



# Ector County Utility District

## Water Master Plan

June 2018



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# ECTOR COUNTY UTILITY DISTRICT

## 2018 WATER SYSTEM MASTER PLAN



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## I. EXECUTIVE SUMMARY

This Water System Master Plan present analyses, findings, and recommendations for implementing a plan to meet the Ector County Utility District's (ECUD) infrastructure needs over the next 25 years. The basis for anticipated infrastructure improvements is twofold: ECUD to become an independent water system, meaning the system would no longer ride off City of Odessa pressure and future growth of both population and commercial development within West Odessa.

Population and commercial growth projections were based on meetings with the ECUD board and information from the Ector County Independent School District. Historical water usage data from the last five years was also provided by the City of Odessa. Kimley-Horn projected water demand (average day, maximum day, and peak hour) values for the next 25-years.

The water system was analyzed using WaterCAD™ modeling software. Fire flow tests were performed by Kimley-Horn and HDR with the assistance of City of Odessa staff. These tests were used to calibrate the water system model to reflect actual system conditions within ECUD. The calibrated model enabled Kimley-Horn to evaluate if the existing water system met the Design Criteria outlined in **Section VI – Design Criteria**.

The ECUD system currently operates in four pressure planes. The plan is to simplify the system, reducing the system to two pressure planes; and ultimately becoming a three-pressure plane system at build out. The typical operating pressure range for the system is from 35 psi to 80 psi, with a maximum of 100 psi in isolated areas.

Elements of the water system, including supply, pumping, ground storage, elevated storage, and the piping were evaluated against established design criteria. Based on this evaluation and current growth projections, Kimley-Horn recommends the following infrastructure improvements over the next 25 years. The projects are divided into two major phases; Texas Commission on Environmental Quality (TCEQ) Compliance Projects and Future Development Projects. They are prioritized in the order of importance. The TCEQ Compliance Projects are required to meet minimum state standards for the district to become an independent water system. The Future Development Projects are associated with future growth throughout the system.

## Texas Commission on Environmental Quality (TCEQ) Compliance Projects

| # | PROJECT NAME                                                | PROJECT COST        |
|---|-------------------------------------------------------------|---------------------|
| 1 | 42nd Street Pump Station Phase 1                            | \$13,000,000        |
| 2 | 42nd Street 30-inch Transmission Line                       | \$8,000,000         |
| 3 | 42nd Street 24-inch Transmission Line                       | \$3,200,000         |
| 4 | Knox Avenue 16-inch Water Line (South)                      | \$5,100,000         |
| 5 | Knox Avenue 1.5 MG Elevated Storage Tank                    | \$4,600,000         |
| 6 | Tripp Avenue 16-Inch Transmission Line to Tripp Avenue Tank | \$5,200,000         |
| 7 | Tripp Avenue 1.0 MG Elevated Storage Tank                   | \$3,200,000         |
|   | <b>TOTAL:</b>                                               | <b>\$42,300,000</b> |

### #1 – 42<sup>nd</sup> Street Pump Station Phase 1

PRESSURE PLANE: EAST/WEST

PROJECT COST: \$13,000,000

NOTES: This project consists of 2 – 2 MG ground storage tanks and a pumping facility with a firm pumping capacity of 12.4 MGD. The facility will be supplied with water by the proposed 42nd Street 30" Transmission Line.

**#2 – 42<sup>nd</sup> Street 30-Inch Transmission Line**

---

PRESSURE PLANE: EAST / WEST

PROJECT COST: \$8,000,000

NOTES: This project consists of approximately 21,750 LF of 30" water transmission line from the Odessa Wholesale Meter to the proposed 42nd Street Pump Station. The line will run along 42nd Street from Loop 338 to Tripp Avenue.

**#3 – 42<sup>nd</sup> Street 24-Inch Transmission Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$3,200,000

NOTES: This project consists of approximately 9,920 LF of 24" water transmission line from the proposed 42nd Street Pump Station to Knox Avenue.

**#4 – Knox Avenue 16-inch Water Line (South)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$5,100,000

NOTES: This project consists of approximately 16,610 LF of 16" water line along Knox Avenue from Whirlaway Drive to University Boulevard. This also includes 1,080 LF of 16" water line along Knox Avenue connecting the existing 16" water line near the Knox Avenue /Bradley Drive intersection to the existing 16" near the Knox Avenue /Joan Drive intersection.

**#5 – Knox Avenue 1.5 MG Elevated Storage Tank**

---

PRESSURE PLANE: WEST

PROJECT COST: \$4,600,000

NOTES: This project consists of a 1.5 MG elevated storage tank at a site located at the intersection of Knox Avenue and Whirlaway Drive.

**#6 – Tripp Avenue 16-Inch Transmission Line to Tripp Avenue Tank**

---

PRESSURE PLANE: EAST

PROJECT COST: \$5,200,000

NOTES: This project consists of approximately 17,770 LF of 16" water transmission line along Tripp Avenue from the proposed 42nd Street Pump Station to the proposed Tripp Avenue Tank.

**#7 – Tripp Avenue 1.0 MG Elevated Storage Tank**

---

PRESSURE PLANE: EAST

PROJECT COST: \$3,200,000

NOTES: This project consists of a 1.0 MG elevated storage tank at a site along Tripp Avenue just south of 3rd Street.

## Future Development Projects

**TABLE 2  
FUTURE DEVELOPMENT PROJECTS  
WATER CAPITAL IMPROVEMENTS PLAN**

| #  | PROJECT NAME                                          | PROJECT COST |
|----|-------------------------------------------------------|--------------|
| 8  | 16th Avenue/FM 1936 12-inch Water Line                | \$3,100,000  |
| 9  | 42nd Street 16-inch Water Line                        | \$3,200,000  |
| 10 | Moss Avenue 12-inch Water Line                        | \$3,100,000  |
| 11 | Fortune 500/Westcliff 16/12-inch Water Line           | \$3,800,000  |
| 12 | University Boulevard 12-inch Water Line               | \$2,400,000  |
| 13 | Fortune 500/3rd Street 12-inch Water Line             | \$3,400,000  |
| 14 | Tripp Avenue 12-inch Water Line (East Pressure Plane) | \$1,900,000  |
| 15 | I-20/FM 1936 12-inch Water Line (East Pressure Plane) | \$2,500,000  |
| 16 | Knox Avenue 12-inch Water Line Phase 1 (North)        | \$1,300,000  |
| 17 | Yukon Road 12-inch Water Line Phase 1                 | \$1,600,000  |
| 18 | Moss Avenue 12-inch Water Line                        | \$1,700,000  |
| 19 | 57th Street 12-inch Water Line Phase 1                | \$1,600,000  |
| 20 | Greenway Avenue 12-inch Water Line                    | \$1,700,000  |
| 21 | Tripp Avenue 12-inch Water Line (West Pressure Plane) | \$1,100,000  |
| 22 | I-20 12-inch Water Line Phase 1 (West Pressure Plane) | \$900,000    |
| 23 | Highway 302 12-inch Water Line Phase 1                | \$2,500,000  |
| 24 | FM 1936 12-inch Water Line                            | \$1,100,000  |
| 25 | 57th Street 12-inch Water Line Phase 2                | \$1,400,000  |

**TABLE 2 (CONTINUED)  
FUTURE DEVELOPMENT PROJECTS  
WATER CAPITAL IMPROVEMENTS PLAN**

| #  | PROJECT NAME                                                    | PROJECT COST        |
|----|-----------------------------------------------------------------|---------------------|
| 26 | Yukon Road 12-inch Water Line Phase 2                           | \$1,600,000         |
| 27 | Westcliff Road 12-inch Water Line (North)                       | \$1,700,000         |
| 28 | Loop 338 12-inch Water Line (South)                             | \$1,400,000         |
| 29 | I-20 12-inch Water Line (East Pressure Plane)                   | \$1,600,000         |
| 30 | I-20 12-inch Water Line Phase 2 (West Pressure Plane)           | \$1,000,000         |
| 31 | Knox Avenue 12-Inch Water Line (South)                          | \$1,100,000         |
| 32 | 16th Street 12-Inch Water Line (West)                           | \$1,700,000         |
| 33 | Westcliff Road 12-inch Water Line (South)                       | \$800,000           |
| 34 | Whirlaway Drive 12-inch Water Line                              | \$1,400,000         |
| 35 | Highway 302 12-inch Water Line Phase 2                          | \$1,900,000         |
| 36 | Far North Tripp Avenue 12-inch Water Line (East Pressure Plane) | \$2,600,000         |
| 37 | Loop 338 12-inch Water Line (North)                             | \$3,900,000         |
| 38 | Highway 302 12-Inch Water Line (West)                           | \$1,800,000         |
| 39 | Knox Avenue 12-Inch Water Line Phase 2 (North)                  | \$800,000           |
| 40 | 42nd Street Pump Station Phase 2 & Meter Upgrade                | \$9,000,000         |
|    | <b>TOTAL:</b>                                                   | <b>\$70,600,000</b> |

**#8 – 16<sup>th</sup> Avenue/FM 1936 12-inch Water Line**

---

PRESSURE PLANE: EAST

PROJECT COST: \$3,100,000

NOTES: This project consists of approximately 12,190 LF of 12" water line along 16<sup>th</sup> Avenue from Tripp Avenue to FM 1936 and along FM 1936 from 16<sup>th</sup> Avenue to Mockingbird Lane.

**#9 – 42<sup>nd</sup> Street 16-inch Water Line**

---

PRESSURE PLANE: EAST

PROJECT COST: \$3,200,000

NOTES: This project consists of approximately 14,300 LF of 16" water line along 42nd Street and FM 1936 from Tripp Avenue to a connection to the existing 18" water line near Morris Street.

**#10 – Moss Avenue 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$3,100,000

NOTES: This project consists of approximately 13,050 LF of 12" water line along Moss Avenue from 42<sup>nd</sup> Street to Swan Road.

**#11 – Fortune 500/Westcliff 16/12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$3,800,000

NOTES: This project consists of approximately 7,710 LF of 16" water line along 42nd Street from Knox Avenue to Westcliff Road and 14,540 LF of 16" water line along Westcliff Road, University Boulevard, and Fortune 500, terminating at 16<sup>th</sup> Street.

**#12 – University Boulevard 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$2,400,000

NOTES: This project consists of approximately 12,180 LF of 12" water line along University Boulevard from Westcliff Road to Moss Avenue.

**#13 – Fortune 500/3<sup>rd</sup> Street 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$3,400,000

NOTES: This project consists of approximately 21,160 LF of 12" water line at the intersection of Fortune 500 and 16<sup>th</sup> Street running along Fortune 500, and 3rd Street to the 3rd Street/Moss Avenue intersection.

**#14 – Tripp Avenue 12-inch Water Line (East Pressure Plane)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$1,900,000

NOTES: This project consists of approximately 7,940 LF of 12" water line along Tripp Avenue from I-20 to the Tripp Avenue Elevated Storage Tank.

**#15 – I-20/FM 1936 12-inch Water Line (East Pressure Plane)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$2,500,000

NOTES: This project consists of approximately 13,530 LF of 12" water line along I-20 from Tripp Avenue to FM 1936; along FM 1936 from I-20 to a connection to the 12" water line north of the FM1936/ Mapp Street intersection.

**#16 – Knox Avenue 12-inch Water Line Phase 1 (North)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,300,000

NOTES: This project consists of approximately 7,420 LF of 16" water line beginning with a connection to the existing 14" water line near the Knox Avenue /April Street intersection continuing along Knox Avenue to Yukon Road.

**#17 – Yukon Road 12-inch Water Line Phase 1**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,600,000

NOTES: This project consists of approximately 9,640 LF of 12" water line along Yukon Road from Knox Avenue to Greenway Avenue.

**#18 – Moss Avenue 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,700,000

NOTES: This project consists of approximately 10,560 LF of 12" water line along Moss Avenue from 42<sup>nd</sup> Street to Yukon Road.

**#19 – 57<sup>th</sup> Street 12-inch Water Line Phase 1**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,600,000

NOTES: This project consists of approximately 9,650 LF of 12" water line along 57<sup>th</sup> Street from Knox Avenue to Greenway Avenue.

**#20 – Greenway Avenue 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,700,000

NOTES: This project consists of approximately 10,820 LF of 12" water line along Greenway Avenue from 42<sup>nd</sup> Street to Yukon Road.

**#21 – Tripp Avenue 12-inch Water Line (West Pressure Plane)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,100,000

NOTES: This project consists of approximately 5,250 LF of 12" water line along Tripp Avenue from I-20 to Hutson Road.

**#22 – I-20 12-inch Water Line Phase 1 (West Pressure Plane)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$900,000

NOTES: This project consists of approximately 5,320 LF of 12" water line along I-20 from Tripp Avenue to Moss Avenue.

**#23 – Highway 302 12-inch Water Line Phase 1**

---

PRESSURE PLANE: EAST

PROJECT COST: \$2,500,000

NOTES: This project consists of approximately 12,260 LF of 12" water line along Highway 302 from Loop 338 to FM 1936.

**#24 – FM 1936 12-inch Water Line**

---

PRESSURE PLANE: EAST

PROJECT COST: \$1,100,000

NOTES: This project consists of approximately 6,110 LF of 12" water line along FM 1936 from 42<sup>nd</sup> Street to Highway 302.

**#25 – 57<sup>th</sup> Street 12-inch Water Line Phase 2**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,400,000

NOTES: This project consists of approximately 8,650 LF of 12" water line along 57<sup>th</sup> Street from Knox Avenue to Westcliff Road.

**#26 – Yukon Road 12-inch Water Line Phase 2**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,600,000

NOTES: This project consists of approximately 9,760 LF of 12" water line along Yukon Road from Knox Avenue to Westcliff Road.

**#27 – Westcliff Road 12-inch Water Line (North)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,700,000

NOTES: This project consists of approximately 10,780 LF of 12" water line along Westcliff Road from 42<sup>nd</sup> Street to Yukon Road.

**#28 – Loop 338 12-inch Water Line (South)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$1,400,000

NOTES: This project consists of approximately 6,740 LF of 12" water line along Loop 338 from I-20, north along Loop 338 to a connection to the existing 12" water line north of the Loop 338/10<sup>th</sup> Street intersection.

**#29 – I-20 12-inch Water Line (East Pressure Plane)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$1,600,000

NOTES: This project consists of approximately 8,670 LF of 12" water line along I-20 from FM 1936 to Loop 338.

**#30 – I-20 12-inch Water Line Phase 2 (West Pressure Plane)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,000,000

NOTES: This project consists of approximately 5,880 LF of 12" water line along I-20 from Moss Avenue to Knox Avenue.

**#31 – Knox Avenue 12-inch Water Line (South)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,100,000

NOTES: This project consists of approximately 6,560 LF of 12" water line along Knox Avenue from I-20 to 3rd Street.

**#32 – 16th Street 12-Inch Water Line (West)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,700,000

NOTES: This project consists of approximately 10,510 LF of 12" water line along 16th Street from Knox Avenue to Fortune 500 Avenue.

**#33 – Westcliff Road 12-inch Water Line (South)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$800,000

NOTES: This project consists of approximately 4,940 LF of 12" water line along Westcliff Road from Whirlaway Drive to 3rd Street.

**#34 – Whirlaway Drive 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,400,000

NOTES: This project consists of approximately 8,030 LF of 12" water line along Whirlaway Drive from Westcliff Road to Knox Avenue.

**#35 – Highway 302 12-inch Water Line Phase 2**

---

PRESSURE PLANE: EAST

PROJECT COST: \$1,900,000

NOTES: This project consists of approximately 11,420 LF of 16" water line along Highway 302 from FM 1936 to just east of Tripp Avenue.

**#36 – Far North Tripp Avenue 12-inch Water Line (East Pressure Plane)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$2,600,000

NOTES: This project consists of approximately 10,650 LF of 12" water line along Tripp Avenue from Highway 302 to 57<sup>th</sup> Street; then continuing south in an easement from 57<sup>th</sup> Street to 42<sup>nd</sup> Street.

**#37 – Loop 338 12-inch Water Line (North)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$3,900,000

NOTES: This project consists of approximately 10,630 LF of 16" water line along Loop 338 from a connection to the existing 18" water line north of the Loop 338/Arcadia Street intersection; south along Loop 338 to a connection to the existing 12" water line north of the Loop 338/10<sup>th</sup> Street intersection.

**#38 – Highway 302 12-inch Water Line (West)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,800,000

NOTES: This project consists of approximately 10,950 LF of 12" water line along Highway 302 between Greenway Avenue and Knox Avenue.

**#39 – Knox Avenue 12-inch Water Line Phase 2 (North)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$800,000

NOTES: This project consists of approximately 4,570 LF of 12" water line along Knox Avenue between Highway 302 and Yukon Road.

**#40 – 42<sup>nd</sup> Street Pump Station Phase 2**

---

PRESSURE PLANE: EAST/WEST

PROJECT COST: \$9,000,000

NOTES: This project consists of adding an additional 4 MG ground storage tank and an additional firm pumping capacity of 3.5 MGD to the existing 42nd Street Pump Station.

## II. INTRODUCTION

Ector County Utility District (ECUD) sits within Ector County, west of the City of Odessa, in an area termed West Odessa. West Odessa is defined by four major roadways: Loop 338, Interstate 20, FM 886, and State Highway 302. ECUD currently supplies water service to a limited area of West Odessa, generally between Loop 338 and Knox Avenue. Situated adjacent to the City of Odessa and with access to the oil fields of west Texas, the projected ECUD service area has an opportunity for tremendous additional growth. The expansion and redevelopment of the water system is a necessary component to allow for the development of open land and aid further infill and redevelopment.

ECUD is a wholesale water customer of Odessa. Odessa staff currently operate and maintain the ECUD water system and provide customer billing services. In operation, the ECUD water system operates as an extension of the Odessa system. ECUD does not have any storage or pumping capacity, except in-line booster stations. The objective of this report is to develop a plan for ECUD to become a stand-alone water system and to provide water services to the citizens of West Odessa.

### Description of Study Area

The Water System Master Plan's study area is approximately 42,460 acres (approximately 66.4 square miles). The study area includes approximately 9,800 acres (approximately 15.3 square miles) within ECUD's current service area and approximately 32,660 acres (approximately 51.1 square miles) of ECUD's projected service area or CCN. ECUD's projected service area contains all West Odessa and is defined approximately by the following four major roadways: Loop 338, Interstate 20, FM 886, and State Highway 302.

See **Appendix A – Boundary Map** for an illustration of ECUD's existing and proposed service areas.

### Objective and Scope of Study

The goal of this report is to develop a strategic plan that allows for ECUD to become an independent water system. As a part of the master planning process, ECUD was recently assigned a public water system identification number from the Texas Commission on Environmental Quality (TCEQ). A significant portion of the strategic plan is ensuring that ECUD will be in compliance with the TCEQ criteria following implementation of the

recommended Capital Improvements Plan (CIP). The remainder of the strategic plan is to ensure that ECUD can operate a robust water system that aids the growth of West Odessa.

## Water System Definitions

The following terms are used throughout this report. The definitions may provide the reader a better understanding of the subtle difference between several of these terms.

**Average Day Demand (ADD)** - Annual water consumption divided by the number of days in a year. The average daily water demand a given water system experiences over a one-day period.

**Capital Improvements Plan (CIP)** - Recommended improvements to the water distribution system based on population and water demand projections for future conditions.

**Demand (Consumption)** - Volume of water used for a given time period, typically measured in units of Million Gallons Per Day (MGD) or Gallons Per Minute (gpm).

**Diurnal Curve** – Typically a graph depicting water demand over a 24-hour period with water demand plotted on the y-axis and time plotted on the x-axis.

**ETJ** - Extra Territorial Jurisdiction

**Firm Pumping Capacity** - The total pumping capacity that a pump station (by pressure plane) can deliver with the largest pump out of service.

**GPD** - Gallons Per Day

**Maximum Day Demand (MDD)** - Water consumption, in volume of water, used on the highest consumption day in a year.

**MGD** - Million Gallons per Day

**Peak Hour Demand (PHD)** - The maximum one-hour water demand given in units of volume per day that a given distribution system experienced or would experience during a particular year or other time period.

**Peaking Factor** - The factor applied to the maximum day demand to determine peak hour and minimum hour demand during maximum day demand conditions.

**Pressure Plane (Pressure Zone)** - A network of water pipes having a common pressure range; each plane may be separated from the other planes by closed valves, pressure-regulating valves, pump stations, and storage facilities.

**PSI** - pounds per square inch (U.S. customary units for pressure)

**TCEQ** - Texas Commission on Environmental Quality.

**Total Pumping Capacity** - The total pumping capacity that a pump station can deliver.

**Transmission System (Piping)** - Transmission piping typically consists of 12" diameter and larger piping, and have minimum service connections if possible and function primarily as the vehicle to move larger quantities of water throughout the water system. The distribution piping consists of 10" diameter and smaller piping.

### III. DATA COLLECTION AND LAND USE

#### Data Collection

Evaluation of the existing system required collection of physical attributes of the existing water system and collection of historical customer demands. Odessa staff operate and maintain the ECUD water system and consequently are most familiar with the physical characteristics of the ECUD water system and its historical operation. Odessa staff provided the distribution piping network in electronic format, pump station information, storage tank information, and general water system operating procedures. Odessa staff also provided historical operating information from the City's Supervisory Control and Data Acquisition (SCADA) system and historical customer water usage from Odessa's AMI (advanced metering infrastructure) billing system. The AMI system provided hourly flow readings for each meter connection both in Odessa and ECUD. The AMI system had been fully implemented for both Odessa and ECUD for the 2016 calendar year. Therefore, 2016 was used as the basis for establishing historical water usage. Utilizing the data from the AMI system and the existing land use, discussed in the following section, water usage magnitude and patterns for different types of land uses could be established. Fire hydrant flow tests were conducted by the Kimley-Horn team and Odessa staff. Odessa already had an existing hydraulic water model of the ECUD water system; this model was provided to Kimley-Horn as the starting point for analysis.

#### Existing Land Use

Kimley-Horn utilized land use information available from the Ector County Appraisal District as the starting point for the existing land use map. The Ector County Appraisal District maintains a database of parcels within Ector County, categorized by existing land use type. Kimley-Horn worked with ECUD staff to verify and ensure the accuracy of the existing land use data. The ECUD service area sits adjacent to the City of Odessa, in Ector County. There are no zoning or development regulations, which has led to a mixture of land uses throughout the service area. The majority of the developed service area is residential, from mobile homes to larger custom built-homes. The average residential lot is approximately 0.8 acres. Commercial developments sit along the major thoroughfares and intersections, especially along University Blvd. and 16<sup>th</sup> St. The commercial developments are a mix of businesses providing services to local citizens and businesses supporting oil field operations. A notable feature of the land use in the ECUD service area is the amount of

above ground oil pads and the amount of underground oil infrastructure. Oil pads sit among residential neighborhoods and businesses. The projected ECUD service area has several large residential neighborhoods, currently on well water, that are anticipated to be brought onto the ECUD system in the future. There are significant tracts of vacant land within the ECUD projected service area that are anticipated to be developed and there is the potential for significant infill and redevelopment in already developed areas as the ECUD system expands. The existing land use was an important part of understanding the water use and distribution throughout ECUD. Refer to **Appendix B – Existing Land Use Map** for an illustration of the existing land use plan. **Table 3** summarizes the existing land use within ECUD’s projected service area. **Table 4** summarizes the existing connections to ECUD’s system by land use type.

Table 3

| Land Use Type                  | Existing Land Use in Service Area |            |
|--------------------------------|-----------------------------------|------------|
|                                | Acreage                           | % of total |
| Single Family                  | 5,209                             | 12.3%      |
| Manufactured Housing           | 1,840                             | 4.3%       |
| Manufactured Housing / Storage | 3,633                             | 8.6%       |
| Public / Semi-Public           | 366                               | 0.8%       |
| Parks and Open Space           | 261                               | 0.6%       |
| Commercial                     | 2,115                             | 5.0%       |
| Oil / Gas Facilities           | 617                               | 1.5%       |
| Right of Way                   | 4,264                             | 10.0%      |
| Rural / Vacant                 | 24,155                            | 56.9%      |
| <b>Total</b>                   | <b>42,460</b>                     |            |

Table 4

| Land Use Type                  | Existing Land Use on ECUD System |            |
|--------------------------------|----------------------------------|------------|
|                                | Acreage                          | % of total |
| Single Family                  | 1,953                            | 53.7%      |
| Manufactured Housing           | 628                              | 17.3%      |
| Manufactured Housing / Storage | 653                              | 17.9%      |
| Public / Semi-Public           | 66                               | 1.8%       |
| Parks and Open Space           | 0                                | 0.0%       |
| Commercial                     | 313                              | 8.6%       |
| Oil / Gas Facilities           | 0                                | 0.0%       |
| Right of Way                   | 0                                | 0.0%       |
| Rural / Vacant                 | 26                               | 0.7%       |
| <b>Total</b>                   | <b>3,639</b>                     |            |

## Ultimate Land Use

Kimley-Horn worked with ECUD staff to develop the ultimate land use plan. Refer to **Appendix C – Ultimate Land Use Map** for the ultimate land use plan. The ultimate land use plan supplemented the existing land use plan. The majority of the vacant land in the projected service area is anticipated to develop as residential neighborhoods and it is anticipated that commercial developments will continue to line major thoroughfares. As noted above, oil infrastructure is a notable feature of ECUD's service area. Additionally, a notable feature of the existing land use configuration is citizen's willingness to live and work near oil infrastructure. Therefore, the ultimate land use plan includes a moderate category for each land use type. This assumes that areas with some level of existing oil infrastructure will see development equating to roughly 50% of non-oil related development. For water use, this would equate to 50% of water use for a tract of the same size and development type with no oil infrastructure. There are some parcels of land with oil infrastructure so dense that they have been categorized as undevelopable. The Interstate 20 corridor runs through ECUD's projected CCN area. As a major thoroughfare through west Texas, providing service to the existing commercial developments and anticipated future commercial developments,

Interstate 20 will be important for establishing ECUD's tax base. **Table 5** summarizes the breakout of the anticipated land use in ECUD's projected service area.

**Table 5**

| Land Use Type                                   | Ultimate Land Use |            |
|-------------------------------------------------|-------------------|------------|
|                                                 | Acreage           | % of total |
| Commercial                                      | 4,824             | 11.4%      |
| Commercial - Moderate Oil Activity              | 2,060             | 4.9%       |
| Low Density Residential                         | 21,204            | 50.0%      |
| Low Density Residential - Moderate Oil Activity | 3,744             | 8.8%       |
| Public / Semi-Public                            | 148               | 0.3%       |
| Undevelopable / High Oil Activity               | 5,833             | 13.7%      |
| Right-of-Way                                    | 4,647             | 10.9%      |
| <b>Total</b>                                    | <b>42,460</b>     |            |

## IV. WATER DEMAND PROJECTIONS

The modern west Texas area has always been tied to the growth or the decline of the oil market. As the oil market rebounds, appetite for growth in west Texas and ECUD swell. Projecting water demand growth in ECUD is equivalent to projecting the oil markets. Because the actual growth in ECUD is anticipated to be tied to the oil market, which is beyond the scope or expertise of this report, proposed CIP projects will not be tied to a percent growth but instead tied to trigger points, such as water usage or number of connections in the system. For the purposes of establishing projected water usage and connections, the first phase of the CIP, the TCEQ Compliance Projects CIP, is anticipated to be completed by 2019. A growth rate of 1% was selected from present day until 2020, a 5% growth rate was selected for 5 years from 2020 to 2025, and a 1% growth was selected for the remainder of the 25-year planning period. These selected growth rates are intended to represent infill within ECUD's existing service area. The basis for this growth rate is to match the growth rate projected by the City of Odessa in their comprehensive plan.

There are large subdivisions within the West Odessa area, outside of ECUD's existing service area, that ECUD staff have noted are waiting to come onto ECUD's water system. These subdivisions are currently served by water wells. These subdivisions will be eligible to enter ECUD's water system with the implementation of the TCEQ Compliance Projects CIP, which will make ECUD compliant with TCEQ regulations. Kimley-Horn anticipates that 50% of the occupied residential homes or businesses not currently on ECUD's system today will be on ECUD's system within 10 years of implementation of the CIP. The remaining occupied homes or businesses are anticipated to be on ECUD's system within the 25-year planning period. The homes and businesses eligible to be on ECUD's system will be highlighted further in **Section VII - Future Infrastructure Analysis and Recommendations**.

In addition to infill and existing occupied homes and businesses on well water entering the ECUD water system, vacant land outside of ECUD's existing service area is anticipated to develop and enter the ECUD water system. 25% of the vacant land is projected to develop and enter ECUD's water system by the end of the 25-year planning period.

Water demand projections can be made using population, number of meter connections, or land use as the basis for projection. Water demands are projected into the future by determining the historical water usage per capita, per connection, or per acre of a land use type and then tying the growth of the water demand projections to the growth of one of these

categories. For this report, the land use method was selected as the ideal way to project future water demands.

## Land Use Demand

Land use projections were used to project future water demands. The AMI billing system provided hourly flow readings for each day in 2016 for each connection in ECUD. Each connection was correlated with its corresponding land use type. With the known land use type and acreage of the corresponding parcel, a water demand loading factor could be calculated for each parcel by land use type. A maximum day water demand loading factor was created for each land use type to be used for projecting future water demand to undeveloped parcels. **Table 5** lists the maximum day water demand loading factors for each land use type. As discussed in the Ultimate Land Use section, moderate loading factors have been established for land that has some level of existing oil infrastructure. It should be noted that July 22, the maximum day of water usage in 2016, was used as the basis for establishing the maximum day water demand loading. Other days during the summer of 2016 were also used as a comparison to ensure that the factors were established were reasonable and representative of the water usage in ECUD. The factors in **Table 5** represent the maximum day water demand, not average day water demand. It should also be noted that the existing water model was loaded with the actual water demand information available for each connection. See **Section V- Methodology** for a discussion of modeling methodology.

**Table 5**

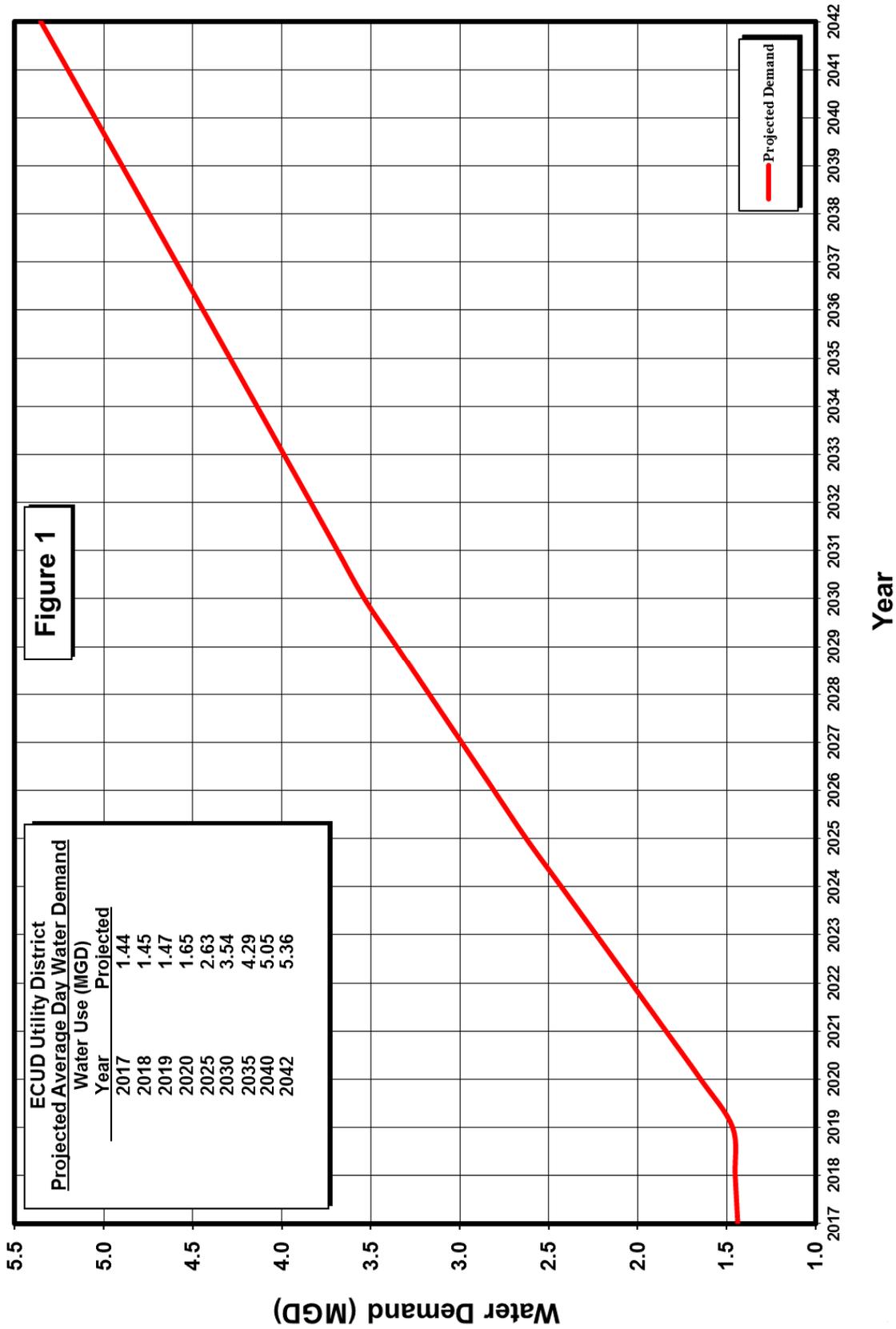
| Land Use Type                       | Maximum Day Demand Loading Factors<br>Gal / Acre/ Day |
|-------------------------------------|-------------------------------------------------------|
| Low Density Residential             | 720                                                   |
| Residential - Moderate Oil Activity | 360                                                   |
| Commercial                          | 820                                                   |
| Commercial - Moderate Oil Activity  | 410                                                   |
| Public/Semi-Public                  | 120                                                   |
| Rural/Vacant                        | 0                                                     |
| Undevelopable/High Oil Activity     | 0                                                     |
| Right-of-Way                        | 0                                                     |

## Average Day Demand (ADD)

Refer to the introductory paragraph of **Section IV- Water Demand Projections** for a discussion on the growth rates and components used to develop the projected average day demand. Refer to **Table 6** and **Figure 1** for the projected average day demand for ECUD. The 5-year average day demand was projected to be approximately 2.04 MGD and the 25-year average day demand was projected to be approximately 5.36 MGD. Due to the potential for tremendous growth based on the oil market and willingness of West Odessa citizens to enter ECUD's system, Kimley-Horn recommends updating these water demand projections annually, verifying no significant changes.

**Table 6**

| Year                    | 2017 | 2022 | 2027 | 2032 | 2037 | 2042 |
|-------------------------|------|------|------|------|------|------|
| Average Water Use (MGD) | 1.44 | 2.04 | 2.99 | 3.84 | 4.60 | 5.36 |

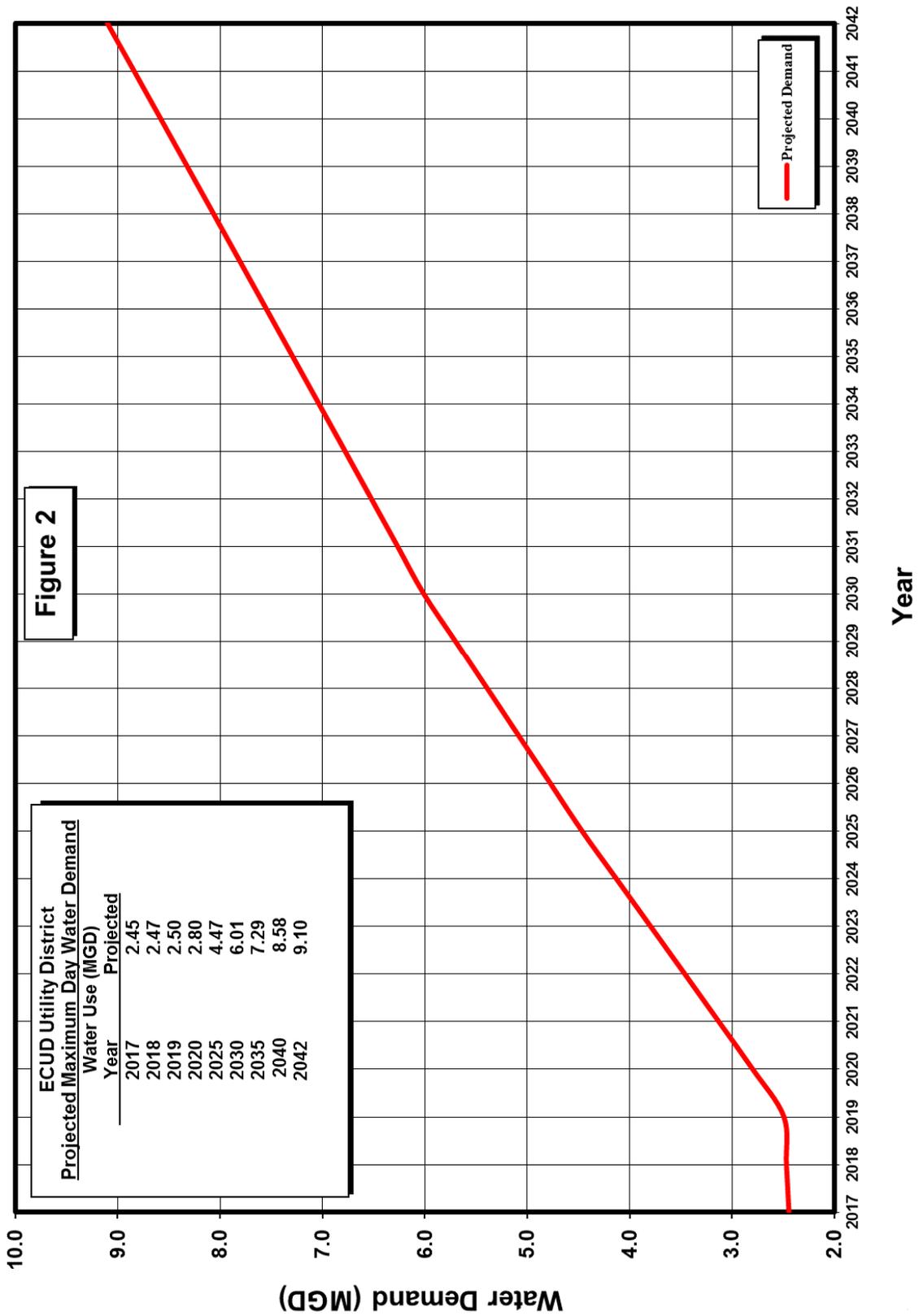


## Maximum Day Demand (MDD)

Historical water-use data was used to determine the ratio between maximum day demand and average day demand. The ratio for the greatest historical maximum day demand to the average day demand was determined to be 1.7:1. Refer to **Figure 2** and **Table 7**. The 5-year maximum day demand projection was approximately 3.46 MGD and the projected 25-year maximum day demand was approximately 9.10 MGD.

**Table 7**

| <b>Year</b>                    | <b>2017</b> | <b>2022</b> | <b>2027</b> | <b>2032</b> | <b>2037</b> | <b>2042</b> |
|--------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Maximum Water Use (MGD)</b> | <b>2.45</b> | <b>3.46</b> | <b>5.08</b> | <b>6.52</b> | <b>7.81</b> | <b>9.10</b> |



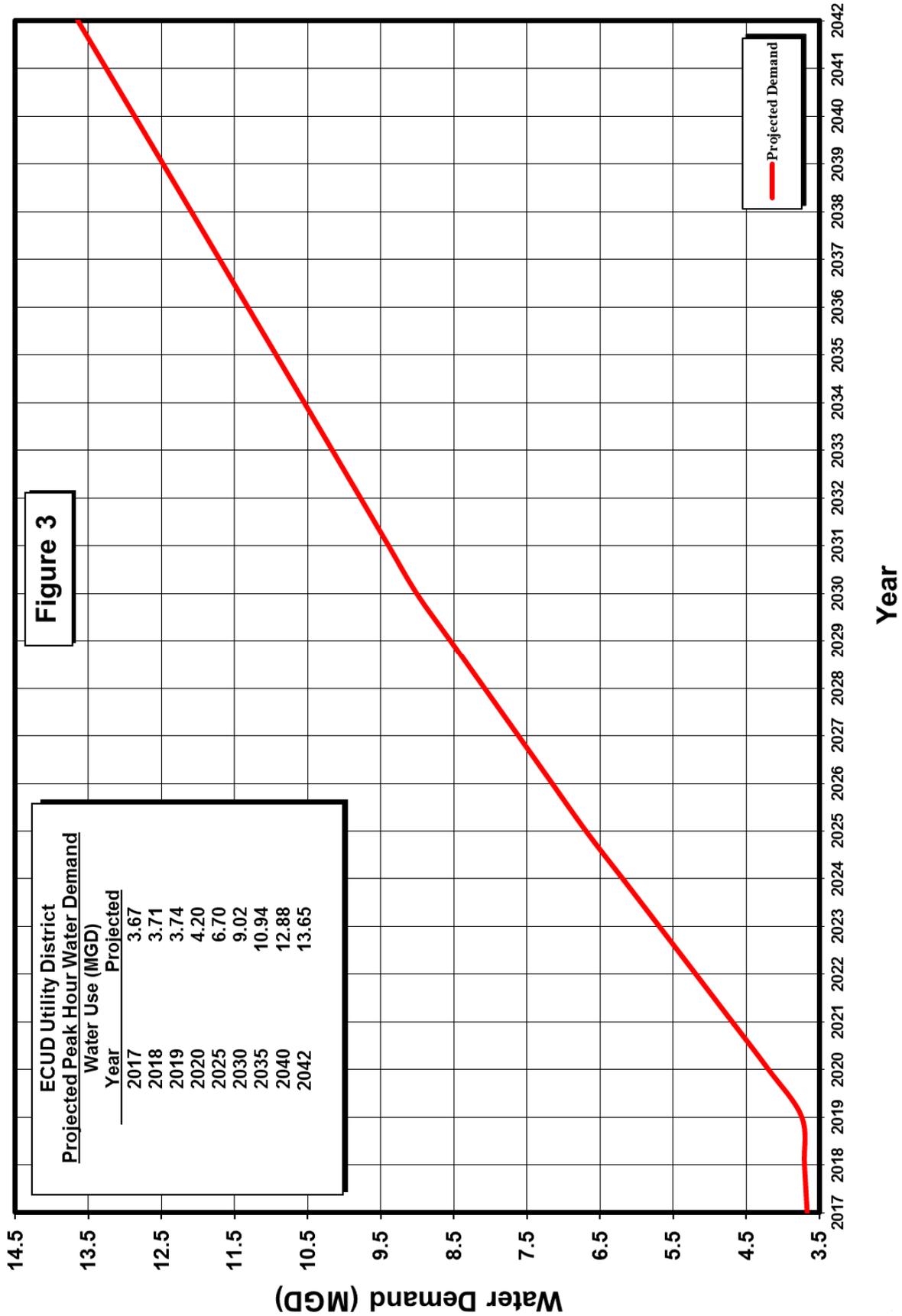
## Peak Hour Demand (PHD)

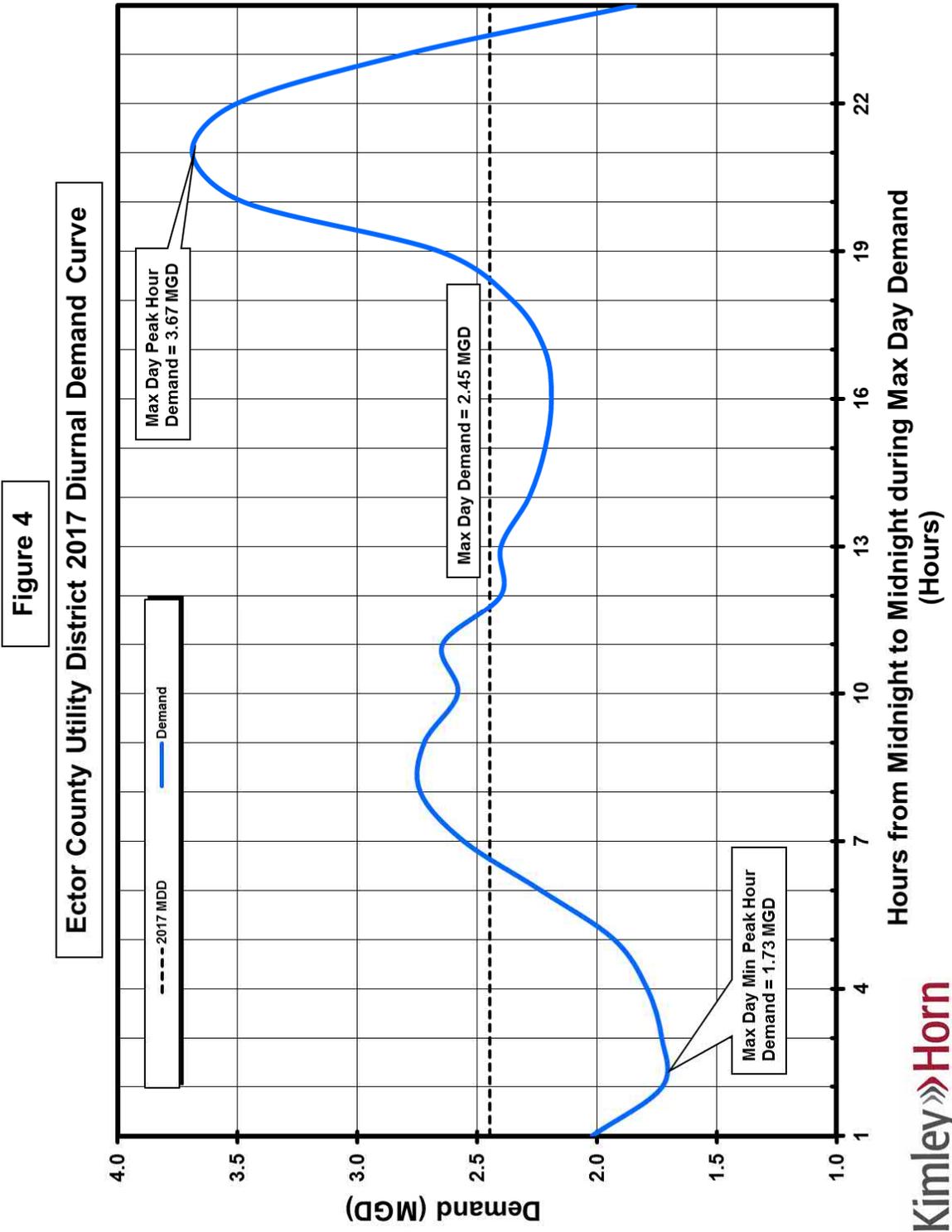
A peak hour demand and a diurnal curve was determined using historical AMI and SCADA data for July 22, the maximum day on 2016. Refer to **Table 8** and **Figure 3** for the projected peak hour demand and **Figure 4** for the system diurnal curve for ECUD. Using the AMI data, a diurnal curve was created for each land use type. The calculated diurnal curve for each land use type was applied to undeveloped parcels in the model.

**Table 8**

| Year                        | 2017        | 2022        | 2027        | 2032        | 2037         | 2042         |
|-----------------------------|-------------|-------------|-------------|-------------|--------------|--------------|
| <b>Peak Water Use (MGD)</b> | <b>3.67</b> | <b>5.20</b> | <b>7.63</b> | <b>9.79</b> | <b>11.71</b> | <b>13.65</b> |

The peak hour demand was expressed as a ratio of the maximum day demand, also referred to as a peaking factor. The peaking factor used for peak hour demand for ECUD was 1.5:1. The projected 5-year peak hour demand was approximately 5.20 MGD and the projected 25-year peak hour demand was approximately 13.65 MGD.



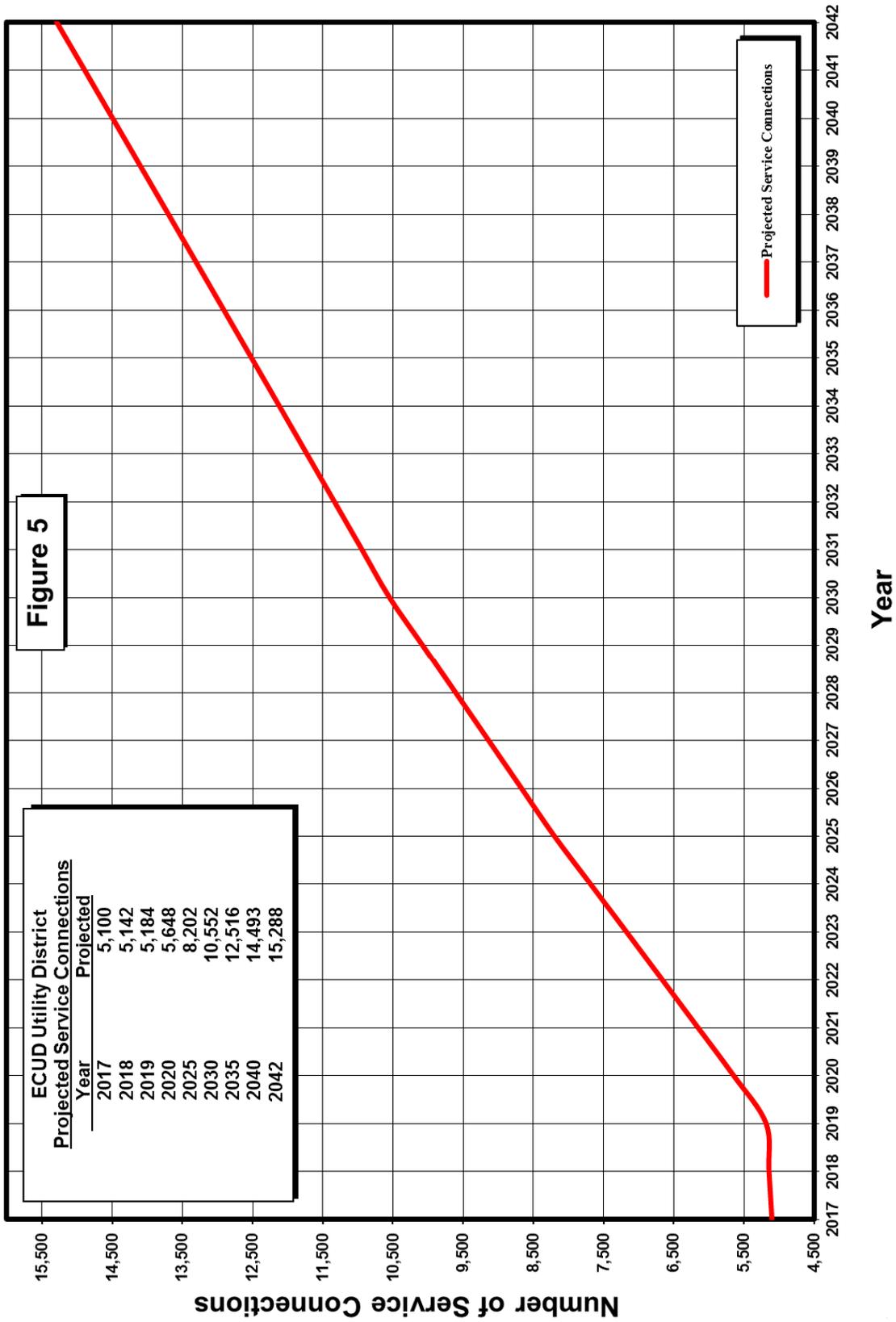


## Projected Connections

The number of connections that are served by a water system is not only an important data point for operation of this system, it also determines TCEQ requirements for system infrastructure, notably pumping facilities and ground and elevated storage tank facilities. The ECUD system currently serves approximately 5,100 connections. As noted previously, projecting the number of connections and the timeline of the development of those connections can be difficult. Projecting connections followed a similar methodology, detailed in the introductory paragraph of **Section IV- Water Demand Projections**. Refer to **Table 9** and **Figure 5** for the projected number of connections within the ECUD service area. Because an unexpected increase in the number of connections could push ECUD out of compliance with TCEQ, Kimley-Horn recommends updating these connection projections annually and verifying no significant adjustments to the projected number of connections.

**Table 9**

| <b>Year</b>                  | <b>2017</b>  | <b>2022</b>  | <b>2027</b>  | <b>2032</b>   | <b>2037</b>   | <b>2042</b>   |
|------------------------------|--------------|--------------|--------------|---------------|---------------|---------------|
| <b>Number of Connections</b> | <b>5,100</b> | <b>6,664</b> | <b>9,140</b> | <b>11,366</b> | <b>13,305</b> | <b>15,288</b> |



## V. METHODOLOGY

### Water System Modeling Methodology

To evaluate the existing water system, a hydraulic model was created representing the overall system. The hydraulic analysis relied on a computer program (WaterCAD™) that solved a large set of simultaneous non-linear equations representing hydraulic and geometric characteristics of the pipe network. Information required included pipe data, node data, storage data, and pump data. Pipe data was obtained from Odessa's current water model and Graphic Information System (GIS). Pipe data consisted primarily of pipe length, location, diameter, and the roughness coefficient of the pipe. Node data consisted of ground elevation and demand, with elevations determined from local topographic data and flow demands from the AMI meter records. Pump data was modeled by each pump's characteristic performance curve. Storage data was modeled by each facility's water surface elevation and tank diameter.

To verify the capability of the hydraulic model to reasonably represent actual system conditions, the model was based on a calibrated system. Model calibration was accomplished using static and residual pressure recordings from fire flow tests taken to verify that the model reflected actual system conditions.

To evaluate the performance of the network, several computational runs were made with varied combinations of demand levels, pump combinations, water levels in the tanks, pipe diameters, adding and removing pipes, etc. A knowledge of the existing system, design and performance criteria, future performance objectives, and hydraulic principles allowed the choice of a limited number of configurations for computational analysis.

To determine the need for additional pressure planes and network piping, computer analysis projections for maximum day, fire flow, and peak hour conditions were used. By applying basic hydraulic principles, pipes were located within the network to establish desirable operating characteristics within the system. After adding any required improvements to the model, replenishment capabilities were checked for the elevated storage tanks. With high service pumping capable of delivering the max day demand, the system must be able to replenish elevated storage during periods of low usage. Using the model, the added pipes, storage, and pumps were checked to verify that they could maintain suitable pressure and volume requirements for the maximum day demand condition. If necessary criteria were not

met, the system was repeatedly adjusted and re-analyzed until satisfactory results were obtained.

## VI. DESIGN CRITERIA

### Ector County Utility District Design Criteria

The following criteria were established by Kimley-Horn as minimum standards from which to evaluate current and future water system components. These criteria could change over time based on demand patterns and regulatory mandates.

#### Contracted Water

ECUD contracted water with the City of Odessa should be capable of meeting peak hour demands. Currently, ECUD does not have any ground or elevated storage. Without storage at the entrance to the ECUD system, there is no buffer between peak hour demands from customers and water the system must deliver. Therefore, the City of Odessa must be able to supply peak hour demand to ECUD in the short term. With the implementation of the TCEQ Compliance Projects CIP, ECUD will have both ground and elevated storage that will be able to offset peak hour demand. After the implementation of the TCEQ Compliance Projects CIP, it is recommended that ECUD only maintain a contracted amount equal to the projected maximum day water use.

#### High Service & Booster Pumping Facilities

Pumping capacities must provide the peak hour demand required by the water system or the suggested capacities, established by the TCEQ, whichever is higher. See further below for TCEQ requirements.

#### Ground Storage

Ground storage serves two functions:

- Equalization for differing feed rates between the water supply and pumping to the system.
- Emergency capacity in the event of temporary loss of water supply.

Generally, ground storage facilities are located at water supply points or at each pump station within the water distribution system. Although ground and elevated storage facilities perform separate functions within the system, both are aimed at decreasing the impact of demand fluctuations. Their capacities are established based on knowledge of how demand varies seasonally and daily. Due to inaccuracies in estimating growth, occasional extremes

in usage exceed design values; ground storage must provide sufficient capacity to supply any differences. Sufficient ground storage should be provided to ensure that adequate supplies meet the maximum day demand. Kimley-Horn recommends that a minimum of 50% of the maximum day demand should be held in ground storage.

### Elevated Storage

Elevated storage serves three purposes:

- Functionally, elevated storage equalizes the pumping rate to compensate for daily variations in demand and to maintain a fairly constant pumping rate (usually referred to as operational storage), or a pumping rate that conforms to the requirements of the local electrical rate structure.
- Provides pressure maintenance and protection against surges created by instantaneous demand, such as fire flow and main breaks, and instantaneous change in supply, such as pumps turning on and off.
- Maintains a reserve capacity for fire protection and pressure maintenance in case of power failure to one or more pump stations. Sufficient storage should be maintained to provide four (4) hours of fire flow demand during a loss of power to the pump station and water treatment plant.

Elevated storage is evaluated separately for each pressure plane. Excess storage on any given pressure plane may only be credited on a lower elevation plane. If dual electrical feed is present for pump stations, system reliability is increased and storage dedicated for fire protection can be reduced.

The design criteria set for ECUD consisted of three levels. **Level 1:** Adequate operational (equalization) storage established by determining the required volume to equalize the daily functions in flow during the maximum day demand; **Level 2:** The reserve volume equal to 1,000 gpm for four (4) hours required for fire protection; **Level 3:** Emergency storage equal to 20% of the combined equalization and fire storage volume. Because elevated storage is approximately four times more expensive than ground storage, an economical balance between elevated storage and pumping should be sought.

## Transmission System

The function of the transmission system is to transfer water across the water system and fill the elevated storage tanks. There are three conditions for which the transmission system is evaluated:

- **Peak hour demand** - This is the maximum demand that the system experiences. It is the condition under which the lowest operational pressures are experienced.
- **Tank filling (minimum hour demand)** - This is the period during which the elevated tanks are replenished. This is the period of lowest demand during the peak day. It normally occurs after midnight and is the condition under which the highest operational pressures are experienced.
- **Fire flow demand** - During the maximum day demand, the local transmission lines are tested to ensure that fire protection requirements are met. Pressures are allowed to fall below normal operating pressures, but should not drop below 20 psi at any point in the system.

The transmission system should be sized to maintain a minimum pressure of 40 psi during normal operating conditions and a minimum pressure of 20 psi during extreme operating conditions. In an urban-type water system, operating pressures of 30-35 psi normally result in customer complaints. For most water systems, pressures above 80 psi are undesirable and should be avoided if possible. The transmission system should also be sized to limit maximum velocity in the pipe to seven (7) feet per second. The maximum pressure in extreme conditions should be limited to 120 psi because high operating pressures will result in increased system maintenance and increased operational cost.

## Texas Commission on Environmental Quality (TCEQ) Design Criteria

Chapter 290 of the Texas Administrative Code, “Public Drinking Water,” mandates the minimum requirements for water systems operating in the State of Texas.

The minimum requirements are as follows:

- **Total Storage** - Equal to 200 gallons per connection.
- **Elevated Storage** - Equal to 100 gallons per connection.
- **Pressure** - Minimum pressure under normal conditions should exceed 35 psi while pressure during extreme events may not drop below 20 psi.
- **Treatment Plant** – Capacity to meet maximum day demand.
- **Pumping** – Total capacity of 2.0 gpm per connection or a total capacity of at least 1,000 gpm and the ability to meet peak hourly demands with the largest pump out of service at each pressure plane.

Table 10

|                                                      | ECUD Criteria                                                                                                                                                                                           | TCEQ Criteria                                                                                                                                |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contracted Water Supply</b>                       | Peak Hour Demand. Max Day Demand after implementation of TCEQ Compliance Projects CIP.                                                                                                                  | Overall Capacity to meet Max Day Demand                                                                                                      |
| <b>High Service &amp; Booster Pumping Facilities</b> | Max Day Demand                                                                                                                                                                                          | Total capacity of at least 1,000 gpm and the ability to meet peak hourly demands with the largest pump out of service at each pressure plane |
| <b>Ground Storage</b>                                | 50% of Max Day Demand                                                                                                                                                                                   | N/A                                                                                                                                          |
| <b>Elevated Storage</b>                              | <p><b>Level 1:</b> Equalization Storage during Max Day Demand</p> <p><b>Level 2:</b> 1,000 gpm for 4 hours for Fire Protection</p> <p><b>Level 3:</b> 20% of combined total for Level 1 and Level 2</p> | Equal to 100 gallons per connection                                                                                                          |
| <b>Total Storage</b>                                 | N/A                                                                                                                                                                                                     | Equal to 200 gallons per connection                                                                                                          |
| <b>Transmission System</b>                           | <p>Normal conditions = minimum 40 psi</p> <p>Extreme conditions = minimum 20 psi</p>                                                                                                                    | <p>Normal conditions = minimum 35 psi</p> <p>Extreme conditions = minimum 20 psi</p>                                                         |

## VII. EXISTING INFRASTRUCTURE ANALYSIS AND RECOMMENDATIONS

The ECUD water system functions as an extension of the Odessa system, without any breaks or air gaps between the systems. ECUD does not have ground storage, elevated storage, or high service pumping facilities. ECUD does have two inline booster stations and one hydro-pneumatic tank pump station. The existing ECUD service area ranges from approximately 3,020' at its highest elevation to approximately 2,915 at its lowest elevation. The City of Odessa has two pressure planes, the Upper and the Lower Pressure Planes. ECUD is served by the City of Odessa's Lower Pressure Plane. The elevated storage tanks in the Lower Pressure Plane have an overflow of elevation of 3,078'. The Lower Pressure Plane boundary extends to approximately Redondo Avenue in the ECUD system. The ECUD system, from approximately Redondo Avenue to the east is served entirely from pressure from the Odessa system. To the west of Redondo Avenue, the ECUD system is served by two inline booster stations and one hydro-pneumatic tank pump station, discussed further below. Below is a discussion on the ECUD facilities and recommendations.

### Contracted Water Supply

ECUD purchases their water from the City of Odessa. ECUD and the City of Odessa first entered into a wholesale contract in 1976 and have subsequently renewed the contract several times since the original agreement. Although the City of Odessa and ECUD have a wholesale contract, discussions with staff at TCEQ indicate that the City of Odessa and ECUD are viewed as one water system at the state level. The current wholesale agreement is set to expire in 2018. There are several important points in the contract that have been noted below:

- Odessa does not guarantee a total amount of water to be delivered or guaranteed rate of flow.
- Odessa guarantees a water pressure to ECUD only to meet state requirements.
- Odessa is not responsible for fire flow capacity for the ECUD system.
- Odessa agrees to repair and maintain ECUD's water transmission system.
- ECUD will work to establish a master plan for the purposes of becoming their own water system.

The primary supply feed from Odessa to ECUD is an 18" line that enters the ECUD system at a wholesale meter at West 42<sup>nd</sup> Street and State Highway 302. There is an emergency 12" feeder that enters the ECUD system near West 10<sup>th</sup> Street and West Loop 338. Refer to **Appendix D – Existing Infrastructure** for the location of the existing supply lines and delivery points.

## Booster Pumping Facilities

ECUD does not have any ground storage, elevated storage, or high service pumping facilities. ECUD boosts the pressure that it receives from the City of Odessa using two inline booster stations and one hydro-pneumatic tank pump station. The Lower Pressure Plane from the City of Odessa stops at approximately Redondo Avenue. An inline booster station, named the Redondo Booster Pump Station, is located at approximately the intersection of W. University Blvd. and Redondo Avenue. Refer to **Appendix D – Existing Infrastructure** for the location of the Redondo Booster Pump Station. The Redondo Booster Pump Station has two variable speed pumps that are set to maintain a discharge pressure of 55 psi. The other inline booster station is the Moss Booster Pump Station, located near the intersection of Moss Avenue and Hutson Rd. The Moss Booster Pump Station serves commercial development along south Moss Avenue and along Interstate 20. The hydro-pneumatic tank pump station, 42<sup>nd</sup> & Knox Hydro-Pneumatic Station, is located near the intersection of Knox St. and 42<sup>nd</sup> St. The 42<sup>nd</sup> & Knox Hydro-Pneumatic Station boosts pressures for homes and businesses north of 42<sup>nd</sup> St. along Knox Avenue.

## Distribution System

The current water distribution system consists of pipe sizes ranging from 4-inch to 18-inches in diameter. Most of the system consists of distribution mains, 6-inch to 8-inch diameter pipes. Most of the transmission systems consists of 12" diameter pipe located along University Blvd., Tripp Avenue, and Moss Avenue. Several portions of the ECUD system are not served by a continuous transmission main from the Odessa system or one of the pressure booster facilities. As ECUD continues to expand, increasing the number of transmission mains along major thoroughfares will be a priority. Additionally, a significant portion of the ECUD system is composed of 4-inch diameter pipe. 4-inch pipe is not recommended due to its inability to provide adequate fire flow capacity. Systematically replacing smaller diameter pipe and increasing internal looping of the distribution system will

be advantageous to increasing the robustness of the water system. **Table 11** summarizes ECUD's water main linear footage.

**Table 11**

| <b>Pipe Size</b> | <b>Linear Footage (LF)</b> |
|------------------|----------------------------|
| Unclassified     | <b>30,120</b>              |
| 4"               | <b>213,340</b>             |
| 6"               | <b>442,800</b>             |
| 8"               | <b>152,060</b>             |
| 10"              | <b>35,660</b>              |
| 12"              | <b>73,910</b>              |
| 14"              | <b>3,240</b>               |
| 16"              | <b>3,010</b>               |
| 18"              | <b>16,970</b>              |
| <b>Total</b>     | <b>971,110</b>             |

## VIII. FUTURE INFRASTRUCTURE ANALYSIS AND RECOMMENDATIONS

### Water Supply

ECUD will continue to be reliant upon the City of Odessa for water for the foreseeable future. A crucial consideration of future water contracts with Odessa will be that ECUD has constructed infrastructure that bring them into compliance with TCEQ criteria and therefore are no longer reliant upon the City of Odessa water system other than for wholesale water delivery. Kimley-Horn recommends renewal of the wholesale contract at the expiration of the current contract period. According to TCEQ criteria, ECUD is required to have a water supply able to meet the projected maximum day demand for the system. Kimley-Horn recommends procuring a contract that guarantees a pressure and maximum flow equal to the projected maximum demand during the contract window. **Table 12** lists the projected maximum demand for the next 25-years.

**Table 12**

| Year                    | 2017 | 2022 | 2027 | 2032 | 2037 | 2042 |
|-------------------------|------|------|------|------|------|------|
| Maximum Water Use (MGD) | 2.45 | 3.46 | 5.08 | 6.52 | 7.81 | 9.10 |

The existing wholesale water contract stipulates the installation of an additional feeder of comparable capacity to the existing 18" supply line. Construction of an additional supply line will be an important part of ECUD becoming a stand-alone water system and for satisfying TCEQ criteria. The existing 18" supply line that currently feeds ECUD has existing service taps and connections to smaller transmission lines, decreasing its reliability. The new supply line will be a dedicated supply line from the Odessa system to the proposed ground storage and pump station, discussed further below. The new supply line will provide redundancy to the ECUD system and help to ensure a robust water system. The new supply line is anticipated to be 30" in diameter and be located along 42<sup>nd</sup> St. See **Appendix F – Capital Improvement Plan** for the location of the new supply line.

### Pressure Planes

As discussed in the criteria section of this report, 40 psi is the minimum pressure recommended by Kimley-Horn and 35 psi is the minimum pressure recommend by TCEQ.

Additionally, pressures above 80 psi are typically considered undesirable. Due to the range of topography, 2,915' to 3,140', that the projected service boundary spans, limiting the pressure range from 40 psi to 80 psi would result in up to 3 separate pressure planes for initial implementation of the TCEQ Compliance Projects CIP. ECUD staff expressed a desire to limit the number of initial pressure planes and infrastructure and plan for the use of localized pressure reducing valves on neighborhoods or individual residences for high pressures. For the purposes of this report, a maximum of 100 psi, above the recommended criteria, was established as the maximum desirable pressure during normal operating conditions.

Three pressure planes are anticipated to be developed as a part of the ultimate build out for ECUD. They are designated as the East, West, and Upper Pressure Planes. The locations and extents of the pressure planes are available on **Appendix F – Capital Improvement Plan**. The East and West Pressure Planes are anticipated to be implemented with the construction of the TCEQ Compliance Projects CIP. The pressure plane boundaries were developed in order to serve the majority of the existing homes within West Odessa and allow additional customers to be brought onto the ECUD system. The pressure planes are anticipated to be isolated from each other except for several emergency connections that are anticipated to remain closed with isolation valves during normal operations. Pumping and storage facilities at each pressure plane are discussed in the following sections.

## Pumping Facilities

ECUD currently does not have any high-service pumping facilities. ECUD currently maintains two inline booster stations and one hydropneumatics tank pump station that boost pressure received from Odessa to the rest of the ECUD system. The existing booster facilities have historically been used to serve localized portions of the ECUD system. Consequently, the existing booster facilities in this setup will provide little value to the system once traditional elevated storage and pumping are implemented. With the implementation of the TCEQ Compliance Projects CIP, Kimley-Horn recommends abandoning or removing from service the three existing booster facilities.

TCEQ requires a firm pumping capacity of 2.0 gpm per connection in each pressure plane, or a firm pumping capacity of at least 1,000 gpm and the ability to meet peak hourly demands in each pressure plane, whichever is less. Pumping capacity has been sized to

meet the peak hourly demands criteria. **Table 13** summarizes the anticipated peak hourly demands per pressure plane to the year 2042.

**Table 13**

| Year | East Pressure Plane       |                        | West Pressure Plane       |                        |
|------|---------------------------|------------------------|---------------------------|------------------------|
|      | Peak Hourly Demands (GPM) | Pumping Required (GPM) | Peak Hourly Demands (GPM) | Pumping Required (GPM) |
| 2017 | 1,125                     | 1,150                  | 1,423                     | 1,450                  |
| 2022 | 1,389                     | 1,400                  | 2,222                     | 2,250                  |
| 2027 | 1,798                     | 1,800                  | 3,500                     | 3,500                  |
| 2037 | 2,486                     | 2,500                  | 5,645                     | 5,650                  |
| 2042 | 2,819                     | 2,850                  | 6,659                     | 6,700                  |

High service pumping facilities or elevated tanks are not anticipated to be constructed for the Upper Pressure Plane within the 2042 planning window. The Upper Pressure Plane will be fed from the lower, West Pressure Plane. Because the West Pressure Plane will feed the Upper Pressure Plane, future pumping required for the Upper Pressure Plane will need to be accounted for in the future West Pressure Plane pumping requirements once the Upper Pressure Plane begins development.

Kimley-Horn recommends the implementation of a pump station and ground storage facilities near the intersection of 42<sup>nd</sup> St. and Tripp Avenue. See **Appendix F – Capital Improvement Plan** for the location of the 42<sup>nd</sup> St. Pump Station. Ground storage tanks at the 42<sup>nd</sup> St. Pump Station will be fed by the proposed 30" supply line from Odessa. The pump station is anticipated to function as a dual pressure plane pump station. Three pumps in the station will discharge into the East Pressure Plane and three pumps in the station will discharge into the West Pressure Plane. The pump station will discharge to satisfy customer demands in the system but will also be sized to fill elevated storage tanks located in the system. Elevated storage tanks are discussed in the section below.

The pump station is anticipated to be constructed to allow for pumps to be removed and replaced with larger pumps as the ECUD system continues to develop. The pumps have been sized for initial implementation and the level of development anticipated in 2042, the end of the planning period. Pumps can be swapped out on either the East Pressure Plane or

West Pressure Plane portion of the station depending on the level of growth in the respective pressure plane. **Table 14** below summarizes the required pumps.

**Table 14**

| Phase                                  | East Pressure Plane |              |              | West Pressure Plane |              |              |
|----------------------------------------|---------------------|--------------|--------------|---------------------|--------------|--------------|
|                                        | Pump 1 (GPM)        | Pump 2 (GPM) | Pump 3 (GPM) | Pump 4 (GPM)        | Pump 5 (GPM) | Pump 6 (GPM) |
| Phase 1 – TCEQ Required Infrastructure | 2,000               | 2,000        | 2,000        | 2,300               | 2,300        | 2,300        |
| Phase 2 – 2042 Anticipated Growth      | 2,000               | 2,000        | 2,000        | 3,500               | 3,500        | 3,500        |

### Ground Storage

ECUD does not currently have any ground storage. TCEQ does not have specific requirements for ground storage, only that 200 gallons per connection of total storage must be supplied. With 100 gallons per connection of elevated storage recommended to be installed, 100 gallons per connection must be accounted for by ground storage to meet TCEQ requirements. Ground storage is extremely important for providing emergency storage and provides a buffer between demand of the system and supplied wholesale water.

Kimley-Horn recommends installing ground storage sufficient to supply 50% of the maximum day demand. Ground storage is recommended to be installed at the 42<sup>nd</sup> St. Pump Station in conjunction with the recommended high service pump station. The 42<sup>nd</sup> St. Pump Station will supply the entire system, therefore ground storage provided at the 42<sup>nd</sup> St. Pump Station will be sized for the entire ECUD system. It should be noted that the storage necessary for pumping for the Upper Pressure is anticipated to be utilized from elevated storage tanks associated with the West Pressure Plane. See **Appendix F – Capital Improvement Plan** for the location of the projected ground storage. **Table 15** summarizes the necessary storage required at the 42<sup>nd</sup> St. Pump Station.

Table 15

| Year | TCEQ Required Storage: 100 gallons per connection (MG) | Design Storage: 50% MDD (MG) | Total Provided Storage (MG) | Provided Infrastructure          |
|------|--------------------------------------------------------|------------------------------|-----------------------------|----------------------------------|
| 2017 | 0.51                                                   | 1.22                         | 4.0                         | 2 – 2 MG Ground Storage Tank     |
| 2022 | 0.67                                                   | 1.73                         | 4.0                         | 2 – 2 MG Ground Storage Tank     |
| 2027 | 0.91                                                   | 2.54                         | 4.0                         | 2 – 2 MG Ground Storage Tank     |
| 2037 | 1.33                                                   | 3.90                         | 4.0                         | 2 – 2 MG Ground Storage Tank     |
| 2042 | 1.53                                                   | 4.55                         | 8.0                         | 2 – 2 MG & 1 - 4 MG Storage Tank |

## Elevated Storage

ECUD currently does not have any elevated storage capacity. TCEQ requires 100 gallons per connection for elevated storage. Two elevated storage tanks are anticipated to be installed with the TCEQ Compliance Projects CIP. One 1 million gallon tank will be installed in the East Pressure Plane and one 1.5 million gallon tank will be installed in the West Pressure Plane. The 1 million gallon tank will be located near the intersection of 3<sup>rd</sup> St. and Tripp Avenue and be called the Tripp Avenue EST. The 1.5 million gallon tank will be located near the intersection of Whirlaway Drive and Knox Avenue and be called the Knox Avenue EST. Refer **Appendix F – Capital Improvement Plan** for the location of the two ESTs. The Tripp Avenue EST will be fed by the eastern portion of the 42<sup>nd</sup> St. Pump Station via a 16” transmission main and the Knox Avenue EST will be fed by the western portion of the 42<sup>nd</sup> St. Pump Station via a 16” transmission main. At 100 gallons per connection, construction of the Tripp Avenue EST will allow for 10,000 connections and construction of the Knox Avenue EST will allow for 15,000 connections. **Table 16** summarizes the required and provided elevated storage as the ECUD system develops.

Table 16

| East Pressure Plane |                       |                            |                                   |                       |                                 |
|---------------------|-----------------------|----------------------------|-----------------------------------|-----------------------|---------------------------------|
| Year                | Number of Connections | TCEQ Required Storage (MG) | Operational Required Storage (MG) | Provided Storage (MG) | Provided Infrastructure         |
| 2017                | 2,309                 | 0.23                       | 0.40                              | 1.00                  | Tripp Avenue 1 MG Storage Tank  |
| 2022                | 2,705                 | 0.27                       | 0.57                              | 1.00                  | Tripp Avenue 1 MG Storage Tank  |
| 2027                | 3,309                 | 0.33                       | 0.60                              | 1.00                  | Tripp Avenue 1 MG Storage Tank  |
| 2037                | 4,344                 | 0.43                       | 0.67                              | 1.00                  | Tripp Avenue 1 MG Storage Tank  |
| 2042                | 4,858                 | 0.49                       | 0.70                              | 1.00                  | Tripp Avenue 1 MG Storage Tank  |
| West Pressure Plane |                       |                            |                                   |                       |                                 |
| Year                | Number of Connections | TCEQ Required Storage (MG) | Operational Required Storage (MG) | Provided Storage (MG) | Provided Infrastructure         |
| 2017                | 2,792                 | 0.27                       | 0.42                              | 1.50                  | Knox Avenue 1.5 MG Storage Tank |
| 2022                | 3,959                 | 0.40                       | 0.65                              | 1.50                  | Knox Avenue 1.5 MG Storage Tank |
| 2027                | 5,832                 | 0.58                       | 0.77                              | 1.50                  | Knox Avenue 1.5 MG Storage Tank |
| 2037                | 8,960                 | 0.90                       | 0.98                              | 1.50                  | Knox Avenue 1.5 MG Storage Tank |
| 2042                | 10,430                | 1.04                       | 1.07                              | 1.50                  | Knox Avenue 1.5 MG Storage Tank |

Additional elevated storage has been shown in the Upper Pressure Plane. These tanks are not anticipated to be necessary until after the 2042 planning window, however, they are anticipated to be necessary for build out of the system. Therefore, the tanks have been shown on the map in the event of land becoming available for purchase in the approximate location of tanks shown on the map.

## Transmission Lines

The transmission lines proposed in the Capital Improvements Plan were divided into two sections: TCEQ Compliance Projects and Future Development Projects. All the projects generally followed the existing major thoroughfare grid system that characterizes the ECUD

service area. The transmission lines ranged in size from 12" in diameter to 30" in diameter. **Table 17** shows the breakdown of linear footage of proposed pipe by diameter.

The TCEQ Compliance Projects will be necessary immediately. These projects will be necessary to move water from the Odessa wholesale meter to the proposed 42<sup>nd</sup> Street Pump Station and to the Tripp Avenue and Knox Avenue elevated storage tanks. The growth-related projects (Future Development Projects) are anticipated to be installed as development occurs or existing neighborhoods come onto the ECUD system near these proposed lines. All the recommended lines will add to the backbone or spine of the ECUD water system and aid in efficiently moving water between storage and pumping facilities and the ECUD customers.

**Table 17**

| <b>Phase</b>                | <b>12" Diameter (LF)</b> | <b>16" Diameter (LF)</b> | <b>24" Diameter (LF)</b> | <b>30" Diameter (LF)</b> |
|-----------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| TCEQ Compliance Projects    | -                        | 35,500                   | 9,900                    | 21,800                   |
| Future Development Projects | 300,400                  | 22,000                   | -                        | -                        |

## IX. CAPITAL IMPROVEMENTS PLAN

From the Master Planning process, a recommended list of Capital improvements has been developed. This Capital Improvements Plan is divided into two phases; Texas Commission on Environmental Quality (TCEQ) compliance projects and Future Development Projects. The TCEQ projects are needed to meet minimum facility requirements for a water system serving over 2,500 connections. The Future Development Projects are related to future growth within the system. The future development projects may need to be accelerated or deferred depending on the growth rate experienced. All improvements are shown in **Appendix F – Capital Improvement Plan**. The following opinion of probable costs for each capital project assumes no design completed, based on 2017 dollars, no inflation increases, and does not include any property acquisitions, unless specifically noted.

## Texas Commission on Environmental Quality (TCEQ) Compliance Projects

| <b>TABLE 1<br/>TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) COMPLIANCE PROJECTS<br/>WATER CAPITAL IMPROVEMENTS PLAN</b> |                                                             |                     |
|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---------------------|
| <b>#</b>                                                                                                                    | <b>PROJECT NAME</b>                                         | <b>PROJECT COST</b> |
| 1                                                                                                                           | 42nd Street Pump Station Phase 1                            | \$13,000,000        |
| 2                                                                                                                           | 42nd Street 30-inch Transmission Line                       | \$8,000,000         |
| 3                                                                                                                           | 42nd Street 24-inch Transmission Line                       | \$3,200,000         |
| 4                                                                                                                           | Knox Avenue 16-inch Water Line (South)                      | \$5,100,000         |
| 5                                                                                                                           | Knox Avenue 1.5 MG Elevated Storage Tank                    | \$4,600,000         |
| 6                                                                                                                           | Tripp Avenue 16-Inch Transmission Line to Tripp Avenue Tank | \$5,200,000         |
| 7                                                                                                                           | Tripp Avenue 1.0 MG Elevated Storage Tank                   | \$3,200,000         |
|                                                                                                                             | <b>TOTAL:</b>                                               | <b>\$42,300,000</b> |

### #1 – 42<sup>nd</sup> Street Pump Station Phase 1

PRESSURE PLANE: EAST/WEST

PROJECT COST: \$13,000,000

NOTES: This project consists of 2 – 2 MG ground storage tanks and a pumping facility with a firm pumping capacity of 12.4 MGD. The facility will be supplied with water by the proposed 42nd Street 30” Transmission Line.

**#2 – 42<sup>nd</sup> Street 30-Inch Transmission Line**

---

PRESSURE PLANE: EAST / WEST

PROJECT COST: \$8,000,000

NOTES: This project consists of approximately 21,750 LF of 30" water transmission line from the Odessa Wholesale Meter to the proposed 42nd Street Pump Station. The line will run along 42nd Street from Loop 338 to Tripp Avenue.

**#3 – 42<sup>nd</sup> Street 24-Inch Transmission Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$3,200,000

NOTES: This project consists of approximately 9,920 LF of 24" water transmission line from the proposed 42nd Street Pump Station to Knox Avenue.

**#4 – Knox Avenue 16-inch Water Line (South)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$5,100,000

NOTES: This project consists of approximately 16,610 LF of 16" water line along Knox Avenue from Whirlaway Drive to University Boulevard. This also includes 1,080 LF of 16" water line along Knox Avenue connecting the existing 16" water line near the Knox Avenue /Bradley Drive intersection to the existing 16" near the Knox Avenue /Joan Drive intersection.

**#5 – Knox Avenue 1.5 MG Elevated Storage Tank**

---

PRESSURE PLANE: WEST

PROJECT COST: \$4,600,000

NOTES: This project consists of a 1.5 MG elevated storage tank at a site located at the intersection of Knox Avenue and Whirlaway Drive.

**#6 – Tripp Avenue 16-Inch Transmission Line to Tripp Avenue Tank**

---

PRESSURE PLANE: EAST

PROJECT COST: \$5,200,000

NOTES: This project consists of approximately 17,770 LF of 16" water transmission line along Tripp Avenue from the proposed 42nd Street Pump Station to the proposed Tripp Avenue Tank.

**#7 – Tripp Avenue 1.0 MG Elevated Storage Tank**

---

PRESSURE PLANE: EAST

PROJECT COST: \$3,200,000

NOTES: This project consists of a 1.0 MG elevated storage tank at a site along Tripp Avenue just south of 3rd Street.

## Future Development Projects

**TABLE 2  
FUTURE DEVELOPMENT PROJECTS  
WATER CAPITAL IMPROVEMENTS PLAN**

| #  | PROJECT NAME                                          | PROJECT COST |
|----|-------------------------------------------------------|--------------|
| 8  | 16th Avenue/FM 1936 12-inch Water Line                | \$3,100,000  |
| 9  | 42nd Street 16-inch Water Line                        | \$3,200,000  |
| 10 | Moss Avenue 12-inch Water Line                        | \$3,100,000  |
| 11 | Fortune 500/Westcliff 16/12-inch Water Line           | \$3,800,000  |
| 12 | University Boulevard 12-inch Water Line               | \$2,400,000  |
| 13 | Fortune 500/3rd Street 12-inch Water Line             | \$3,400,000  |
| 14 | Tripp Avenue 12-inch Water Line (East Pressure Plane) | \$1,900,000  |
| 15 | I-20/FM 1936 12-inch Water Line (East Pressure Plane) | \$2,500,000  |
| 16 | Knox Avenue 12-inch Water Line Phase 1 (North)        | \$1,300,000  |
| 17 | Yukon Road 12-inch Water Line Phase 1                 | \$1,600,000  |
| 18 | Moss Avenue 12-inch Water Line                        | \$1,700,000  |
| 19 | 57th Street 12-inch Water Line Phase 1                | \$1,600,000  |
| 20 | Greenway Avenue 12-inch Water Line                    | \$1,700,000  |
| 21 | Tripp Avenue 12-inch Water Line (West Pressure Plane) | \$1,100,000  |
| 22 | I-20 12-inch Water Line Phase 1 (West Pressure Plane) | \$900,000    |
| 23 | Highway 302 12-inch Water Line Phase 1                | \$2,500,000  |
| 24 | FM 1936 12-inch Water Line                            | \$1,100,000  |
| 25 | 57th Street 12-inch Water Line Phase 2                | \$1,400,000  |

**TABLE 2 (CONTINUED)  
FUTURE DEVELOPMENT PROJECTS  
WATER CAPITAL IMPROVEMENTS PLAN**

| #  | PROJECT NAME                                                    | PROJECT COST        |
|----|-----------------------------------------------------------------|---------------------|
| 26 | Yukon Road 12-inch Water Line Phase 2                           | \$1,600,000         |
| 27 | Westcliff Road 12-inch Water Line (North)                       | \$1,700,000         |
| 28 | Loop 338 12-inch Water Line (South)                             | \$1,400,000         |
| 29 | I-20 12-inch Water Line (East Pressure Plane)                   | \$1,600,000         |
| 30 | I-20 12-inch Water Line Phase 2 (West Pressure Plane)           | \$1,000,000         |
| 31 | Knox Avenue 12-Inch Water Line (South)                          | \$1,100,000         |
| 32 | 16th Street 12-Inch Water Line (West)                           | \$1,700,000         |
| 33 | Westcliff Road 12-inch Water Line (South)                       | \$800,000           |
| 34 | Whirlaway Drive 12-inch Water Line                              | \$1,400,000         |
| 35 | Highway 302 12-inch Water Line Phase 2                          | \$1,900,000         |
| 36 | Far North Tripp Avenue 12-inch Water Line (East Pressure Plane) | \$2,600,000         |
| 37 | Loop 338 12-inch Water Line (North)                             | \$3,900,000         |
| 38 | Highway 302 12-Inch Water Line (West)                           | \$1,800,000         |
| 39 | Knox Avenue 12-Inch Water Line Phase 2 (North)                  | \$800,000           |
| 40 | 42nd Street Pump Station Phase 2 & Meter Upgrade                | \$9,000,000         |
|    | <b>TOTAL:</b>                                                   | <b>\$70,600,000</b> |

**#8 – 16<sup>th</sup> Avenue/FM 1936 12-inch Water Line**

---

PRESSURE PLANE: EAST

PROJECT COST: \$3,100,000

NOTES: This project consists of approximately 12,190 LF of 12" water line along 16<sup>th</sup> Avenue from Tripp Avenue to FM 1936 and along FM 1936 from 16<sup>th</sup> Avenue to Mockingbird Lane.

**#9 – 42<sup>nd</sup> Street 16-inch Water Line**

---

PRESSURE PLANE: EAST

PROJECT COST: \$3,200,000

NOTES: This project consists of approximately 14,300 LF of 16" water line along 42nd Street and FM 1936 from Tripp Avenue to a connection to the existing 18" water line near Morris Street.

**#10 – Moss Avenue 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$3,100,000

NOTES: This project consists of approximately 13,050 LF of 12" water line along Moss Avenue from 42<sup>nd</sup> Street to Swan Road.

**#11 – Fortune 500/Westcliff 16/12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$3,800,000

NOTES: This project consists of approximately 7,710 LF of 16" water line along 42nd Street from Knox Avenue to Westcliff Road and 14,540 LF of 16" water line along Westcliff Road, University Boulevard, and Fortune 500, terminating at 16<sup>th</sup> Street.

**#12 – University Boulevard 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$2,400,000

NOTES: This project consists of approximately 12,180 LF of 12" water line along University Boulevard from Westcliff Road to Moss Avenue.

**#13 – Fortune 500/3<sup>rd</sup> Street 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$3,400,000

NOTES: This project consists of approximately 21,160 LF of 12" water line at the intersection of Fortune 500 and 16<sup>th</sup> Street running along Fortune 500, and 3rd Street to the 3rd Street/Moss Avenue intersection.

**#14 – Tripp Avenue 12-inch Water Line (East Pressure Plane)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$1,900,000

NOTES: This project consists of approximately 7,940 LF of 12" water line along Tripp Avenue from I-20 to the Tripp Avenue Elevated Storage Tank.

**#15 – I-20/FM 1936 12-inch Water Line (East Pressure Plane)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$2,500,000

NOTES: This project consists of approximately 13,530 LF of 12" water line along I-20 from Tripp Avenue to FM 1936; along FM 1936 from I-20 to a connection to the 12" water line north of the FM1936/ Mapp Street intersection.

**#16 – Knox Avenue 12-inch Water Line Phase 1 (North)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,300,000

NOTES: This project consists of approximately 7,420 LF of 16" water line beginning with a connection to the existing 14" water line near the Knox Avenue /April Street intersection continuing along Knox Avenue to Yukon Road.

**#17 – Yukon Road 12-inch Water Line Phase 1**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,600,000

NOTES: This project consists of approximately 9,640 LF of 12" water line along Yukon Road from Knox Avenue to Greenway Avenue.

**#18 – Moss Avenue 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,700,000

NOTES: This project consists of approximately 10,560 LF of 12" water line along Moss Avenue from 42<sup>nd</sup> Street to Yukon Road.

**#19 – 57<sup>th</sup> Street 12-inch Water Line Phase 1**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,600,000

NOTES: This project consists of approximately 9,650 LF of 12" water line along 57<sup>th</sup> Street from Knox Avenue to Greenway Avenue.

**#20 – Greenway Avenue 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,700,000

NOTES: This project consists of approximately 10,820 LF of 12" water line along Greenway Avenue from 42<sup>nd</sup> Street to Yukon Road.

**#21 – Tripp Avenue 12-inch Water Line (West Pressure Plane)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,100,000

NOTES: This project consists of approximately 5,250 LF of 12" water line along Tripp Avenue from I-20 to Hutson Road.

**#22 – I-20 12-inch Water Line Phase 1 (West Pressure Plane)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$900,000

NOTES: This project consists of approximately 5,320 LF of 12" water line along I-20 from Tripp Avenue to Moss Avenue.

**#23 – Highway 302 12-inch Water Line Phase 1**

---

PRESSURE PLANE: EAST

PROJECT COST: \$2,500,000

NOTES: This project consists of approximately 12,260 LF of 12" water line along Highway 302 from Loop 338 to FM 1936.

**#24 – FM 1936 12-inch Water Line**

---

PRESSURE PLANE: EAST

PROJECT COST: \$1,100,000

NOTES: This project consists of approximately 6,110 LF of 12" water line along FM 1936 from 42<sup>nd</sup> Street to Highway 302.

**#25 – 57<sup>th</sup> Street 12-inch Water Line Phase 2**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,400,000

NOTES: This project consists of approximately 8,650 LF of 12" water line along 57<sup>th</sup> Street from Knox Avenue to Westcliff Road.

**#26 – Yukon Road 12-inch Water Line Phase 2**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,600,000

NOTES: This project consists of approximately 9,760 LF of 12" water line along Yukon Road from Knox Avenue to Westcliff Road.

**#27 – Westcliff Road 12-inch Water Line (North)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,700,000

NOTES: This project consists of approximately 10,780 LF of 12" water line along Westcliff Road from 42<sup>nd</sup> Street to Yukon Road.

**#28 – Loop 338 12-inch Water Line (South)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$1,400,000

NOTES: This project consists of approximately 6,740 LF of 12" water line along Loop 338 from I-20, north along Loop 338 to a connection to the existing 12" water line north of the Loop 338/10<sup>th</sup> Street intersection.

**#29 – I-20 12-inch Water Line (East Pressure Plane)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$1,600,000

NOTES: This project consists of approximately 8,670 LF of 12" water line along I-20 from FM 1936 to Loop 338.

**#30 – I-20 12-inch Water Line Phase 2 (West Pressure Plane)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,000,000

NOTES: This project consists of approximately 5,880 LF of 12" water line along I-20 from Moss Avenue to Knox Avenue.

**#31 – Knox Avenue 12-inch Water Line (South)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,100,000

NOTES: This project consists of approximately 6,560 LF of 12" water line along Knox Avenue from I-20 to 3rd Street.

**#32 – 16th Street 12-Inch Water Line (West)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,700,000

NOTES: This project consists of approximately 10,510 LF of 12" water line along 16th Street from Knox Avenue to Fortune 500 Avenue.

**#33 – Westcliff Road 12-inch Water Line (South)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$800,000

NOTES: This project consists of approximately 4,940 LF of 12" water line along Westcliff Road from Whirlaway Drive to 3rd Street.

**#34 – Whirlaway Drive 12-inch Water Line**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,400,000

NOTES: This project consists of approximately 8,030 LF of 12" water line along Whirlaway Drive from Westcliff Road to Knox Avenue.

**#35 – Highway 302 12-inch Water Line Phase 2**

---

PRESSURE PLANE: EAST

PROJECT COST: \$1,900,000

NOTES: This project consists of approximately 11,420 LF of 16" water line along Highway 302 from FM 1936 to just east of Tripp Avenue.

**#36 – Far North Tripp Avenue 12-inch Water Line (East Pressure Plane)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$2,600,000

NOTES: This project consists of approximately 10,650 LF of 12" water line along Tripp Avenue from Highway 302 to 57<sup>th</sup> Street; then continuing south in an easement from 57<sup>th</sup> Street to 42<sup>nd</sup> Street.

**#37 – Loop 338 12-inch Water Line (North)**

---

PRESSURE PLANE: EAST

PROJECT COST: \$3,900,000

NOTES: This project consists of approximately 10,630 LF of 16" water line along Loop 338 from a connection to the existing 18" water line north of the Loop 338/Arcadia Street intersection; south along Loop 338 to a connection to the existing 12" water line north of the Loop 338/10<sup>th</sup> Street intersection.

**#38 – Highway 302 12-inch Water Line (West)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$1,800,000

NOTES: This project consists of approximately 10,950 LF of 12" water line along Highway 302 between Greenway Avenue and Knox Avenue.

**#39 – Knox Avenue 12-inch Water Line Phase 2 (North)**

---

PRESSURE PLANE: WEST

PROJECT COST: \$800,000

NOTES: This project consists of approximately 4,570 LF of 12" water line along Knox Avenue between Highway 302 and Yukon Road.

**#40 – 42<sup>nd</sup> Street Pump Station Phase 2**

---

PRESSURE PLANE: EAST/WEST

PROJECT COST: \$9,000,000

NOTES: This project consists of adding an additional 4 MG ground storage tank and an additional firm pumping capacity of 3.5 MGD to the existing 42nd Street Pump Station.

## **X. APPENDICES**

**Appendix A – Boundary Map**

**Appendix B – Existing Land Use Map**

**Appendix C – Ultimate Land Use Map**

**Appendix D – Existing Infrastructure**

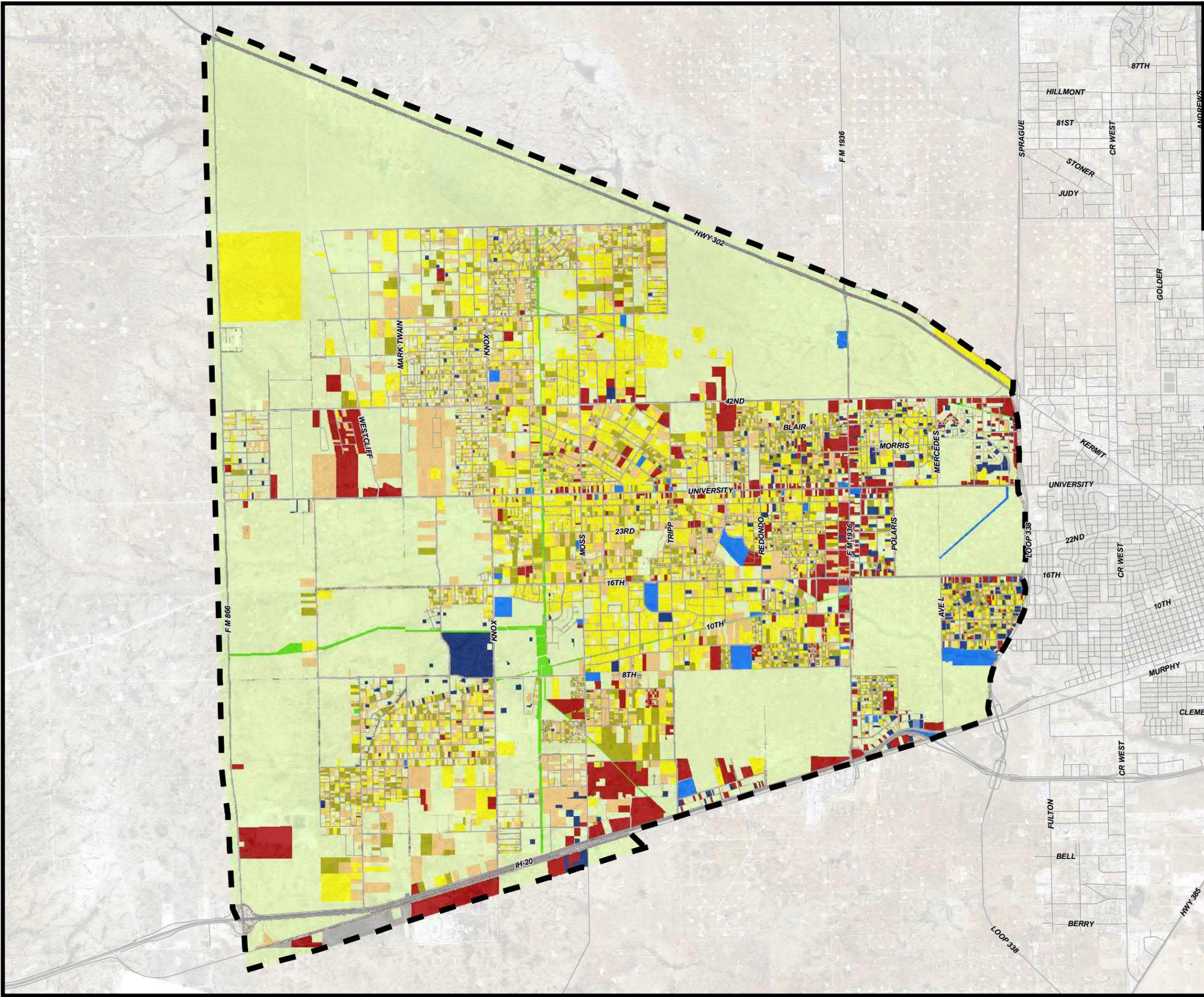
**Appendix E – Project Description Sheets and Opinions of Probable  
Construction Costs**

**Appendix F - Capital Improvement Plan**

## **Appendix A – Boundary Map**



## **Appendix B – Existing Land Use Map**

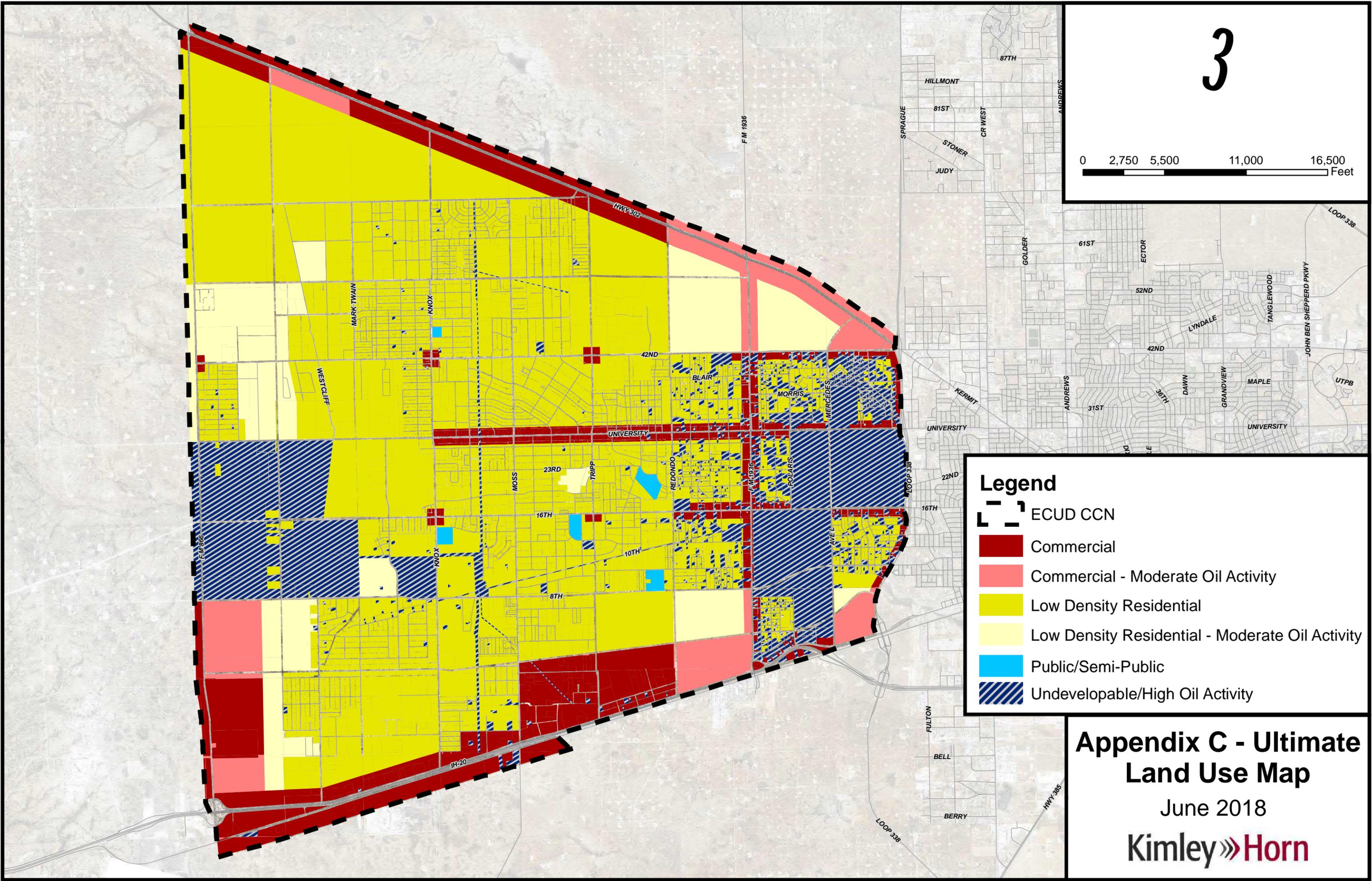


**Legend**

- ECUD CCN
- Single Family
- Industrial
- Manufactured Homes
- Manufactured Homes/Storage
- Public/Semi-Public
- Parks and Open Space
- Commercial
- Oil/Gas Facilities
- Utilities
- Rural/Vacant

**Appendix B - Existing Land Use Map**  
June 2018  
**Kimley»Horn**

## **Appendix C – Ultimate Land Use Map**

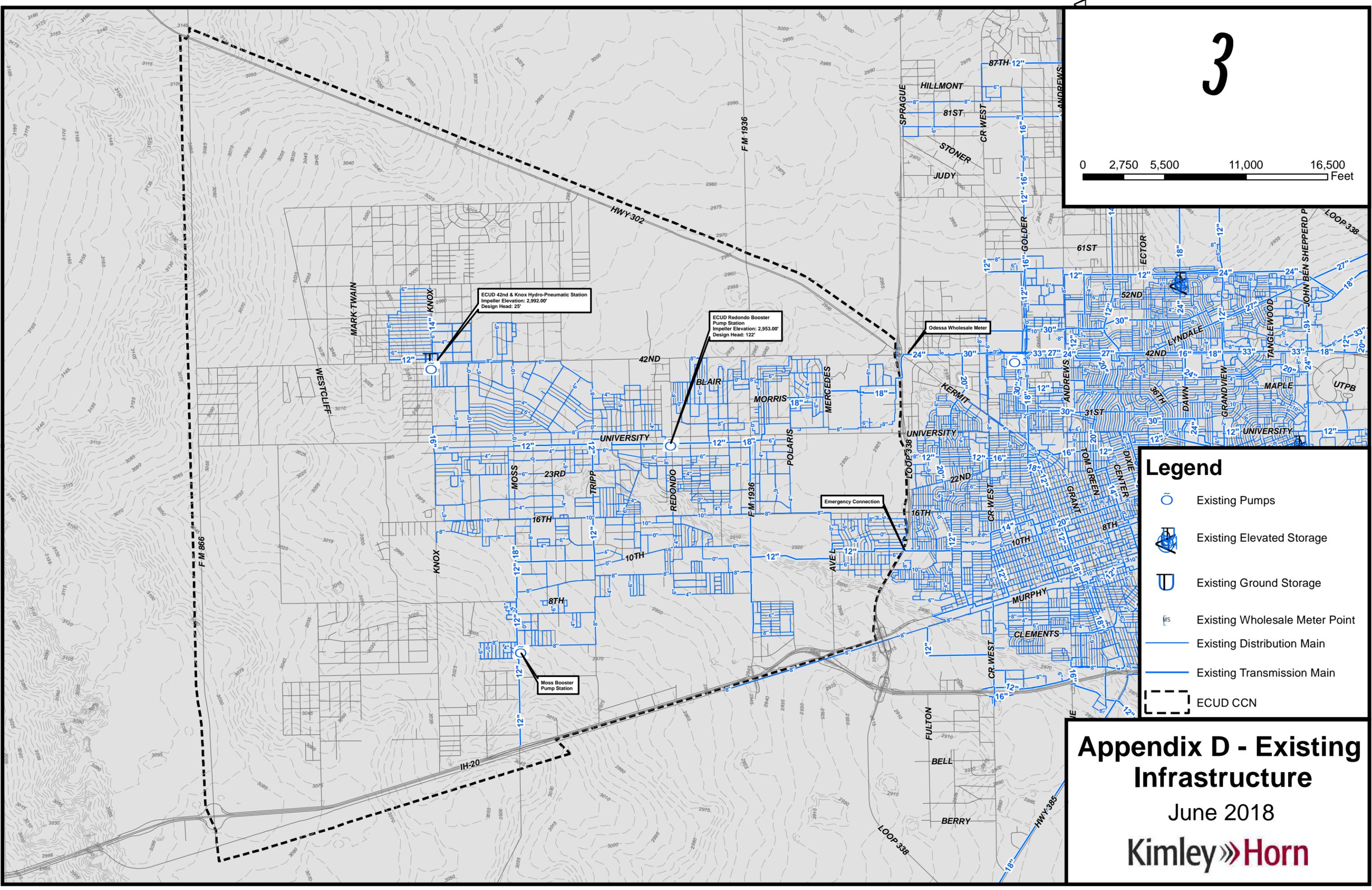


**Legend**

- ECUD CCN
- Commercial
- Commercial - Moderate Oil Activity
- Low Density Residential
- Low Density Residential - Moderate Oil Activity
- Public/Semi-Public
- Undevelopable/High Oil Activity

**Appendix C - Ultimate Land Use Map**  
June 2018  
**Kimley»Horn**

## **Appendix D – Existing Infrastructure**



### Legend

- Existing Pumps
- Existing Elevated Storage
- Existing Ground Storage
- Existing Wholesale Meter Point
- Existing Distribution Main
- Existing Transmission Main
- ECUD CCN

## Appendix D - Existing Infrastructure

June 2018

**Appendix E – Project Description Sheets and Opinions of Probable  
Construction Costs**

**Kimley-Horn & Associates, Inc.** **Opinion of Probable Construction Cost**

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

| Item No.                        | Item Description                                            | Item Cost    |
|---------------------------------|-------------------------------------------------------------|--------------|
| <b>TCEQ Compliance Projects</b> |                                                             |              |
| 1                               | 42nd Street Pump Station Phase 1                            | \$13,000,000 |
| 2                               | 42nd Street 30-inch Transmission Line                       | \$8,000,000  |
| 3                               | 42nd Street 24-inch Transmission Line                       | \$3,200,000  |
| 4                               | Knox Avenue 16-inch Water Line (South)                      | \$5,100,000  |
| 5                               | Knox Avenue 1.5 MG Elevated Storage Tank                    | \$4,600,000  |
| 6                               | Tripp Avenue 16-Inch Transmission Line to Tripp Avenue Tank | \$5,200,000  |
| 7                               | Tripp Avenue 1.0 MG Elevated Storage Tank                   | \$3,200,000  |

**TCEQ Compliance Projects Total:** \$42,300,000

| Item No.                           | Item Description                                                | Item Cost   |
|------------------------------------|-----------------------------------------------------------------|-------------|
| <b>Future Development Projects</b> |                                                                 |             |
| 8                                  | 16th Avenue/FM 1936 12-inch Water Line                          | \$3,100,000 |
| 9                                  | 42nd Street 16-inch Water Line                                  | \$3,200,000 |
| 10                                 | Moss Avenue 12-inch Water Line                                  | \$3,100,000 |
| 11                                 | Fortune 500/Westcliff 16/12-inch Water Line                     | \$3,800,000 |
| 12                                 | University Boulevard 12-inch Water Line                         | \$2,400,000 |
| 13                                 | Fortune 500/3rd Street 12-inch Water Line                       | \$3,400,000 |
| 14                                 | Tripp Avenue 12-inch Water Line (East Pressure Plane)           | \$1,900,000 |
| 15                                 | I-20/FM 1936 12-inch Water Line (East Pressure Plane)           | \$2,500,000 |
| 16                                 | Knox Avenue 12-inch Water Line Phase 1 (North)                  | \$1,300,000 |
| 17                                 | Yukon Road 12-inch Water Line Phase 1                           | \$1,600,000 |
| 18                                 | Moss Avenue 12-inch Water Line                                  | \$1,700,000 |
| 19                                 | 57th Street 12-inch Water Line Phase 1                          | \$1,600,000 |
| 20                                 | Greenway Avenue 12-inch Water Line                              | \$1,700,000 |
| 21                                 | Tripp Avenue 12-inch Water Line (West Pressure Plane)           | \$1,100,000 |
| 22                                 | I-20 12-inch Water Line Phase 1 (West Pressure Plane)           | \$900,000   |
| 23                                 | Highway 302 12-inch Water Line Phase 1                          | \$2,500,000 |
| 24                                 | FM 1936 12-inch Water Line                                      | \$1,100,000 |
| 25                                 | 57th Street 12-inch Water Line Phase 2                          | \$1,400,000 |
| 26                                 | Yukon Road 12-inch Water Line Phase 2                           | \$1,600,000 |
| 27                                 | Westcliff Road 12-inch Water Line (North)                       | \$1,700,000 |
| 28                                 | Loop 338 12-inch Water Line (South)                             | \$1,400,000 |
| 29                                 | I-20 12-inch Water Line (East Pressure Plane)                   | \$1,600,000 |
| 30                                 | I-20 12-inch Water Line Phase 2 (West Pressure Plane)           | \$1,000,000 |
| 31                                 | Knox Avenue 12-Inch Water Line (South)                          | \$1,100,000 |
| 32                                 | 16th Street 12-Inch Water Line (West)                           | \$1,700,000 |
| 33                                 | Westcliff Road 12-inch Water Line (South)                       | \$800,000   |
| 34                                 | Whirlaway Drive 12-inch Water Line                              | \$1,400,000 |
| 35                                 | Highway 302 12-inch Water Line Phase 2                          | \$1,900,000 |
| 36                                 | Far North Tripp Avenue 12-inch Water Line (East Pressure Plane) | \$2,600,000 |
| 37                                 | Loop 338 12-inch Water Line (North)                             | \$3,900,000 |
| 38                                 | Highway 302 12-Inch Water Line (West)                           | \$1,800,000 |
| 39                                 | Knox Avenue 12-Inch Water Line Phase 2 (North)                  | \$800,000   |
| 40                                 | 42nd Street Pump Station Phase 2 & Meter Upgrade                | \$9,000,000 |

**Future Development Projects Total:** \$70,600,000

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

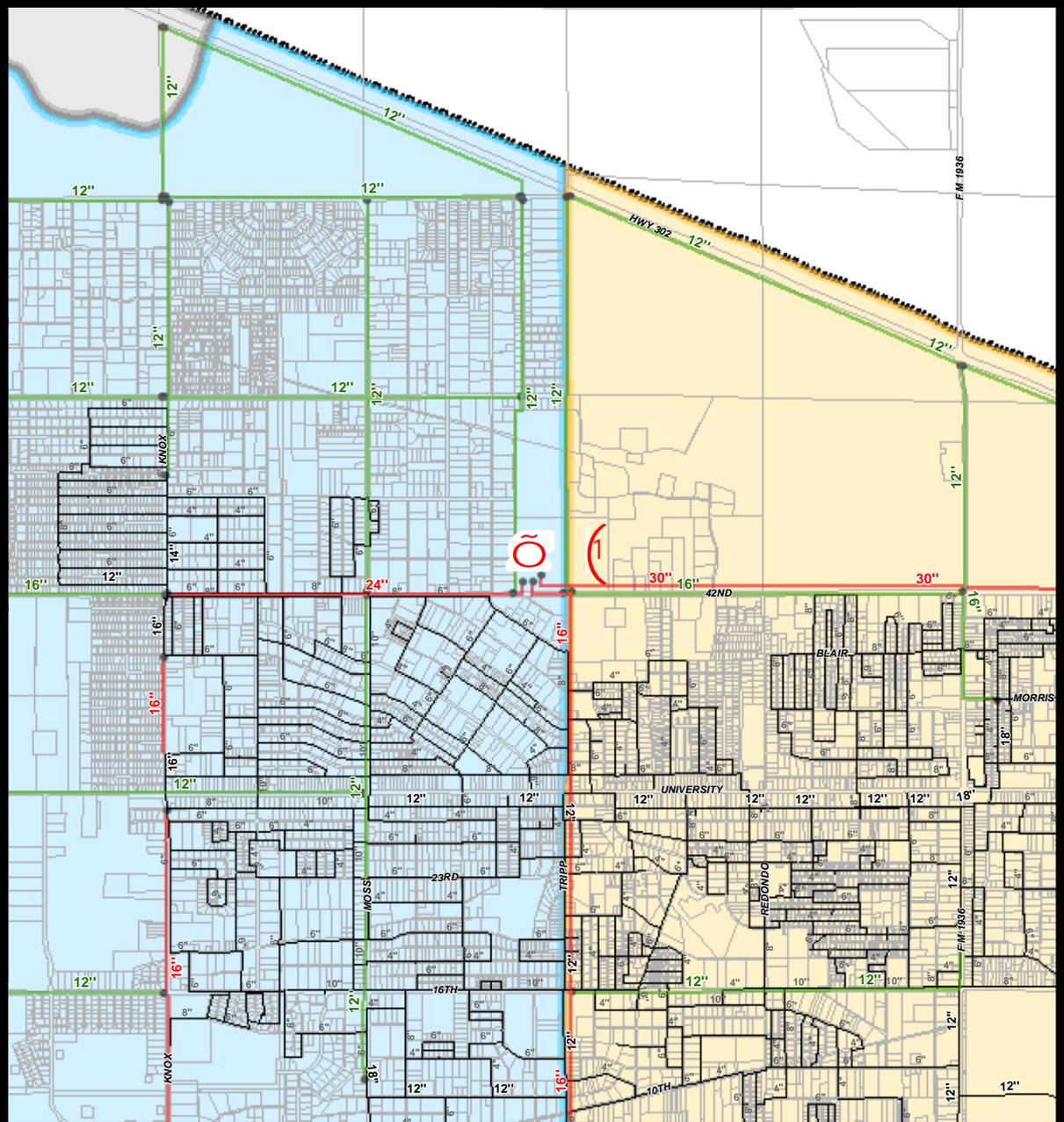
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1 inch = 4,500 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



# Kimley»Horn

## June 2018

### Phase: TCEQ Compliance

**Project Description:** This project consists of a 2 - 2 MG ground storage tanks and a pumping facility with a firm pumping capacity of 12.4 MGD. The facility will be supplied with water by the proposed 42nd Street 30-inch Transmission Line.

**Recommendation Comments:** TCEQ Compliance Project. Needed to meet minimum state standards for ground storage and pumping facilities. Utilizing the requirement to meet peak hourly demands at each pressure plane TCEQ criterion, the pump station is sized to pump a peak hour demand of 5.8 MGD in the East Pressure Plane with 3-2,000 gallon per minute pumps and a peak demand of 6.6 MGD in the West Pressure Plane with 3-2,300 gallon per minute pumps.

**Pressure Plane:** East/West

**Capital Cost:** \$13,000,000

# Project Name: 42nd Street Pump Station Phase 1

| Kimley-Horn & Associates, Inc.                    |                                   | Opinion of Probable Construction Cost |      |                |                     |
|---------------------------------------------------|-----------------------------------|---------------------------------------|------|----------------|---------------------|
| <b>Client:</b> Ector County Utility District      |                                   | <b>Date:</b> 6/18/2018                |      |                |                     |
| <b>Project:</b> Water System Master Plan          |                                   | <b>Prepared By:</b> AWS               |      |                |                     |
| <b>KHA No.:</b> 063685005                         |                                   | <b>Checked By:</b> JRA                |      |                |                     |
| <b>Title:</b> 1. 42nd Street Pump Station Phase 1 |                                   |                                       |      |                |                     |
| Item No.                                          | Item Description                  | Quantity                              | Unit | Unit Price     | Item Cost           |
| 1                                                 | Bonds, Insurance                  | 1                                     | LS   | \$200,000.00   | \$200,000           |
| 2                                                 | Mobilization                      | 1                                     | LS   | \$200,000.00   | \$200,000           |
| 3                                                 | Site Grading                      | 1                                     | LS   | \$50,000.00    | \$50,000            |
| 4                                                 | 8' Security Fence                 | 1,600                                 | LF   | \$50.00        | \$80,000            |
| 5                                                 | Landscaping                       | 1                                     | LS   | \$10,000.00    | \$10,000            |
| 6                                                 | Concrete Drive                    | 25                                    | CY   | \$650.00       | \$16,250            |
| 7                                                 | 24" Tank Supply Line              | 350                                   | LF   | \$300.00       | \$105,000           |
| 8                                                 | 30" Outlet Piping to Suction Line | 200                                   | LF   | \$375.00       | \$75,000            |
| 9                                                 | 30" Discharge Piping              | 200                                   | LF   | \$375.00       | \$75,000            |
| 10                                                | 8" Tank Drain Line                | 100                                   | LF   | \$125.00       | \$12,500            |
| 11                                                | Trench Safety for all Yard Piping | 850                                   | LF   | \$3.00         | \$2,550             |
| 12                                                | Discharge Meter Vault             | 2                                     | EA   | \$45,000.00    | \$90,000            |
| 13                                                | 8" Gate Valve                     | 1                                     | EA   | \$5,000.00     | \$5,000             |
| 14                                                | 24" Gate Valve and Vault          | 6                                     | EA   | \$25,000.00    | \$150,000           |
| 15                                                | 2 MG Ground Storage Tank          | 2                                     | EA   | \$2,300,000.00 | \$4,600,000         |
| 16                                                | Excavation                        | 2,000                                 | CY   | \$30.00        | \$60,000            |
| 17                                                | Select Backfill                   | 1,300                                 | CY   | \$30.00        | \$39,000            |
| 18                                                | 1,500 gpm pump and 150 hp motor   | 3                                     | EA   | \$150,000.00   | \$450,000           |
| 19                                                | 2,300 gpm pump and 250 hp motor   | 3                                     | EA   | \$250,000.00   | \$750,000           |
| 20                                                | 16" Gate Valve                    | 12                                    | EA   | \$15,000.00    | \$180,000           |
| 21                                                | 16" Piping                        | 100                                   | LF   | \$200.00       | \$20,000            |
| 22                                                | Air Release Valve                 | 6                                     | EA   | \$10,000.00    | \$60,000            |
| 23                                                | 16" Flow Control Valve            | 6                                     | EA   | \$50,000.00    | \$300,000           |
| 24                                                | Electrical/SCADA/Power            | 1                                     | LS   | \$1,200,000.00 | \$1,200,000         |
| 25                                                | Building                          | 4,000                                 | SF   | \$150.00       | \$600,000           |
| 26                                                | Property (4 acres)                | 1                                     | LS   | \$100,000.00   | \$100,000           |
| 27                                                | Allowance                         | 1                                     | LS   | \$189,000.00   | \$189,000           |
| <b>Basis for Cost Projection:</b>                 |                                   | Subtotal:                             |      |                | \$9,619,300         |
| <input checked="" type="checkbox"/>               | No Design Completed               | Conting. (%,+/-)                      |      |                | 20                  |
| <input type="checkbox"/>                          | Preliminary Design                | Professional Services (%,+/-)         |      |                | 15                  |
| <input type="checkbox"/>                          | Final Design                      | <b>Total:</b>                         |      |                | <b>\$13,000,000</b> |

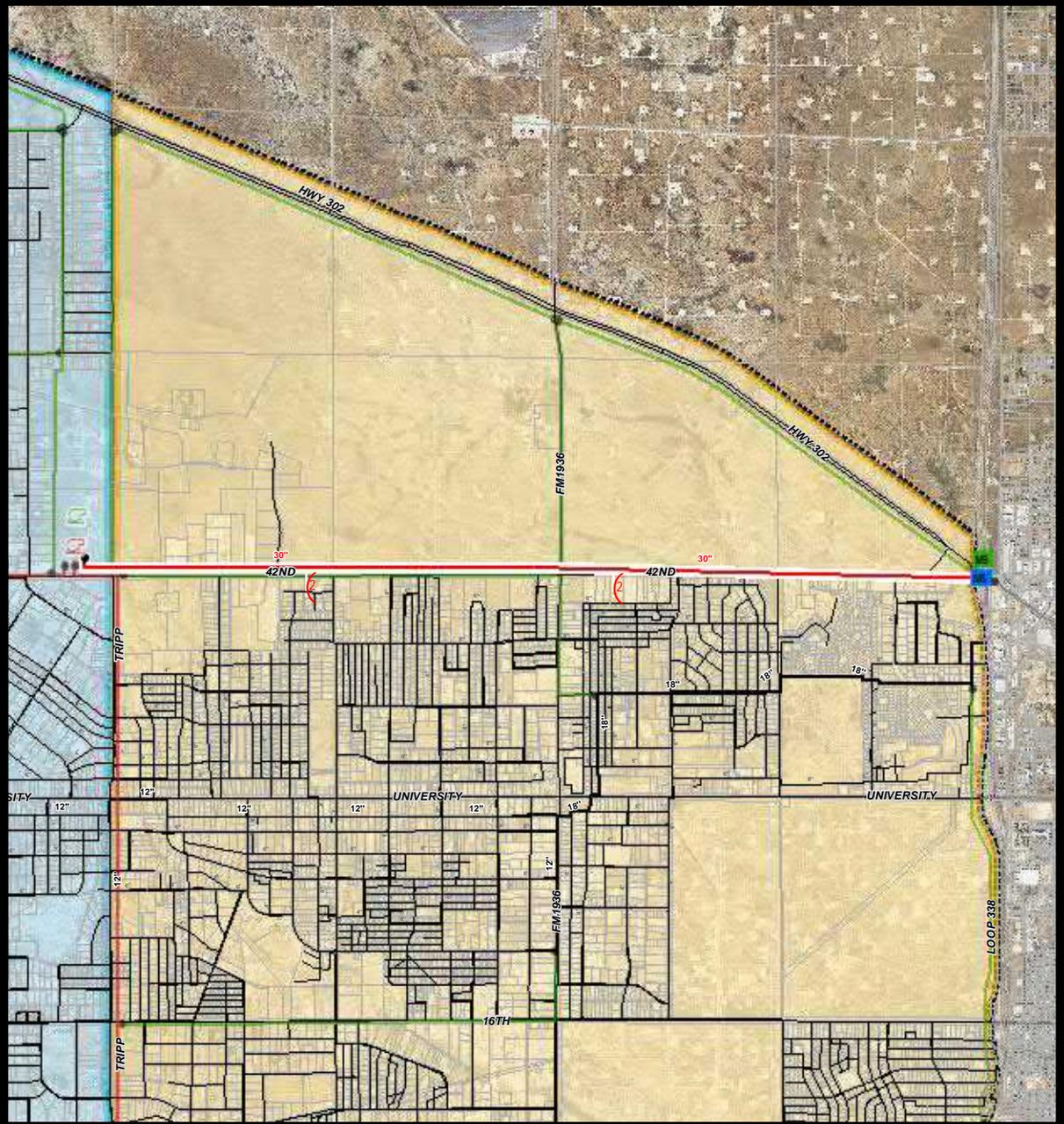
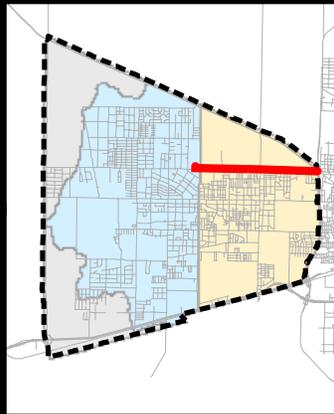
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1 inch = 4,000 feet

### Legend

- Future Development
- TCEQ Compliance
- Existing Water Line
- West Pressure Plane
- East Pressure Plane
- Upper Pressure Plane
- ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** TCEQ Compliance

**Project Description:** This project consists of approximately 21,750 LF of 30" water transmission line from the Odessa Wholesale Meter to the proposed 42nd Street Pump Station. The line will run along 42nd Street from Loop 338 to Tripp Avenue.

**Recommendation Comments:** TCEQ Compliance Project. Needed to provide wholesale water from the City of Odessa. This is a transmission main to transport water to the 42nd Street Ground Storage Tank and Pump Station. No East Pressure Plane distribution lines or service connections are allowed to connect to this main.

**Pressure Plane:** East / West

**Capital Cost:** \$8,000,000

**Project Name:** 42nd Street 30-Inch Transmission Line

| Kimley-Horn & Associates, Inc.                         |                                | Opinion of Probable Construction Cost |           |             |                    |             |
|--------------------------------------------------------|--------------------------------|---------------------------------------|-----------|-------------|--------------------|-------------|
| <b>Client:</b>                                         | Ector County Utility District  | <b>Date:</b>                          | 6/18/2018 |             |                    |             |
| <b>Project:</b>                                        | Water System Master Plan       | <b>Prepared By:</b>                   | AWS       |             |                    |             |
| <b>KHA No.:</b>                                        | 063685005                      | <b>Checked By:</b>                    | JRA       |             |                    |             |
| <b>Title: 2. 42nd Street 30-inch Transmission Line</b> |                                |                                       |           |             |                    |             |
| Item No.                                               | Item Description               | Quantity                              | Unit      | Unit Price  | Item Cost          |             |
| 1                                                      | Mobilization                   | 1                                     | LS        | \$33,000    | \$33,000           |             |
| 2                                                      | Traffic Control                | 1                                     | LS        | \$88,000    | \$88,000           |             |
| 3                                                      | Erosion Control                | 1                                     | LS        | \$88,000    | \$88,000           |             |
| 4                                                      | 30" Water Pipe                 | 21,750                                | LF        | \$140.00    | \$3,045,000        |             |
| 5                                                      | 42" Bore with Steel Casing     | 1,000                                 | LF        | \$700.00    | \$700,000          |             |
| 6                                                      | Water Line Trench Safety       | 21,750                                | LF        | \$2.00      | \$44,000           |             |
| 7                                                      | 30" AWWA Gate Valve            | 11                                    | EA        | \$25,000.00 | \$268,000          |             |
| 8                                                      | Connect to Existing Water Line | 2                                     | EA        | \$5,000.00  | \$10,000           |             |
| 9                                                      | Fire Hydrant Assembly          | 44                                    | EA        | \$5,000.00  | \$218,000          |             |
| 10                                                     | Ductile Iron Fittings          | 22                                    | TON       | \$5,000.00  | \$109,000          |             |
| 11                                                     | Asphalt Pavement Repair        | 19,400                                | SY        | \$60.00     | \$1,164,000        |             |
| 11                                                     | Allowance                      | 1                                     | LS        | \$93,000.00 | \$93,000           |             |
| <b>Basis for Cost Projection:</b>                      |                                | Subtotal:                             |           |             | \$5,860,000        |             |
| <input checked="" type="checkbox"/>                    | No Design Completed            | Conting. (%,+/-)                      |           |             | 20                 | \$1,172,000 |
| <input type="checkbox"/>                               | Preliminary Design             | Professional Services (%,+/-)         |           |             | 15                 | \$879,000   |
| <input type="checkbox"/>                               | Final Design                   | <b>Total:</b>                         |           |             | <b>\$8,000,000</b> |             |

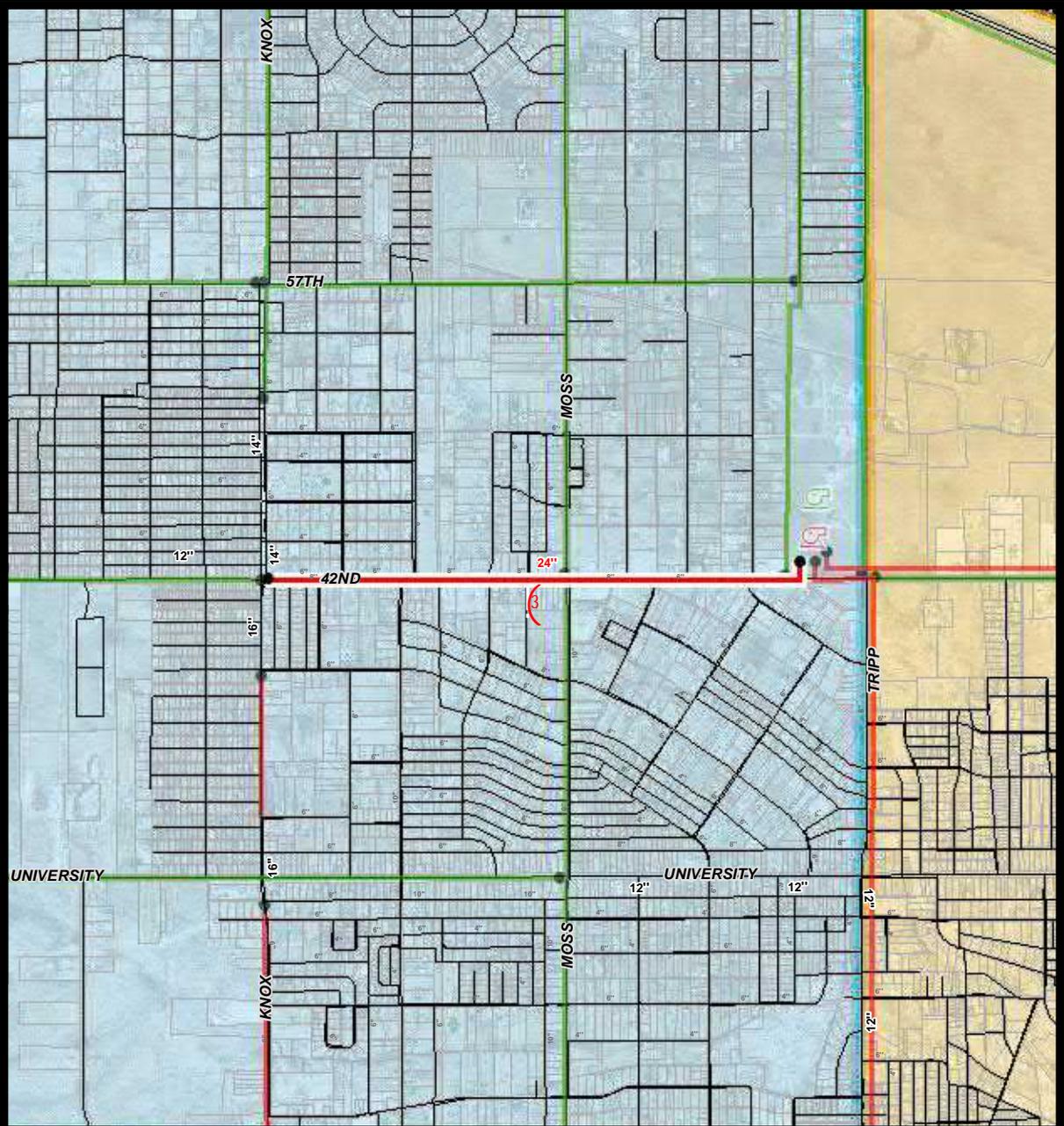
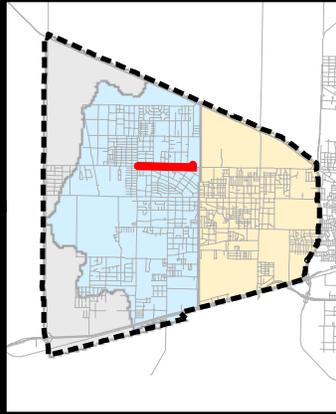
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1 inch = 3,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** TCEQ Compliance

**Project Description:** This project consists of approximately 9,920 LF of 24" water transmission line from the proposed 42nd Street Pump Station to Knox Avenue.

**Recommendation Comments:** TCEQ Compliance Project. This transmission main transports water from the 42nd Street Pump Station into the West Pressure Plane. Its primary purpose is to fill the Knox Avenue 1.5 Million Gallon Elevated Storage Tank. Other West Pressure Plane transmission mains and distribution lines may connect to this main. No service connections are allowed on this main.

**Pressure Plane:** West  
**Capital Cost:** \$3,200,000

**Project Name:** 42nd Street 24-Inch Transmission Line

| Kimley-Horn & Associates, Inc.                         |                                | Opinion of Probable Construction Cost |           |             |                    |           |
|--------------------------------------------------------|--------------------------------|---------------------------------------|-----------|-------------|--------------------|-----------|
| <b>Client:</b>                                         | Ector County Utility District  | <b>Date:</b>                          | 6/18/2018 |             |                    |           |
| <b>Project:</b>                                        | Water System Master Plan       | <b>Prepared By:</b>                   | AWS       |             |                    |           |
| <b>KHA No.:</b>                                        | 063685005                      | <b>Checked By:</b>                    | JRA       |             |                    |           |
| <b>Title: 3. 42nd Street 24-inch Transmission Line</b> |                                |                                       |           |             |                    |           |
| Item No.                                               | Item Description               | Quantity                              | Unit      | Unit Price  | Item Cost          |           |
| 1                                                      | Mobilization                   | 1                                     | LS        | \$41,000    | \$41,000           |           |
| 2                                                      | Traffic Control                | 1                                     | LS        | \$43,000    | \$43,000           |           |
| 3                                                      | Erosion Control                | 1                                     | LS        | \$43,000    | \$43,000           |           |
| 4                                                      | 24" Water Pipe                 | 9,920                                 | LF        | \$120.00    | \$1,191,000        |           |
| 5                                                      | 42" Bore with Steel Casing     | 200                                   | LF        | \$700.00    | \$140,000          |           |
| 6                                                      | Water Line Trench Safety       | 9,920                                 | LF        | \$2.00      | \$20,000           |           |
| 7                                                      | 16" AWWA Gate Valve            | 8                                     | EA        | \$10,000.00 | \$80,000           |           |
| 8                                                      | Connect to Existing Water Line | 4                                     | EA        | \$5,000.00  | \$20,000           |           |
| 9                                                      | Fire Hydrant Assembly          | 20                                    | EA        | \$5,000.00  | \$100,000          |           |
| 10                                                     | Ductile Iron Fittings          | 10                                    | TON       | \$5,000.00  | \$50,000           |           |
| 11                                                     | Asphalt Pavement Repair        | 8,900                                 | SY        | \$60.00     | \$534,000          |           |
| 12                                                     | Allowance                      | 1                                     | LS        | \$46,000.00 | \$46,000           |           |
| <b>Basis for Cost Projection:</b>                      |                                | Subtotal:                             |           |             | \$2,308,000        |           |
| <input checked="" type="checkbox"/>                    | No Design Completed            | Conting. (%,+/-)                      |           |             | 20                 | \$461,700 |
| <input type="checkbox"/>                               | Preliminary Design             | Professional Services (%,+/-)         |           |             | 15                 | \$346,300 |
| <input type="checkbox"/>                               | Final Design                   | <b>Total:</b>                         |           |             | <b>\$3,200,000</b> |           |

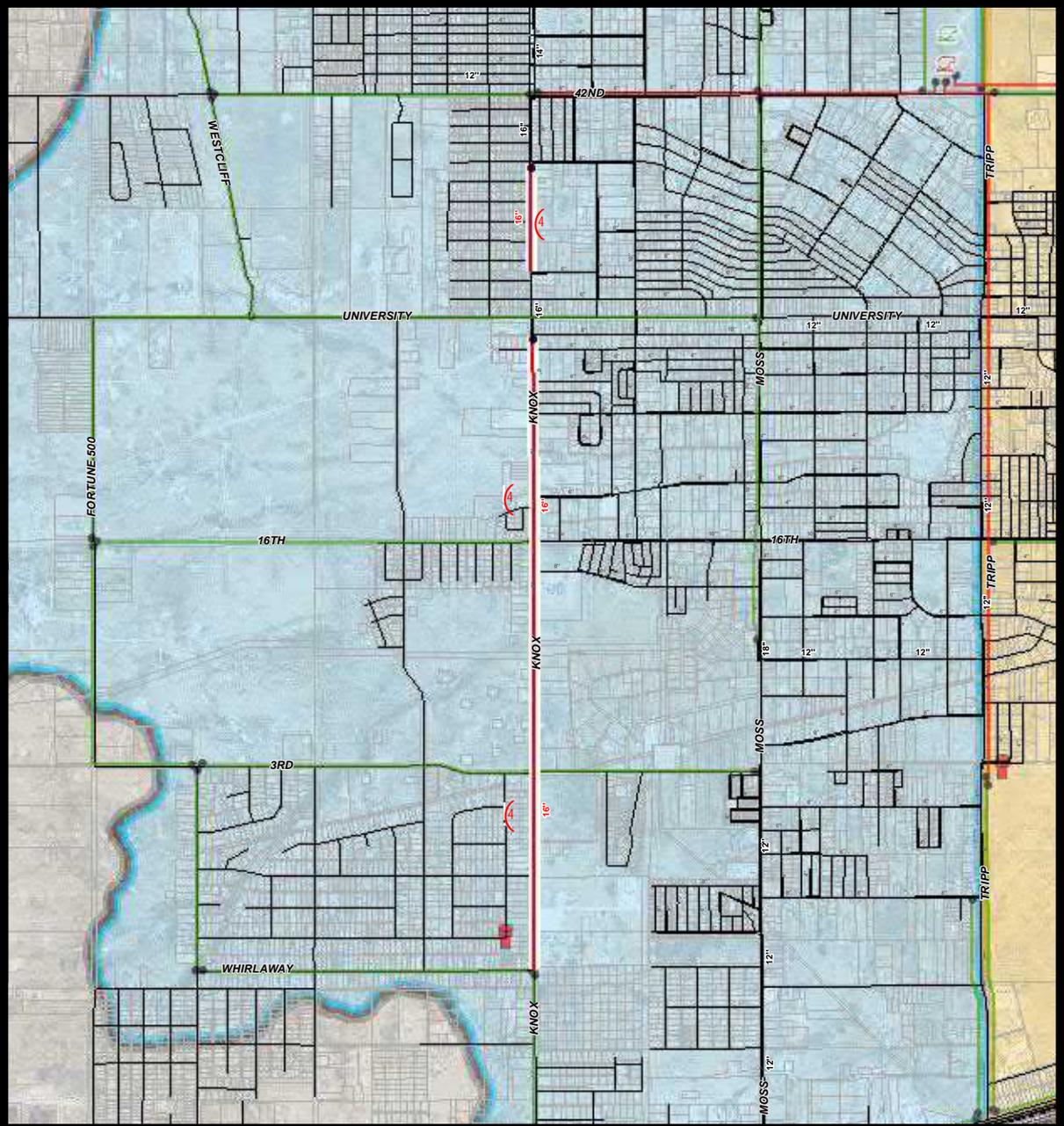
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1 inch = 4,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** TCEQ Compliance

**Project Description:** This project consists of approximately 16,610 LF of 16" water line along Knox Avenue from Whirlaway Drive to University Boulevard. This also includes 1,080 LF of 16" water line along Knox Avenue connecting the existing 16" water line near the Knox Avenue/Bradley Drive intersection to the existing 16" near the Knox Avenue/Joan Drive intersection.

**Recommendation Comments:** TCEQ Compliance Project. This transmission main transports water from the 42nd Street Pump Station into the West Pressure Plane. Its primary purpose is to fill the Knox Avenue 1.5 Million Gallon Elevated Storage Tank. Other West Pressure Plane transmission mains and distribution lines may connect to this main. No service connections are allowed on this main.

**Pressure Plane:** West  
**Capital Cost:** \$5,100,000

**Project Name:** Knox Avenue 16-inch Water Line (South)

| Kimley-Horn & Associates, Inc.                          |                                      | Opinion of Probable Construction Cost |                  |             |                    |           |
|---------------------------------------------------------|--------------------------------------|---------------------------------------|------------------|-------------|--------------------|-----------|
| <b>Client:</b>                                          | <b>Ector County Utility District</b> | <b>Date:</b>                          | <b>6/18/2018</b> |             |                    |           |
| <b>Project:</b>                                         | <b>Water System Master Plan</b>      | <b>Prepared By:</b>                   | <b>AWS</b>       |             |                    |           |
| <b>KHA No.:</b>                                         | <b>063685005</b>                     | <b>Checked By:</b>                    | <b>JRA</b>       |             |                    |           |
| <b>Title: 4. Knox Avenue 16-inch Water Line (South)</b> |                                      |                                       |                  |             |                    |           |
| Item No.                                                | Item Description                     | Quantity                              | Unit             | Unit Price  | Item Cost          |           |
| 1                                                       | Mobilization                         | 1                                     | LS               | \$70,000    | \$70,000           |           |
| 2                                                       | Traffic Control                      | 1                                     | LS               | \$69,000    | \$69,000           |           |
| 3                                                       | Erosion Control                      | 1                                     | LS               | \$69,000    | \$69,000           |           |
| 4                                                       | 16" Water Pipe                       | 17,690                                | LF               | \$100.00    | \$1,769,000        |           |
| 5                                                       | 36" Bore with Steel Casing           | 500                                   | LF               | \$600.00    | \$300,000          |           |
| 6                                                       | Water Line Trench Safety             | 17,690                                | LF               | \$2.00      | \$36,000           |           |
| 7                                                       | 16" AWWA Gate Valve                  | 11                                    | EA               | \$10,000.00 | \$111,000          |           |
| 8                                                       | Connect to Existing Water Line       | 4                                     | EA               | \$5,000.00  | \$20,000           |           |
| 9                                                       | Fire Hydrant Assembly                | 35                                    | EA               | \$5,000.00  | \$177,000          |           |
| 10                                                      | Ductile Iron Fittings                | 18                                    | TON              | \$5,000.00  | \$89,000           |           |
| 11                                                      | Asphalt Pavement Repair              | 15,800                                | SY               | \$60.00     | \$948,000          |           |
| 12                                                      | Allowance                            | 1                                     | LS               | \$74,000.00 | \$74,000           |           |
| <b>Basis for Cost Projection:</b>                       |                                      | Subtotal:                             |                  |             | \$3,732,000        |           |
| <input checked="" type="checkbox"/>                     | No Design Completed                  | Conting. (%,+/-)                      |                  |             | 20                 | \$746,800 |
| <input type="checkbox"/>                                | Preliminary Design                   | Professional Services (%,+/-)         |                  |             | 15                 | \$560,200 |
| <input type="checkbox"/>                                | Final Design                         | <b>Total:</b>                         |                  |             | <b>\$5,100,000</b> |           |

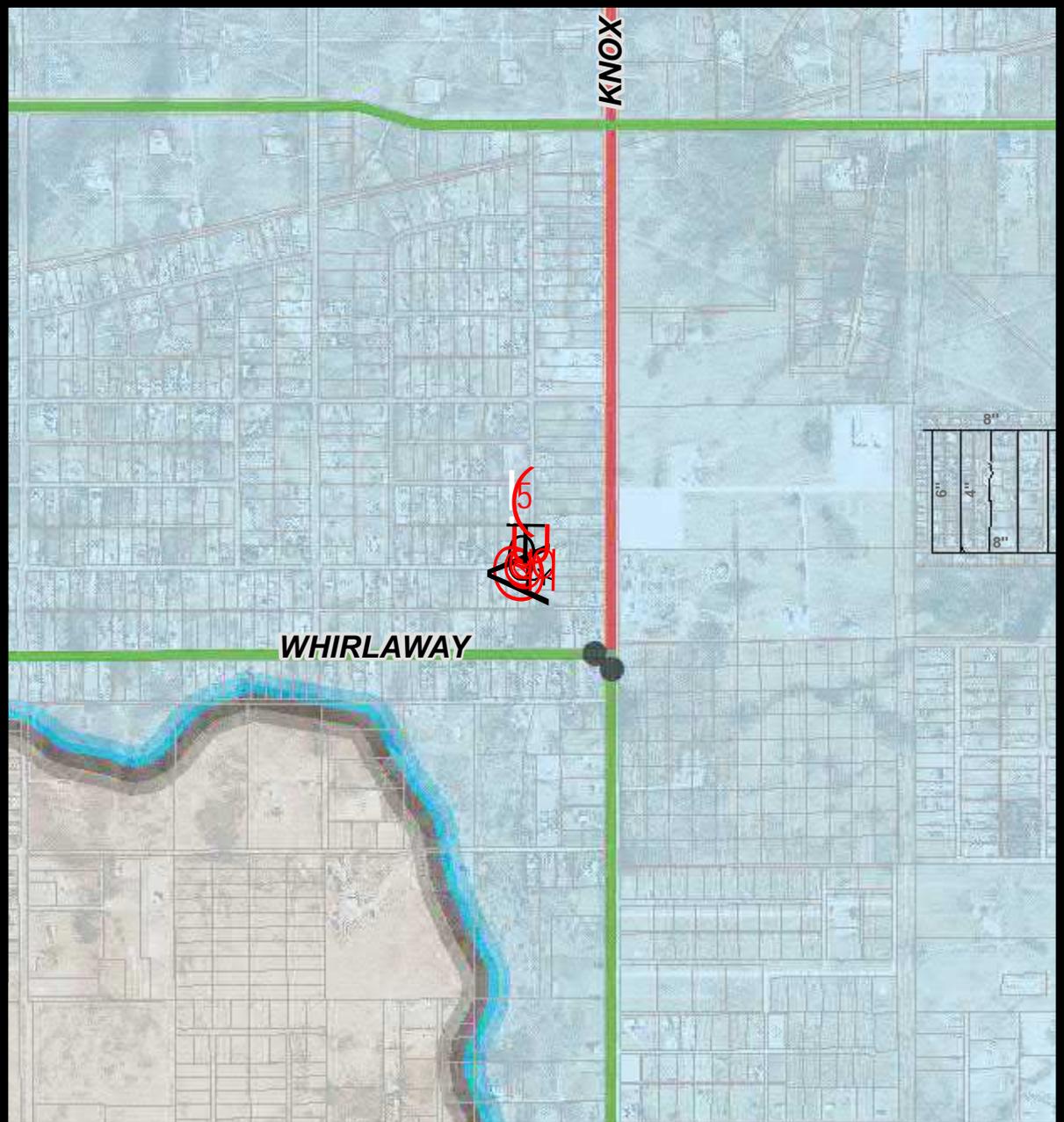
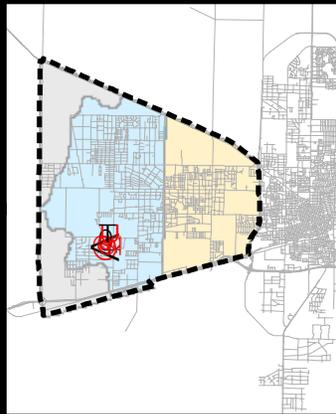
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1 inch = 1,500 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**

**June 2018**

**Phase:** TCEQ Compliance

**Project Description:** This project consists of a 1.5 MG elevated storage tank at a site located at the intersection of Knox Avenue and Whirlaway Drive.

**Recommendation Comments:** TCEQ Compliance Project. Needed to meet minimum state standards for elevated storage in the West Pressure Plane. Utilizing the 200 gallons per connection TCEQ criterion, the tank is sized to serve 7,500 connections in the West Pressure Plane.

**Pressure Plane:** West

**Capital Cost:** \$4,600,000

**Project Name:** Knox Avenue 1.5 MG Elevated Storage Tank

| Kimley-Horn & Associates, Inc.                     |                                              | Opinion of Probable Construction Cost |      |             |                    |           |
|----------------------------------------------------|----------------------------------------------|---------------------------------------|------|-------------|--------------------|-----------|
| Client: Ector County Utility District              |                                              | Date: 6/18/2018                       |      |             |                    |           |
| Project: Water System Master Plan                  |                                              | Prepared By: AWS                      |      |             |                    |           |
| KHA No.: 063685005                                 |                                              | Checked By: JRA                       |      |             |                    |           |
| Title: 5. Knox Avenue 1.5 MG Elevated Storage Tank |                                              |                                       |      |             |                    |           |
| Item No.                                           | Item Description                             | Quantity                              | Unit | Unit Price  | Item Cost          |           |
| 1                                                  | Mobilization                                 | 1                                     | LS   | \$120,000   | \$120,000          |           |
| 2                                                  | Pollution Prevention and Control             | 1                                     | LS   | \$5,000     | \$5,000            |           |
| 3                                                  | 1.5 MG Composite Elevated Water Storage Tank | 1                                     | LS   | \$3,000,000 | \$3,000,000        |           |
| 4                                                  | 24" On Site Piping                           | 300                                   | LF   | \$200.00    | \$60,000           |           |
| 5                                                  | Concrete Sidewalk                            | 150                                   | SY   | \$30.00     | \$5,000            |           |
| 6                                                  | Driveway                                     | 150                                   | SY   | \$50.00     | \$8,000            |           |
| 7                                                  | Site Grading                                 | 1                                     | LS   | \$20,000.00 | \$20,000           |           |
| 8                                                  | 8' Security Fence                            | 600                                   | LF   | \$50.00     | \$30,000           |           |
| 9                                                  | Landscaping                                  | 1                                     | LS   | \$10,000.00 | \$10,000           |           |
| 10                                                 | Recirculation System                         | 1                                     | LS   | \$20,000.00 | \$20,000           |           |
| 11                                                 | Site Acquisition (2 acres)                   | 1                                     | LS   | \$50,000.00 | \$50,000           |           |
| 12                                                 | Allowance                                    | 1                                     | LS   | \$67,000.00 | \$67,000           |           |
| <b>Basis for Cost Projection:</b>                  |                                              | Subtotal:                             |      |             | \$3,395,000        |           |
| <input checked="" type="checkbox"/>                | No Design Completed                          | Conting. (%,+/-)                      |      |             | 20                 | \$665,700 |
| <input type="checkbox"/>                           | Preliminary Design                           | Professional Services (%,+/-)         |      |             | 15                 | \$499,300 |
| <input type="checkbox"/>                           | Final Design                                 | <b>Total:</b>                         |      |             | <b>\$4,600,000</b> |           |

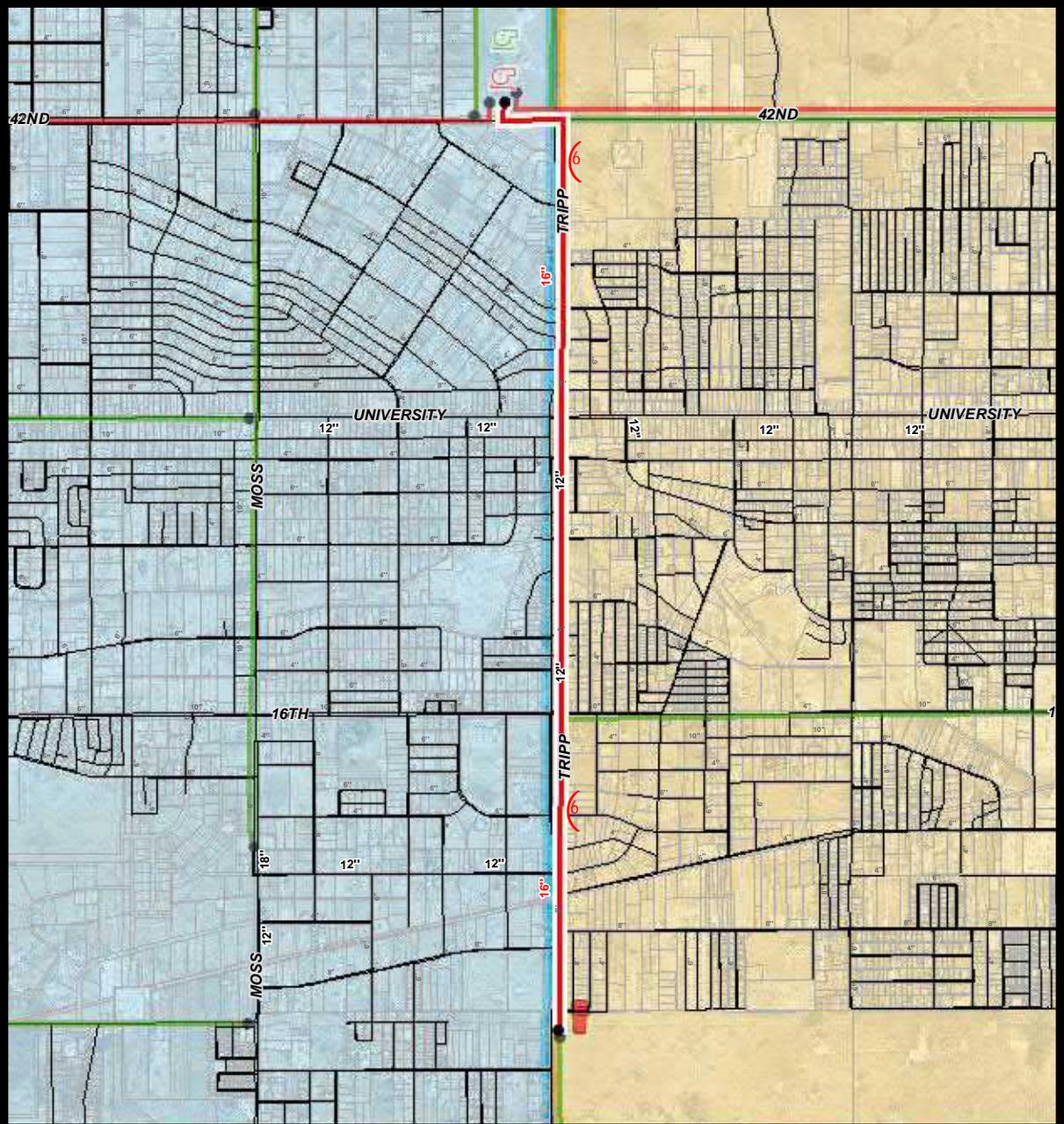
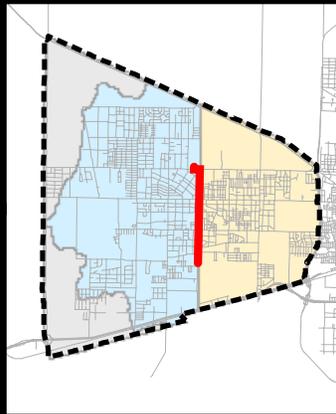
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1 inch = 3,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** TCEQ Compliance

**Project Description:** This project consists of approximately 17,770 LF of 16" water transmission line along Tripp Avenue from the proposed 42nd Street Pump Station to the proposed Tripp Avenue Tank.

**Recommendation Comments:** TCEQ Compliance Project. This transmission main transports water from the 42nd Street Pump Station into the East Pressure Plane. Its primary purpose is to fill the Tripp Avenue 1.0 Million Gallon Elevated Storage Tank. Other East Pressure Plane transmission mains and distribution lines may connect to this main. No service connections are allowed on this main.

**Pressure Plane:** East  
**Capital Cost:** \$5,200,000

**Project Name:** Tripp Avenue 16-Inch Transmission Line to Tripp Avenue Tank

| Kimley-Horn & Associates, Inc.                                        |                                | Opinion of Probable Construction Cost |           |             |                    |
|-----------------------------------------------------------------------|--------------------------------|---------------------------------------|-----------|-------------|--------------------|
| Client: Ector County Utility District                                 |                                | Date: 6/18/2018                       |           |             |                    |
| Project: Water System Master Plan                                     |                                | Prepared By: AWS                      |           |             |                    |
| KHA No.: 063685005                                                    |                                | Checked By: JRA                       |           |             |                    |
| Title: 6. Tripp Avenue 16-Inch Transmission Line to Tripp Avenue Tank |                                |                                       |           |             |                    |
| Item No.                                                              | Item Description               | Quantity                              | Unit      | Unit Price  | Item Cost          |
| 1                                                                     | Mobilization                   | 1                                     | LS        | \$77,000    | \$77,000           |
| 2                                                                     | Traffic Control                | 1                                     | LS        | \$70,000    | \$70,000           |
| 3                                                                     | Erosion Control                | 1                                     | LS        | \$70,000    | \$70,000           |
| 4                                                                     | 16" Water Pipe                 | 17,770                                | LF        | \$100.00    | \$1,777,000        |
| 5                                                                     | 36" Bore with Steel Casing     | 300                                   | LF        | \$600.00    | \$180,000          |
| 6                                                                     | Water Line Trench Safety       | 17,770                                | LF        | \$2.00      | \$36,000           |
| 7                                                                     | 16" AWWA Gate Valve            | 21                                    | EA        | \$10,000.00 | \$212,000          |
| 8                                                                     | Connect to Existing Water Line | 14                                    | EA        | \$5,000.00  | \$70,000           |
| 9                                                                     | Fire Hydrant Assembly          | 36                                    | EA        | \$5,000.00  | \$178,000          |
| 10                                                                    | Ductile Iron Fittings          | 18                                    | TON       | \$5,000.00  | \$89,000           |
| 11                                                                    | Asphalt Pavement Repair        | 15,800                                | SY        | \$60.00     | \$948,000          |
| 12                                                                    | Allowance                      | 1                                     | LS        | \$75,000.00 | \$75,000           |
| <b>Basis for Cost Projection:</b>                                     |                                |                                       | Subtotal: |             | \$3,782,000        |
| <input checked="" type="checkbox"/>                                   | No Design Completed            | Conting. (%,+/-)                      |           | 20          | \$756,550          |
| <input type="checkbox"/>                                              | Preliminary Design             | Professional Services (%,+/-)         |           | 15          | \$567,450          |
| <input type="checkbox"/>                                              | Final Design                   | <b>Total:</b>                         |           |             | <b>\$5,200,000</b> |

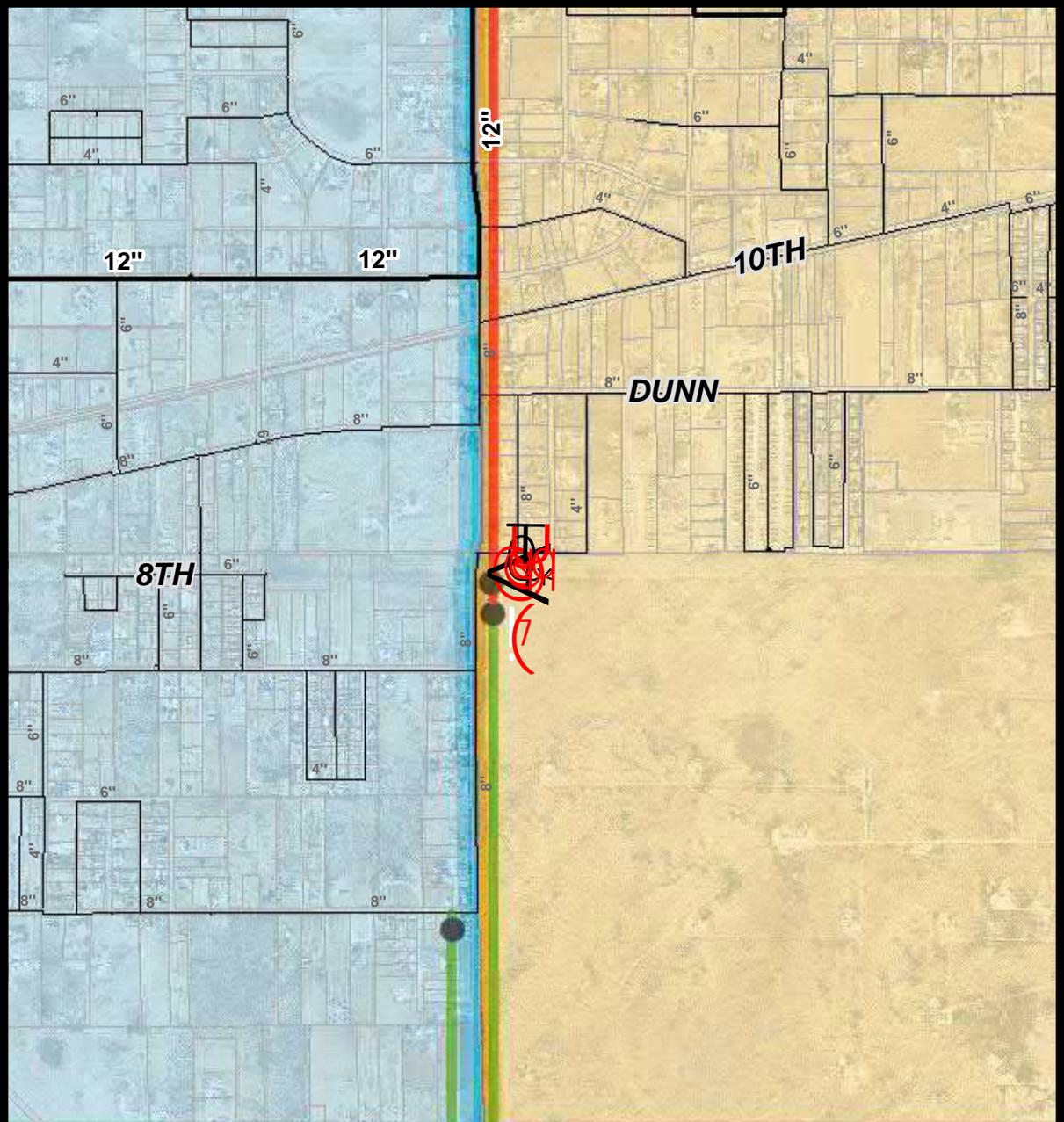
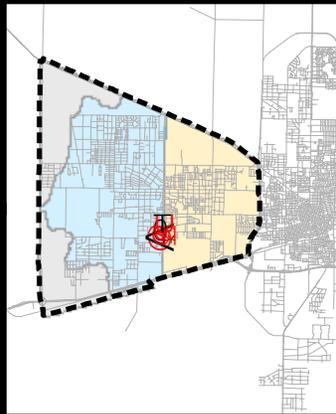
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1 inch = 1,500 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**

**June 2018**

**Phase:** TCEQ Compliance

**Project Description:** This project consists of a 1.0 MG elevated storage tank at a site located at the intersection of Tripp Avenue and 3rd Street.

**Recommendation Comments:** TCEQ Compliance Project. Needed to meet minimum state standards for elevated storage in the East Pressure Plane. Utilizing the 200 gallons per connection TCEQ criterion, the tank is sized to serve 5,000 connections in the East Pressure Plane.

**Pressure Plane:** East

**Capital Cost:** \$3,200,000

**Project Name:** Tripp Avenue 1.0 MG Elevated Storage Tank

| Kimley-Horn & Associates, Inc.                      |                                              | Opinion of Probable Construction Cost |      |             |             |                    |
|-----------------------------------------------------|----------------------------------------------|---------------------------------------|------|-------------|-------------|--------------------|
| Client: Ector County Utility District               |                                              | Date: 6/18/2018                       |      |             |             |                    |
| Project: Water System Master Plan                   |                                              | Prepared By: AWS                      |      |             |             |                    |
| KHA No.: 063685005                                  |                                              | Checked By: JRA                       |      |             |             |                    |
| Title: 7. Tripp Avenue 1.0 MG Elevated Storage Tank |                                              |                                       |      |             |             |                    |
| Item No.                                            | Item Description                             | Quantity                              | Unit | Unit Price  | Item Cost   |                    |
| 1                                                   | Mobilization                                 | 1                                     | LS   | \$120,000   | \$120,000   |                    |
| 2                                                   | Pollution Prevention and Control             | 1                                     | LS   | \$5,000     | \$5,000     |                    |
| 3                                                   | 1.0 MG Composite Elevated Water Storage Tank | 1                                     | LS   | \$2,000,000 | \$2,000,000 |                    |
| 4                                                   | 16" On Site Piping                           | 300                                   | LF   | \$150.00    | \$45,000    |                    |
| 5                                                   | Concrete Sidewalk                            | 150                                   | SY   | \$30.00     | \$4,500     |                    |
| 6                                                   | Driveway                                     | 150                                   | SY   | \$50.00     | \$7,500     |                    |
| 7                                                   | Site Grading                                 | 1                                     | LS   | \$20,000.00 | \$20,000    |                    |
| 8                                                   | 8' Security Fence                            | 600                                   | LF   | \$50.00     | \$30,000    |                    |
| 9                                                   | Landscaping                                  | 1                                     | LS   | \$10,000.00 | \$10,000    |                    |
| 10                                                  | Recirculation System                         | 1                                     | LS   | \$20,000.00 | \$20,000    |                    |
| 11                                                  | Site Acquisition (2 acres)                   | 1                                     | LS   | \$50,000.00 | \$50,000    |                    |
| 12                                                  | Allowance                                    | 1                                     | LS   | \$47,000.00 | \$47,000    |                    |
| <b>Basis for Cost Projection:</b>                   |                                              | Subtotal:                             |      |             | \$2,359,000 |                    |
| <input checked="" type="checkbox"/>                 | No Design Completed                          | Conting. (%,+/-)                      |      |             | 20          | \$462,800          |
| <input type="checkbox"/>                            | Preliminary Design                           | Professional Services (%,+/-)         |      |             | 15          | \$347,200          |
| <input type="checkbox"/>                            | Final Design                                 | <b>Total:</b>                         |      |             |             | <b>\$3,200,000</b> |

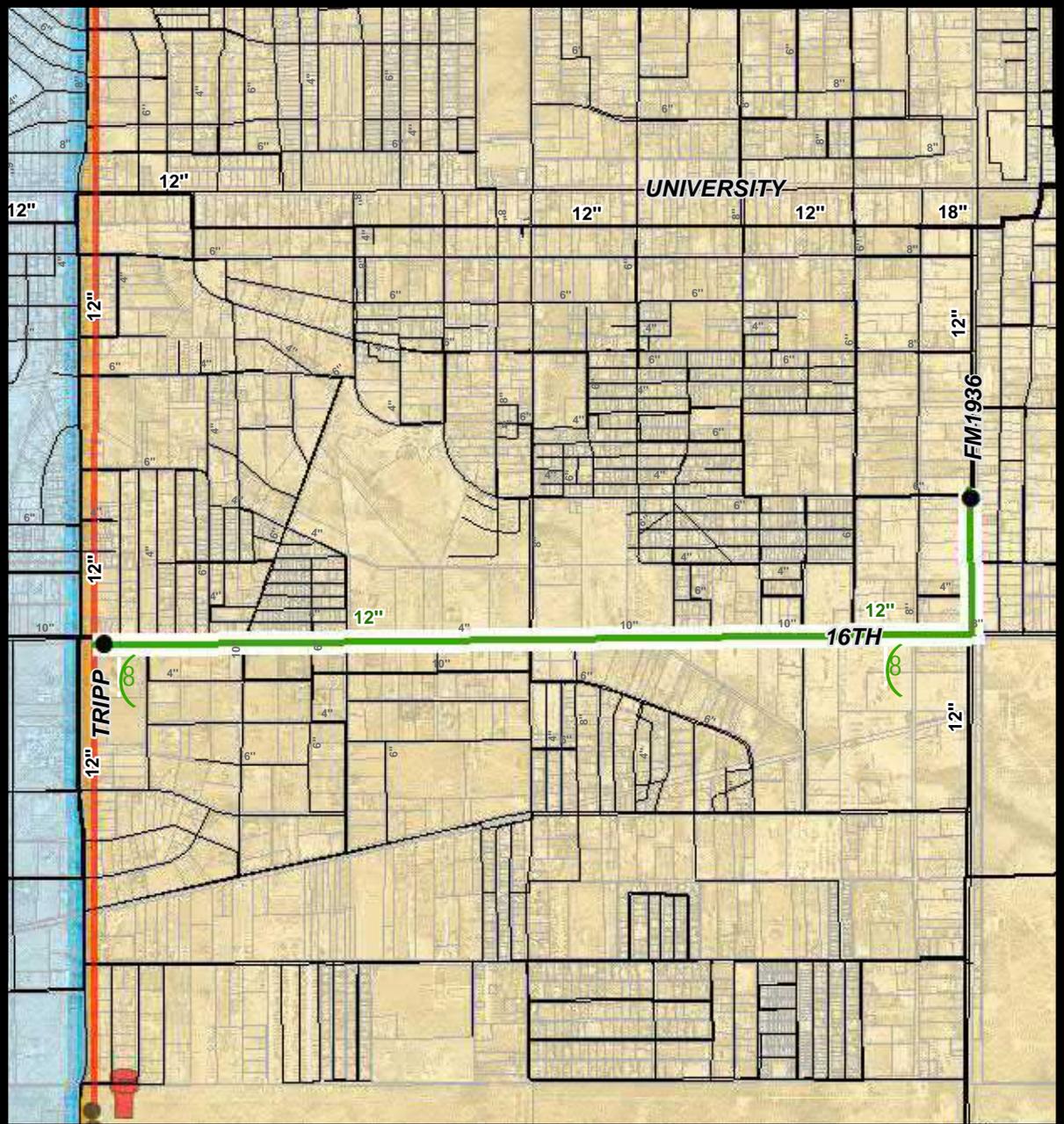
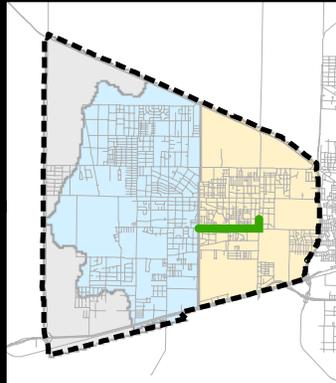
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1 inch = 2,000 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 12,190 LF of 12" water line along 16th Avenue from Tripp Avenue to FM 1936 and along FM 1936 from 16th Avenue to Mockingbird Lane.

**Recommendation Comments:** This transmission main will improve system transmission capacity, redundancy, and fire flow capacity to the east along 16th Street towards Redondo Avenue and FM 1936.

**Pressure Plane:** East  
**Capital Cost:** \$3,100,000

**Project Name:** 16th Avenue/FM 1936 12-inch Water Line

| Kimley-Horn & Associates, Inc.                          |                                | Opinion of Probable Construction Cost |           |             |                    |           |
|---------------------------------------------------------|--------------------------------|---------------------------------------|-----------|-------------|--------------------|-----------|
| <b>Client:</b>                                          | Ector County Utility District  | <b>Date:</b>                          | 6/18/2018 |             |                    |           |
| <b>Project:</b>                                         | Water System Master Plan       | <b>Prepared By:</b>                   | AWS       |             |                    |           |
| <b>KHA No.:</b>                                         | 063685005                      | <b>Checked By:</b>                    | JRA       |             |                    |           |
| <b>Title: 8. 16th Avenue/FM 1936 12-inch Water Line</b> |                                |                                       |           |             |                    |           |
| Item No.                                                | Item Description               | Quantity                              | Unit      | Unit Price  | Item Cost          |           |
| 1                                                       | Mobilization                   | 1                                     | LS        | \$49,000    | \$49,000           |           |
| 2                                                       | Traffic Control                | 1                                     | LS        | \$43,000    | \$43,000           |           |
| 3                                                       | Erosion Control                | 1                                     | LS        | \$43,000    | \$43,000           |           |
| 4                                                       | 12" Water Pipe                 | 12,190                                | LF        | \$85.00     | \$1,037,000        |           |
| 5                                                       | 24" Bore with Steel Casing     | 200                                   | LF        | \$500.00    | \$100,000          |           |
| 6                                                       | Water Line Trench Safety       | 12,190                                | LF        | \$2.00      | \$25,000           |           |
| 7                                                       | 12" AWWA Gate Valve            | 13                                    | EA        | \$5,000.00  | \$65,000           |           |
| 8                                                       | Connect to Existing Water Line | 8                                     | EA        | \$5,000.00  | \$40,000           |           |
| 9                                                       | Fire Hydrant Assembly          | 24                                    | EA        | \$5,000.00  | \$122,000          |           |
| 10                                                      | Ductile Iron Fittings          | 12                                    | TON       | \$5,000.00  | \$61,000           |           |
| 11                                                      | Asphalt Pavement Repair        | 10,900                                | SY        | \$60.00     | \$654,000          |           |
| 12                                                      | Allowance                      | 1                                     | LS        | \$45,000.00 | \$45,000           |           |
| <b>Basis for Cost Projection:</b>                       |                                | Subtotal:                             |           |             | \$2,284,000        |           |
| <input checked="" type="checkbox"/>                     | No Design Completed            | Conting. (%,+/-)                      |           |             | 20                 | \$457,100 |
| <input type="checkbox"/>                                | Preliminary Design             | Professional Services (%,+/-)         |           |             | 15                 | \$342,900 |
| <input type="checkbox"/>                                | Final Design                   | <b>Total:</b>                         |           |             | <b>\$3,100,000</b> |           |

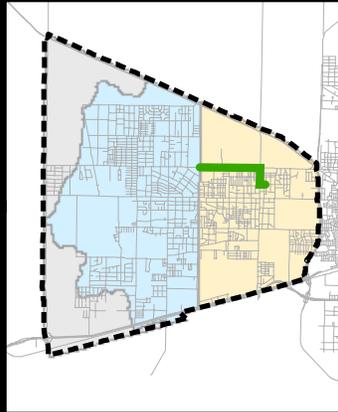
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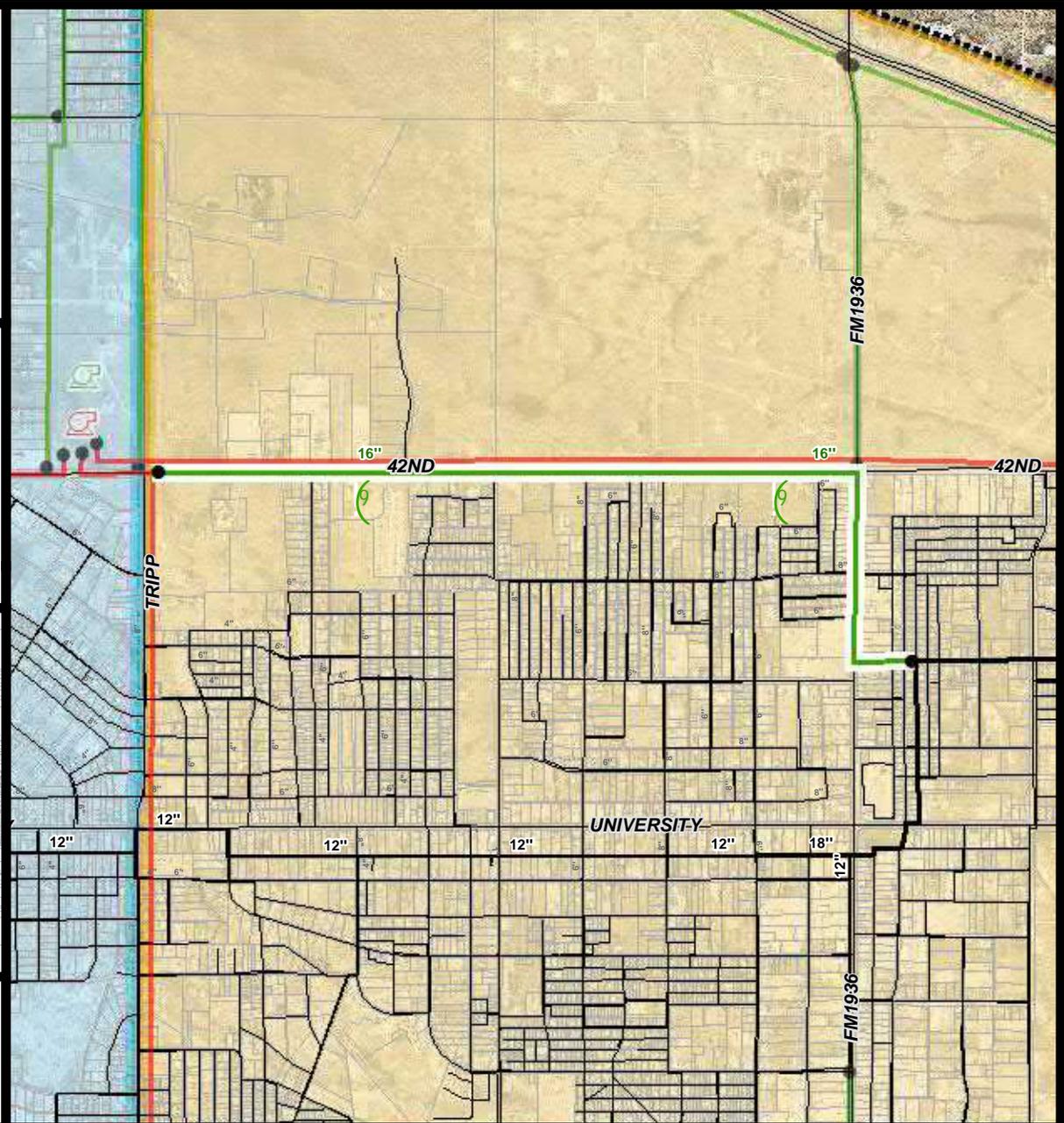
1 inch = 2,500 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018



**Phase:** Future Development

**Project Description:** This project consists of approximately 14,300 LF of 16" water line along 42nd Street and FM 1936 from Tripp Avenue to a connection to the existing 18" water line near Morris Street.

**Recommendation Comments:** This transmission main will improve system transmission capacity, redundancy, and fire flow capacity to the east along 42nd Street towards Huntington Avenue and FM 1936.

**Pressure Plane:** East  
**Capital Cost:** \$3,200,000

**Project Name:** 42nd Street 16-inch Water Line

| Kimley-Horn & Associates, Inc.                  |                                | Opinion of Probable Construction Cost |           |             |                    |           |
|-------------------------------------------------|--------------------------------|---------------------------------------|-----------|-------------|--------------------|-----------|
| <b>Client:</b>                                  | Ector County Utility District  | <b>Date:</b>                          | 6/18/2018 |             |                    |           |
| <b>Project:</b>                                 | Water System Master Plan       | <b>Prepared By:</b>                   | AWS       |             |                    |           |
| <b>KHA No.:</b>                                 | 063685005                      | <b>Checked By:</b>                    | JRA       |             |                    |           |
| <b>Title: 9. 42nd Street 16-inch Water Line</b> |                                |                                       |           |             |                    |           |
| Item No.                                        | Item Description               | Quantity                              | Unit      | Unit Price  | Item Cost          |           |
| 1                                               | Mobilization                   | 1                                     | LS        | \$28,000    | \$28,000           |           |
| 2                                               | Traffic Control                | 1                                     | LS        | \$44,000    | \$44,000           |           |
| 3                                               | Erosion Control                | 1                                     | LS        | \$44,000    | \$44,000           |           |
| 4                                               | 16" Water Pipe                 | 14,300                                | LF        | \$100.00    | \$1,430,000        |           |
| 5                                               | 36" Bore with Steel Casing     | 300                                   | LF        | \$600.00    | \$180,000          |           |
| 6                                               | Water Line Trench Safety       | 14,300                                | LF        | \$2.00      | \$29,000           |           |
| 7                                               | 16" AWWA Gate Valve            | 10                                    | EA        | \$10,000.00 | \$98,000           |           |
| 8                                               | Connect to Existing Water Line | 4                                     | EA        | \$5,000.00  | \$20,000           |           |
| 9                                               | Fire Hydrant Assembly          | 29                                    | EA        | \$5,000.00  | \$143,000          |           |
| 10                                              | Ductile Iron Fittings          | 14                                    | TON       | \$5,000.00  | \$72,000           |           |
| 11                                              | Asphalt Pavement Repair        | 3,300                                 | SY        | \$60.00     | \$198,000          |           |
| 12                                              | Allowance                      | 1                                     | LS        | \$46,000.00 | \$46,000           |           |
| <b>Basis for Cost Projection:</b>               |                                | Subtotal:                             |           |             | \$2,332,000        |           |
| <input checked="" type="checkbox"/>             | No Design Completed            | Conting. (%,+/-)                      |           |             | 20                 | \$466,800 |
| <input type="checkbox"/>                        | Preliminary Design             | Professional Services (%,+/-)         |           |             | 15                 | \$350,200 |
| <input type="checkbox"/>                        | Final Design                   | <b>Total:</b>                         |           |             | <b>\$3,200,000</b> |           |

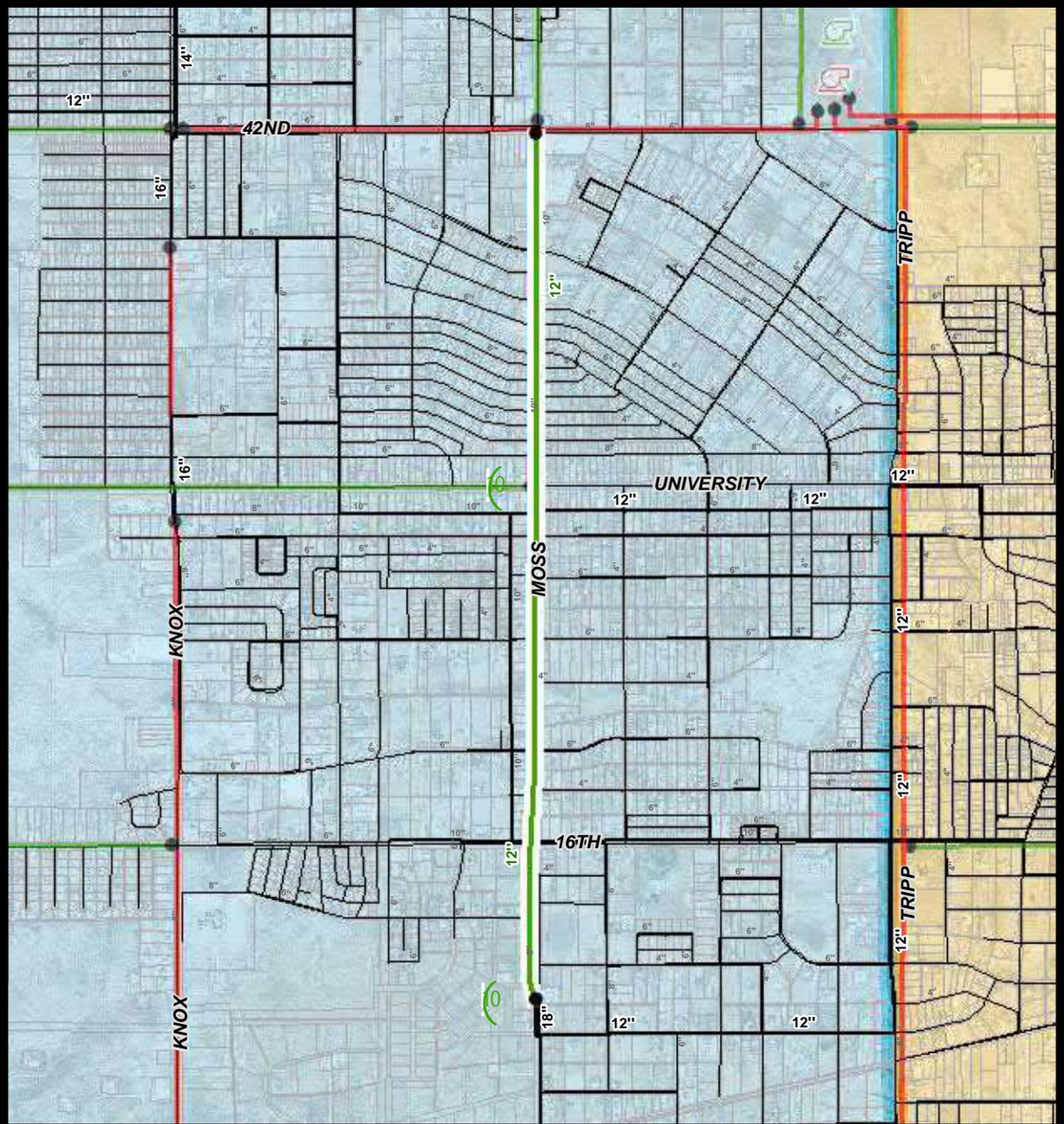
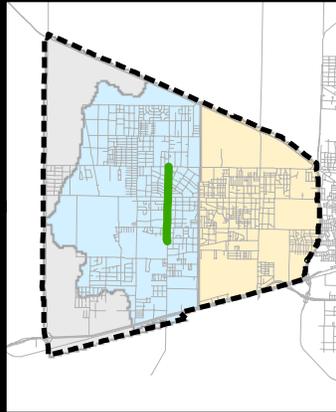
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1 inch = 2,500 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 13,050 LF of 12" water line along Moss Avenue from 42nd Street to Swan Road.

**Recommendation Comments:** This transmission main will improve fire flow capacity in the West Pressure Plane along Moss Avenue.

**Pressure Plane:** West  
**Capital Cost:** \$3,100,000

**Project Name:** Moss Avenue 12-inch Water Line

| Kimley-Horn & Associates, Inc.                   |                                | Opinion of Probable Construction Cost |           |             |                    |           |
|--------------------------------------------------|--------------------------------|---------------------------------------|-----------|-------------|--------------------|-----------|
| <b>Client:</b>                                   | Ector County Utility District  | <b>Date:</b>                          | 6/18/2018 |             |                    |           |
| <b>Project:</b>                                  | Water System Master Plan       | <b>Prepared By:</b>                   | AWS       |             |                    |           |
| <b>KHA No.:</b>                                  | 063685005                      | <b>Checked By:</b>                    | JRA       |             |                    |           |
| <b>Title: 10. Moss Avenue 12-inch Water Line</b> |                                |                                       |           |             |                    |           |
| Item No.                                         | Item Description               | Quantity                              | Unit      | Unit Price  | Item Cost          |           |
| 1                                                | Mobilization                   | 1                                     | LS        | \$18,000    | \$18,000           |           |
| 2                                                | Traffic Control                | 1                                     | LS        | \$43,000    | \$43,000           |           |
| 3                                                | Erosion Control                | 1                                     | LS        | \$43,000    | \$43,000           |           |
| 4                                                | 12" Water Pipe                 | 13,050                                | LF        | \$85.00     | \$1,110,000        |           |
| 5                                                | 24" Bore with Steel Casing     | 1,300                                 | LF        | \$500.00    | \$650,000          |           |
| 6                                                | Water Line Trench Safety       | 13,050                                | LF        | \$2.00      | \$27,000           |           |
| 7                                                | 12" AWWA Gate Valve            | 14                                    | EA        | \$5,000.00  | \$72,000           |           |
| 8                                                | Connect to Existing Water Line | 9                                     | EA        | \$5,000.00  | \$45,000           |           |
| 9                                                | Fire Hydrant Assembly          | 26                                    | EA        | \$5,000.00  | \$131,000          |           |
| 10                                               | Ductile Iron Fittings          | 13                                    | TON       | \$5,000.00  | \$66,000           |           |
| 11                                               | Allowance                      | 1                                     | LS        | \$45,000.00 | \$45,000           |           |
| <b>Basis for Cost Projection:</b>                |                                | Subtotal:                             |           |             | \$2,250,000        |           |
| <input checked="" type="checkbox"/>              | No Design Completed            | Conting. (%,+/-)                      |           |             | 20                 | \$450,250 |
| <input type="checkbox"/>                         | Preliminary Design             | Professional Services (%,+/-)         |           |             | 15                 | \$337,750 |
| <input type="checkbox"/>                         | Final Design                   | <b>Total:</b>                         |           |             | <b>\$3,100,000</b> |           |

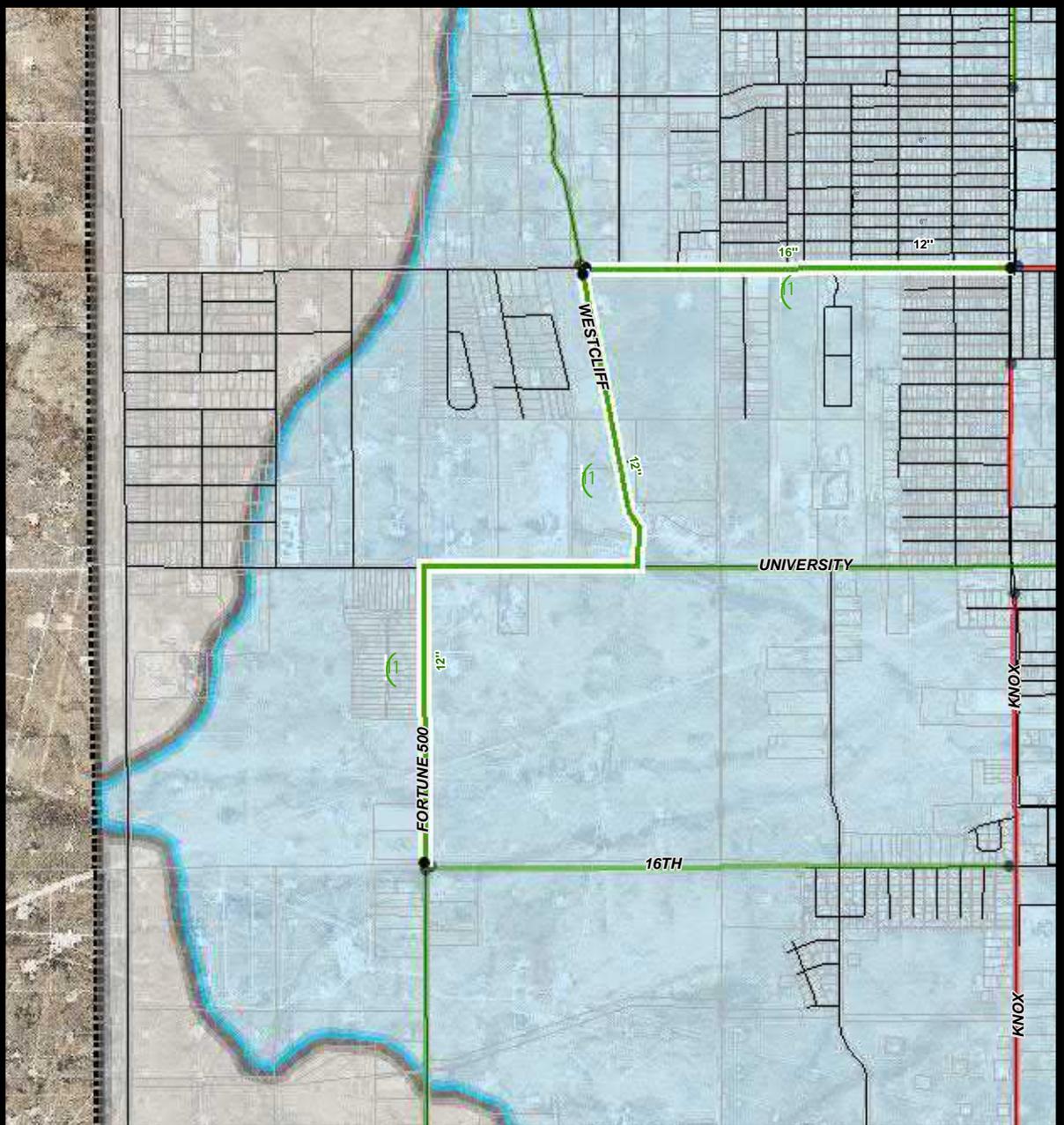
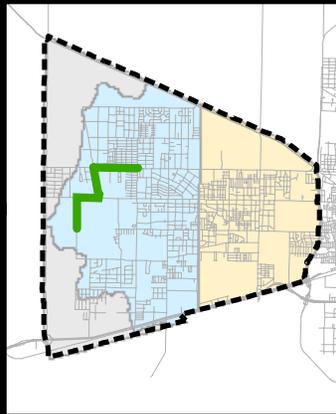
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1 inch = 3,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 7,710 LF of 16" water line along 42nd Street from Knox Avenue to Westcliff Road and 14,540 LF of 16" water line along Westcliff Road, University Boulevard, and Fortune 500, terminating at 16th Street.

**Recommendation Comments:** This transmission main will improve system transmission capacity, redundancy, and fire flow capacity to the area currently served by the 42nd Street and Knox Avenue Pump Station.

**Pressure Plane:** West  
**Capital Cost:** \$3,800,000

**Project Name:** Fortune 500/Westcliff 16/12-inch Water Line

| Kimley-Horn & Associates, Inc.                                |                                      | Opinion of Probable Construction Cost |                  |             |                    |           |
|---------------------------------------------------------------|--------------------------------------|---------------------------------------|------------------|-------------|--------------------|-----------|
| <b>Client:</b>                                                | <b>Ector County Utility District</b> | <b>Date:</b>                          | <b>6/18/2018</b> |             |                    |           |
| <b>Project:</b>                                               | <b>Water System Master Plan</b>      | <b>Prepared By:</b>                   | <b>AWS</b>       |             |                    |           |
| <b>KHA No.:</b>                                               | <b>063685005</b>                     | <b>Checked By:</b>                    | <b>JRA</b>       |             |                    |           |
| <b>Title: 11. Fortune 500/Westcliff 16/12-inch Water Line</b> |                                      |                                       |                  |             |                    |           |
| Item No.                                                      | Item Description                     | Quantity                              | Unit             | Unit Price  | Item Cost          |           |
| 1                                                             | Mobilization                         | 1                                     | LS               | \$29,000    | \$29,000           |           |
| 2                                                             | Traffic Control                      | 1                                     | LS               | \$52,000    | \$52,000           |           |
| 3                                                             | Erosion Control                      | 1                                     | LS               | \$52,000    | \$52,000           |           |
| 4                                                             | 16" Water Pipe                       | 7,710                                 | LF               | \$100.00    | \$771,000          |           |
| 5                                                             | 12" Water Pipe                       | 14,540                                | LF               | \$85.00     | \$1,236,000        |           |
| 5                                                             | Water Line Trench Safety             | 22,250                                | LF               | \$2.00      | \$45,000           |           |
| 6                                                             | 16" AWWA Gate Valve                  | 3                                     | EA               | \$10,000.00 | \$31,000           |           |
| 7                                                             | 12" AWWA Gate Valve                  | 31                                    | EA               | \$5,000.00  | \$156,000          |           |
| 7                                                             | Connect to Existing Water Line       | 2                                     | EA               | \$5,000.00  | \$10,000           |           |
| 8                                                             | Fire Hydrant Assembly                | 45                                    | EA               | \$5,000.00  | \$223,000          |           |
| 9                                                             | Ductile Iron Fittings                | 22                                    | TON              | \$5,000.00  | \$112,000          |           |
| 10                                                            | Allowance                            | 1                                     | LS               | \$55,000.00 | \$55,000           |           |
| <b>Basis for Cost Projection:</b>                             |                                      | Subtotal:                             |                  |             | \$2,772,000        |           |
| <input checked="" type="checkbox"/>                           | No Design Completed                  | Conting. (%,+/-)                      |                  |             | 20                 | \$554,800 |
| <input type="checkbox"/>                                      | Preliminary Design                   | Professional Services (%,+/-)         |                  |             | 15                 | \$416,200 |
| <input type="checkbox"/>                                      | Final Design                         | <b>Total:</b>                         |                  |             | <b>\$3,800,000</b> |           |

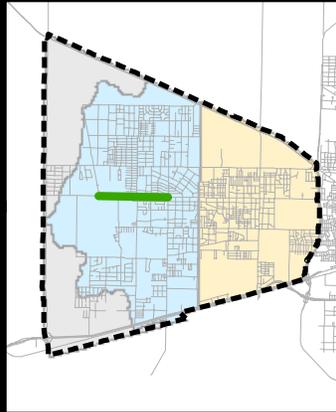
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1 inch = 2,500 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 12,180 LF of 12" water line along University Boulevard from Westcliff Road to Moss Avenue.

**Recommendation Comments:** This transmission main will improve system transmission capacity, redundancy, and fire flow capacity in the West Pressure Plane along University Boulevard, connecting to the Moss Avenue 12" water line.

**Pressure Plane:** West  
**Capital Cost:** \$2,400,000

**Project Name:** University Boulevard 12-inch Water Line

| Kimley-Horn & Associates, Inc.                            |                                | Opinion of Probable Construction Cost |           |             |                    |           |
|-----------------------------------------------------------|--------------------------------|---------------------------------------|-----------|-------------|--------------------|-----------|
| <b>Client:</b>                                            | Ector County Utility District  | <b>Date:</b>                          | 6/18/2018 |             |                    |           |
| <b>Project:</b>                                           | Water System Master Plan       | <b>Prepared By:</b>                   | AWS       |             |                    |           |
| <b>KHA No.:</b>                                           | 063685005                      | <b>Checked By:</b>                    | JRA       |             |                    |           |
| <b>Title: 12. University Boulevard 12-inch Water Line</b> |                                |                                       |           |             |                    |           |
| Item No.                                                  | Item Description               | Quantity                              | Unit      | Unit Price  | Item Cost          |           |
| 1                                                         | Mobilization                   | 1                                     | LS        | \$29,000    | \$29,000           |           |
| 2                                                         | Traffic Control                | 1                                     | LS        | \$33,000    | \$33,000           |           |
| 3                                                         | Erosion Control                | 1                                     | LS        | \$33,000    | \$33,000           |           |
| 4                                                         | 12" Water Pipe                 | 12,180                                | LF        | \$85.00     | \$1,036,000        |           |
| 5                                                         | 24" Bore with Steel Casing     | 100                                   | LF        | \$500.00    | \$50,000           |           |
| 6                                                         | Water Line Trench Safety       | 12,180                                | LF        | \$2.00      | \$25,000           |           |
| 7                                                         | 12" AWWA Gate Valve            | 9                                     | EA        | \$5,000.00  | \$45,000           |           |
| 8                                                         | Connect to Existing Water Line | 4                                     | EA        | \$5,000.00  | \$20,000           |           |
| 9                                                         | Fire Hydrant Assembly          | 24                                    | EA        | \$5,000.00  | \$122,000          |           |
| 10                                                        | Ductile Iron Fittings          | 12                                    | TON       | \$5,000.00  | \$61,000           |           |
| 11                                                        | Asphalt Pavement Repair        | 4,800                                 | SY        | \$60.00     | \$288,000          |           |
| 12                                                        | Allowance                      | 1                                     | LS        | \$35,000.00 | \$35,000           |           |
| <b>Basis for Cost Projection:</b>                         |                                | Subtotal:                             |           |             | \$1,777,000        |           |
| <input checked="" type="checkbox"/>                       | No Design Completed            | Conting. (%,+/-)                      |           |             | 20                 | \$355,425 |
| <input type="checkbox"/>                                  | Preliminary Design             | Professional Services (%,+/-)         |           |             | 15                 | \$266,575 |
| <input type="checkbox"/>                                  | Final Design                   | <b>Total:</b>                         |           |             | <b>\$2,400,000</b> |           |

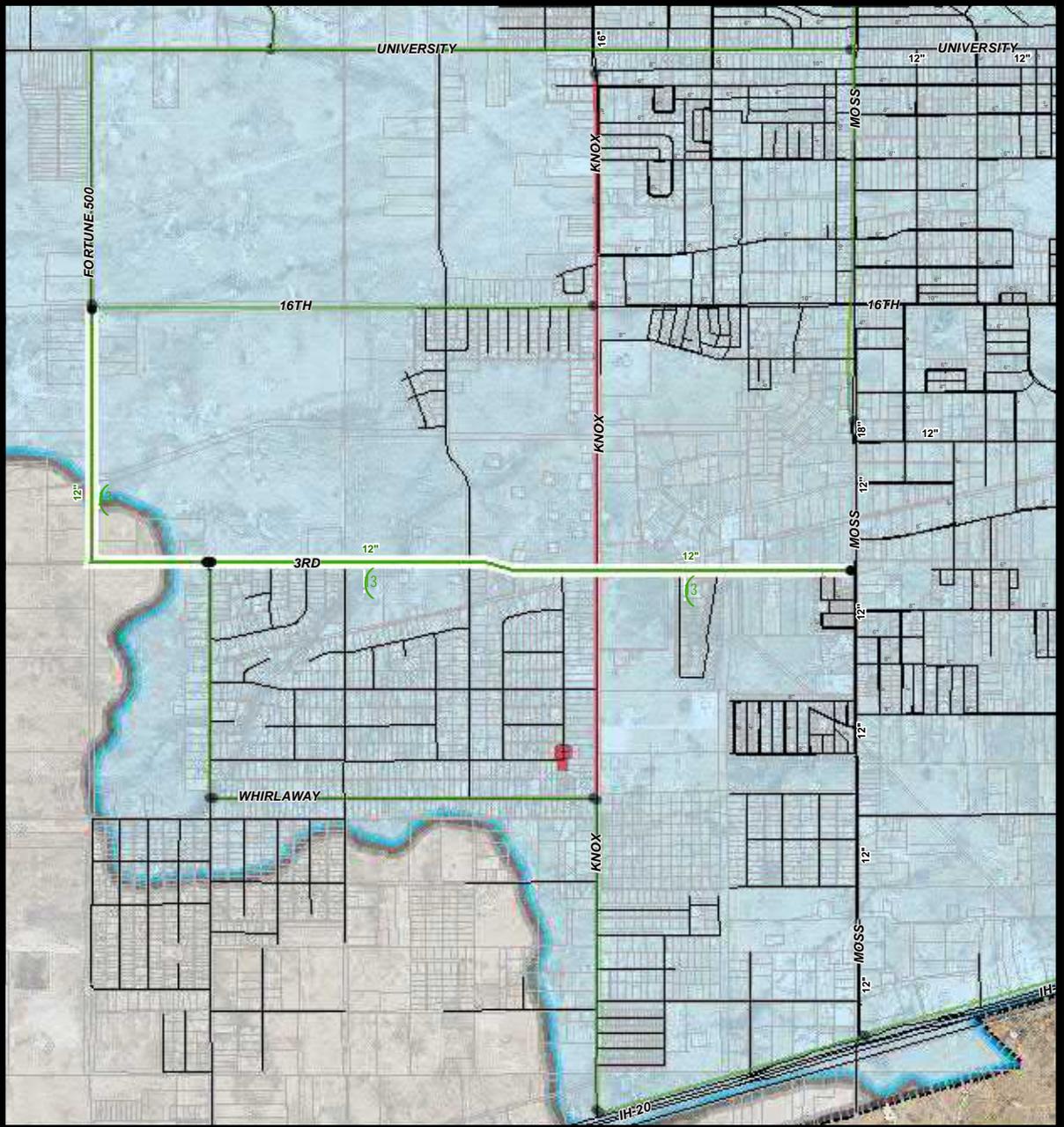
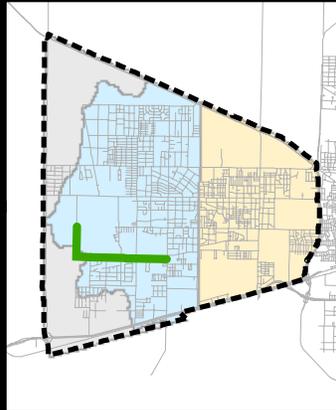
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1 inch = 3,500 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 21,160 LF of 12" water line at the intersection of Fortune 500 and 16th Street running along Fortune 500, and 3rd Street to the 3rd Street/Moss Avenue intersection.

**Recommendation Comments:** This transmission main will improve system transmission capacity, redundancy, and fire flow capacity to the area along Fortune 500 and 3rd Street and the surrounding area.

**Pressure Plane:** West  
**Capital Cost:** \$3,400,000

**Project Name:** Fortune 500/3rd Street 12-inch Water Line

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                                                                                                       |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Client:</b> Ector County Utility District<br><b>Project:</b> Water System Master Plan<br><b>KHA No.:</b> 063685005 | <b>Date:</b> 6/18/2018<br><b>Prepared By:</b> AWS<br><b>Checked By:</b> JRA |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

|                                                             |
|-------------------------------------------------------------|
| <b>Title:</b> 13. Fortune 500/3rd Street 12-inch Water Line |
|-------------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost   |
|----------|--------------------------------|----------|------|-------------|-------------|
| 1        | Mobilization                   | 1        | LS   | \$22,000    | \$22,000    |
| 2        | Traffic Control                | 1        | LS   | \$47,000    | \$47,000    |
| 3        | Erosion Control                | 1        | LS   | \$47,000    | \$47,000    |
| 4        | 12" Water Pipe                 | 21,160   | LF   | \$85.00     | \$1,799,000 |
| 5        | 24" Bore with Steel Casing     | 200      | LF   | \$500.00    | \$100,000   |
| 6        | Water Line Trench Safety       | 21,160   | LF   | \$2.00      | \$43,000    |
| 7        | 12" AWWA Gate Valve            | 10       | EA   | \$5,000.00  | \$53,000    |
| 8        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000    |
| 9        | Fire Hydrant Assembly          | 42       | EA   | \$5,000.00  | \$212,000   |
| 10       | Ductile Iron Fittings          | 21       | TON  | \$5,000.00  | \$106,000   |
| 11       | Allowance                      | 1        | LS   | \$49,000.00 | \$49,000    |

|                                                         |                               |                    |
|---------------------------------------------------------|-------------------------------|--------------------|
| <b>Basis for Cost Projection:</b>                       |                               |                    |
| <input checked="" type="checkbox"/> No Design Completed | Subtotal:                     | \$2,488,000        |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20      \$497,700  |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15      \$373,300  |
|                                                         | <b>Total:</b>                 | <b>\$3,400,000</b> |

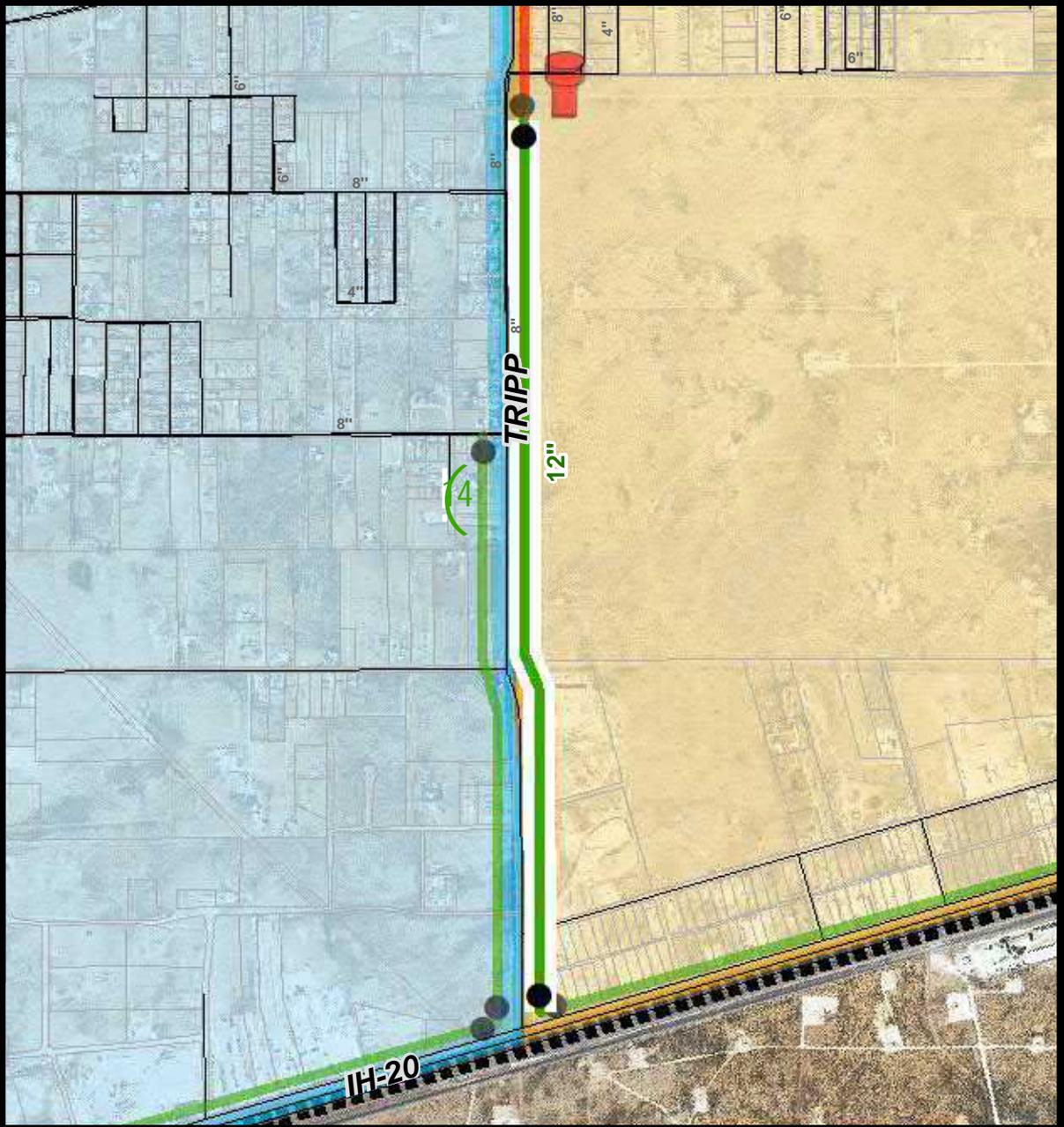
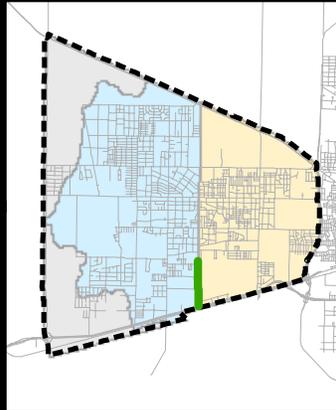
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1 inch = 1,500 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 7,940 LF of 12" water line along Tripp Avenue from I-20 to the Tripp Avenue Elevated Storage Tank.

**Recommendation Comments:** Future Development Driven. Is required if existing or new development along I-20 or from Tripp Avenue desires ECUD water.

**Pressure Plane:** East  
**Capital Cost:** \$1,900,000

**Project Name:** Tripp Avenue 12-inch Water Line (East Pressure Plane)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                                                                                                       |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Client:</b> Ector County Utility District<br><b>Project:</b> Water System Master Plan<br><b>KHA No.:</b> 063685005 | <b>Date:</b> 6/18/2018<br><b>Prepared By:</b> AWS<br><b>Checked By:</b> JRA |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

|                                                                         |
|-------------------------------------------------------------------------|
| <b>Title:</b> 14. Tripp Avenue 12-inch Water Line (East Pressure Plane) |
|-------------------------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$30,000    | \$30,000  |
| 2        | Traffic Control                | 1        | LS   | \$26,000    | \$26,000  |
| 3        | Erosion Control                | 1        | LS   | \$26,000    | \$26,000  |
| 4        | 12" Water Pipe                 | 7,940    | LF   | \$85.00     | \$675,000 |
| 5        | Water Line Trench Safety       | 7,940    | LF   | \$2.00      | \$16,000  |
| 6        | 12" AWWA Gate Valve            | 5        | EA   | \$5,000.00  | \$26,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 16       | EA   | \$5,000.00  | \$80,000  |
| 9        | Ductile Iron Fittings          | 8        | TON  | \$5,000.00  | \$40,000  |
| 10       | Asphalt Pavement Repair        | 7,100    | SY   | \$60.00     | \$426,000 |
| 11       | Allowance                      | 1        | LS   | \$28,000.00 | \$28,000  |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| Subtotal:                     |    | \$1,383,000        |
| Conting. (%,+/-)              | 20 | \$277,075          |
| Professional Services (%,+/-) | 15 | \$207,925          |
| <b>Total:</b>                 |    | <b>\$1,900,000</b> |

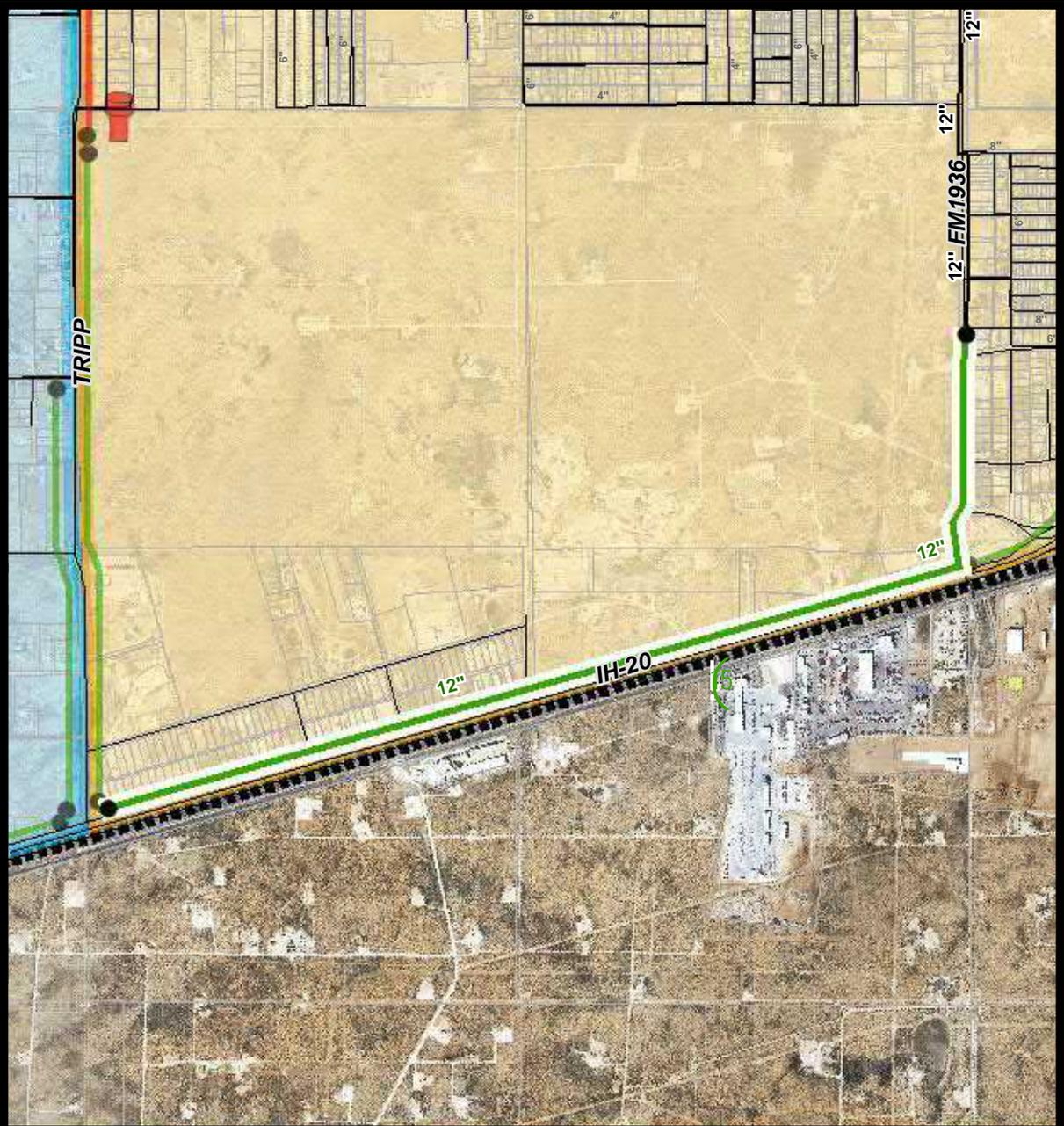
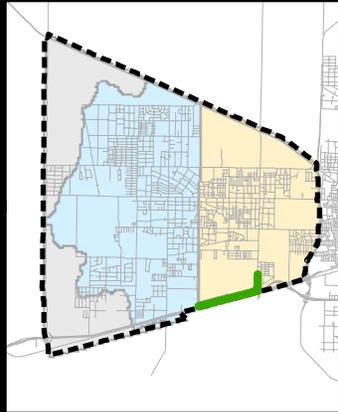
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1 inch = 2,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 13,530 LF of 12" water line along I-20 from Tripp Avenue to FM 1936; along FM 1936 from I-20 to a connection to the 12" water line north of the FM1936/ Mapp Street intersection.

**Recommendation Comments:** Future Development Driven. This is a continuation of project #14. Is required if existing or new development along I-20 from Tripp Avenue east to FM 1936 desires ECUD water. Is part of looping the water system in the East Pressure Plane along I-20 and Loop 338.

**Pressure Plane:** East  
**Capital Cost:** \$2,500,000

**Project Name:** I-20/FM 1936 12-inch Water Line (East Pressure Plane)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                                         |
|-------------------------------------------------------------------------|
| <b>Title: 15. I-20/FM 1936 12-inch Water Line (East Pressure Plane)</b> |
|-------------------------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost   |
|----------|--------------------------------|----------|------|-------------|-------------|
| 1        | Mobilization                   | 1        | LS   | \$23,000    | \$23,000    |
| 2        | Traffic Control                | 1        | LS   | \$35,000    | \$35,000    |
| 3        | Erosion Control                | 1        | LS   | \$35,000    | \$35,000    |
| 4        | 12" Water Pipe                 | 13,530   | LF   | \$85.00     | \$1,151,000 |
| 5        | 24" Bore with Steel Casing     | 200      | LF   | \$500.00    | \$100,000   |
| 6        | Water Line Trench Safety       | 13,530   | LF   | \$2.00      | \$28,000    |
| 7        | 12" AWWA Gate Valve            | 7        | EA   | \$5,000.00  | \$38,000    |
| 8        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000    |
| 9        | Fire Hydrant Assembly          | 27       | EA   | \$5,000.00  | \$136,000   |
| 10       | Ductile Iron Fittings          | 14       | TON  | \$5,000.00  | \$68,000    |
| 11       | Asphalt Pavement Repair        | 2,900    | SY   | \$60.00     | \$174,000   |
| 12       | Allowance                      | 1        | LS   | \$36,000.00 | \$36,000    |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| Subtotal:                     |    | \$1,834,000        |
| Conting. (%,+/-)              | 20 | \$366,850          |
| Professional Services (%,+/-) | 15 | \$275,150          |
| <b>Total:</b>                 |    | <b>\$2,500,000</b> |

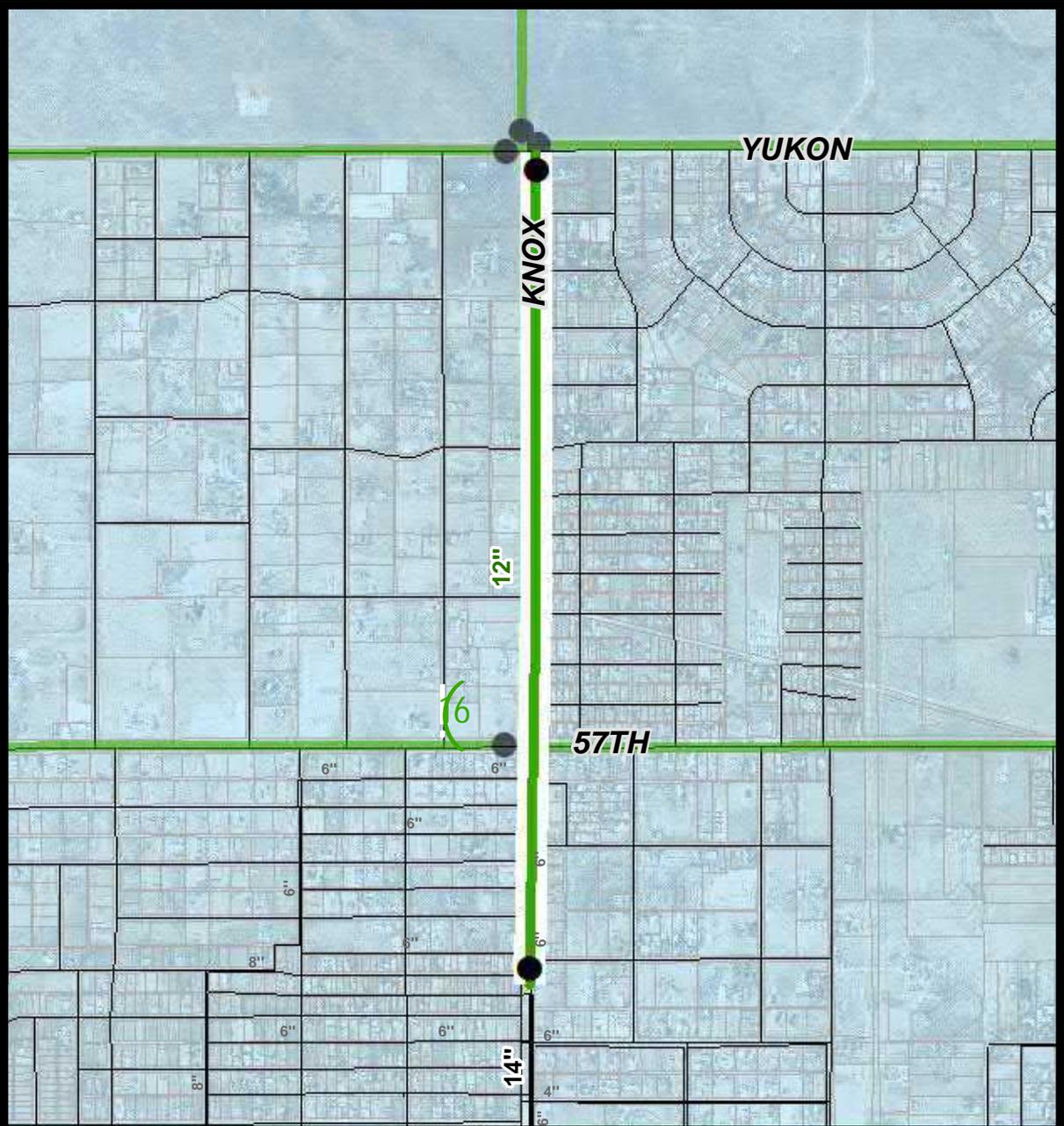
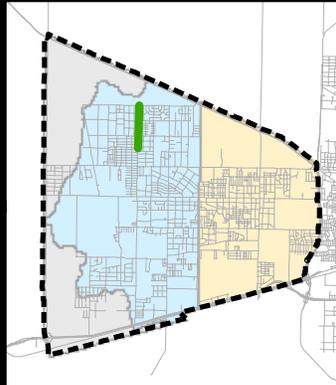
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1 inch = 1,500 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 7,420 LF of 16" water line beginning with a connection to the existing 14" water line near the Knox Avenue/April Street intersection continuing along Knox Avenue to Yukon Road.

**Recommendation Comments:** Future Development Driven. Is required if existing or new development along Knox Avenue north of 57th Street desires ECUD water.

**Pressure Plane:** West  
**Capital Cost:** \$1,300,000

**Project Name:** Knox Avenue 12-inch Water Line Phase 1 (North)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                                  |
|------------------------------------------------------------------|
| <b>Title: 16. Knox Avenue 12-inch Water Line Phase 1 (North)</b> |
|------------------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$9,000     | \$9,000   |
| 2        | Traffic Control                | 1        | LS   | \$17,000    | \$17,000  |
| 3        | Erosion Control                | 1        | LS   | \$17,000    | \$17,000  |
| 4        | 12" Water Pipe                 | 7,420    | LF   | \$85.00     | \$631,000 |
| 5        | 24" Bore with Steel Casing     | 100      | LF   | \$500.00    | \$50,000  |
| 6        | Water Line Trench Safety       | 7,420    | LF   | \$2.00      | \$15,000  |
| 7        | 12" AWWA Gate Valve            | 5        | EA   | \$5,000.00  | \$25,000  |
| 8        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 9        | Fire Hydrant Assembly          | 15       | EA   | \$5,000.00  | \$75,000  |
| 10       | Ductile Iron Fittings          | 7        | TON  | \$5,000.00  | \$38,000  |
| 11       | Allowance                      | 1        | LS   | \$18,000.00 | \$18,000  |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| Subtotal:                     |    | \$905,000          |
| Conting. (%,+/-)              | 20 | \$181,125          |
| Professional Services (%,+/-) | 15 | \$135,875          |
| <b>Total:</b>                 |    | <b>\$1,300,000</b> |

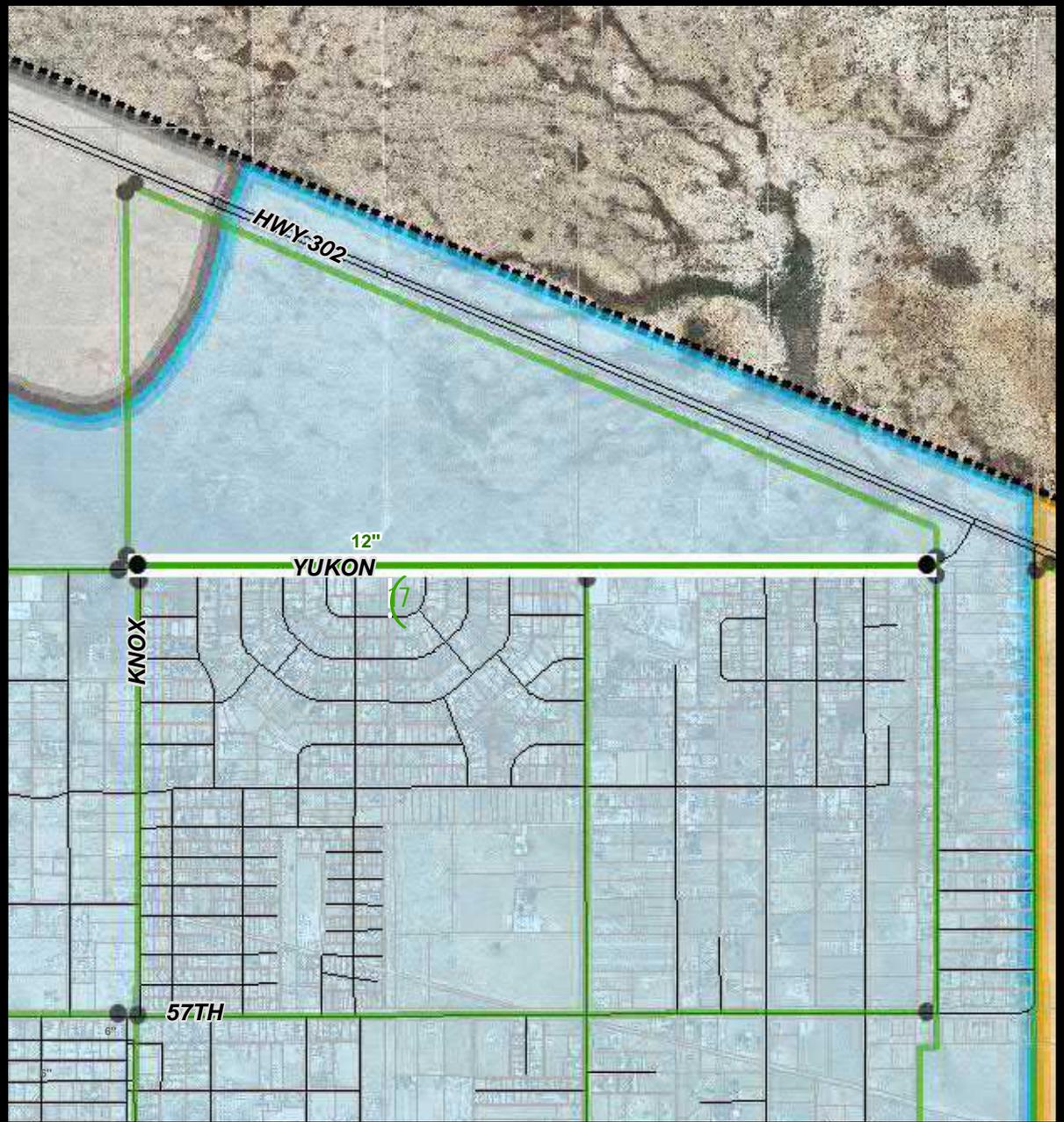
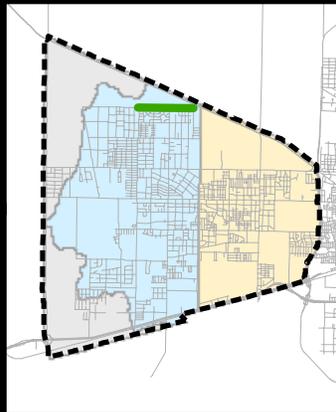
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1 inch = 2,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 9,640 LF of 12" water line along Yukon Road from Knox Avenue to Greenway Avenue.

**Recommendation Comments:** Future Development Driven. This is a continuation of project #16. Is required if existing or new development along Yukon Road south Knox Avenue desires ECUD water.

**Pressure Plane:** West  
**Capital Cost:** \$1,600,000

**Project Name:** Yukon Road 12-inch Water Line Phase 1

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                         |
|---------------------------------------------------------|
| <b>Title: 17. Yukon Road 12-inch Water Line Phase 1</b> |
|---------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$11,000    | \$11,000  |
| 2        | Traffic Control                | 1        | LS   | \$23,000    | \$23,000  |
| 3        | Erosion Control                | 1        | LS   | \$23,000    | \$23,000  |
| 4        | 12" Water Pipe                 | 9,640    | LF   | \$85.00     | \$820,000 |
| 5        | 24" Bore with Steel Casing     | 150      | LF   | \$500.00    | \$75,000  |
| 6        | Water Line Trench Safety       | 9,640    | LF   | \$2.00      | \$20,000  |
| 7        | 12" AWWA Gate Valve            | 6        | EA   | \$5,000.00  | \$30,000  |
| 8        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 9        | Fire Hydrant Assembly          | 19       | EA   | \$5,000.00  | \$97,000  |
| 10       | Ductile Iron Fittings          | 10       | TON  | \$5,000.00  | \$49,000  |
| 11       | Allowance                      | 1        | LS   | \$24,000.00 | \$24,000  |

**Basis for Cost Projection:**

|                                                                                                                                                 |                                                                                       |                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------|
| <input checked="" type="checkbox"/> No Design Completed<br><input type="checkbox"/> Preliminary Design<br><input type="checkbox"/> Final Design | Subtotal:<br>Conting. (%,+/-) 20<br>Professional Services (%,+/-) 15<br><b>Total:</b> | \$1,182,000<br>\$236,550<br>\$177,450<br><b>\$1,600,000</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------|

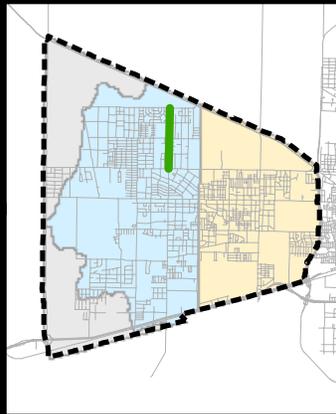
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1 inch = 2,000 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 10,560 LF of 12" water line along Moss Avenue from 42nd Street to Yukon Road.

**Recommendation Comments:** Future Development Driven. Is required if existing or new development along Moss Avenue north of 42nd Street and 57th Street desires ECUD water.

**Pressure Plane:** West  
**Capital Cost:** \$1,700,000

**Project Name:** Moss Avenue 12-inch Water Line

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                  |
|--------------------------------------------------|
| <b>Title: 18. Moss Avenue 12-inch Water Line</b> |
|--------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$12,000    | \$12,000  |
| 2        | Traffic Control                | 1        | LS   | \$24,000    | \$24,000  |
| 3        | Erosion Control                | 1        | LS   | \$24,000    | \$24,000  |
| 4        | 12" Water Pipe                 | 10,560   | LF   | \$85.00     | \$898,000 |
| 5        | 24" Bore with Steel Casing     | 100      | LF   | \$500.00    | \$50,000  |
| 6        | Water Line Trench Safety       | 10,560   | LF   | \$2.00      | \$22,000  |
| 7        | 12" AWWA Gate Valve            | 6        | EA   | \$5,000.00  | \$32,000  |
| 8        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 9        | Fire Hydrant Assembly          | 21       | EA   | \$5,000.00  | \$106,000 |
| 10       | Ductile Iron Fittings          | 11       | TON  | \$5,000.00  | \$53,000  |
| 11       | Allowance                      | 1        | LS   | \$25,000.00 | \$25,000  |

|                                                         |                               |                    |
|---------------------------------------------------------|-------------------------------|--------------------|
| <b>Basis for Cost Projection:</b>                       |                               |                    |
| <input checked="" type="checkbox"/> No Design Completed | Subtotal:                     | \$1,256,000        |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20      \$251,400  |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15      \$188,600  |
|                                                         | <b>Total:</b>                 | <b>\$1,700,000</b> |

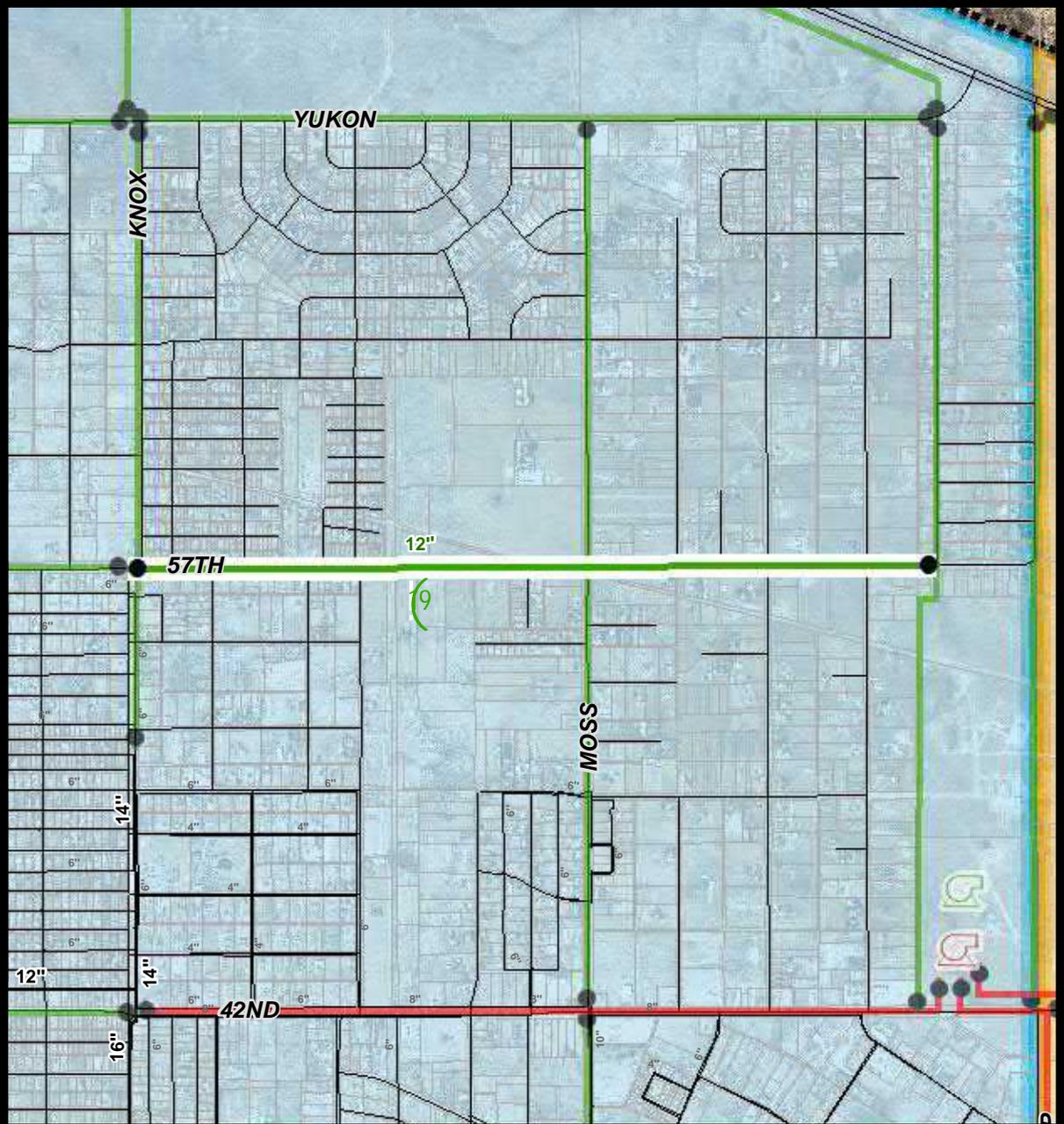
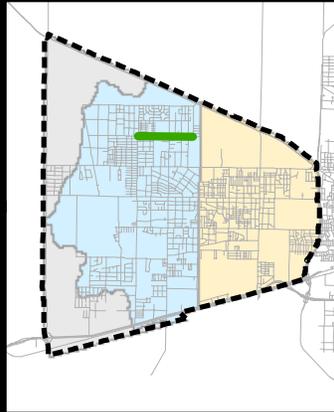
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1 inch = 2,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
 June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 9,650 LF of 12" water line along 57th Street from Knox Avenue to Greenway Avenue.

**Recommendation Comments:** Future Development Driven. This is a continuation of looping of project #16 and #18. Is required if existing or new development along 57th east of Knox Avenue desires ECUD water.

**Pressure Plane:** West  
**Capital Cost:** \$1,600,000

**Project Name:** 57th Street 12-inch Water Line Phase 1

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                              |                         |
|----------------------------------------------|-------------------------|
| <b>Client:</b> Ector County Utility District | <b>Date:</b> 6/18/2018  |
| <b>Project:</b> Water System Master Plan     | <b>Prepared By:</b> AWS |
| <b>KHA No.:</b> 063685005                    | <b>Checked By:</b> JRA  |

|                                                          |
|----------------------------------------------------------|
| <b>Title:</b> 19. 57th Street 12-inch Water Line Phase 1 |
|----------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$11,000    | \$11,000  |
| 2        | Traffic Control                | 1        | LS   | \$22,000    | \$22,000  |
| 3        | Erosion Control                | 1        | LS   | \$22,000    | \$22,000  |
| 4        | 12" Water Pipe                 | 9,650    | LF   | \$85.00     | \$821,000 |
| 5        | 24" Bore with Steel Casing     | 100      | LF   | \$500.00    | \$50,000  |
| 6        | Water Line Trench Safety       | 9,650    | LF   | \$2.00      | \$20,000  |
| 7        | 12" AWWA Gate Valve            | 6        | EA   | \$5,000.00  | \$30,000  |
| 8        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 9        | Fire Hydrant Assembly          | 19       | EA   | \$5,000.00  | \$97,000  |
| 10       | Ductile Iron Fittings          | 10       | TON  | \$5,000.00  | \$49,000  |
| 11       | Allowance                      | 1        | LS   | \$23,000.00 | \$23,000  |

**Basis for Cost Projection:**

|                                                         |                               |                    |
|---------------------------------------------------------|-------------------------------|--------------------|
| <input checked="" type="checkbox"/> No Design Completed | <b>Subtotal:</b>              | \$1,155,000        |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20      \$231,375  |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15      \$173,625  |
|                                                         | <b>Total:</b>                 | <b>\$1,600,000</b> |

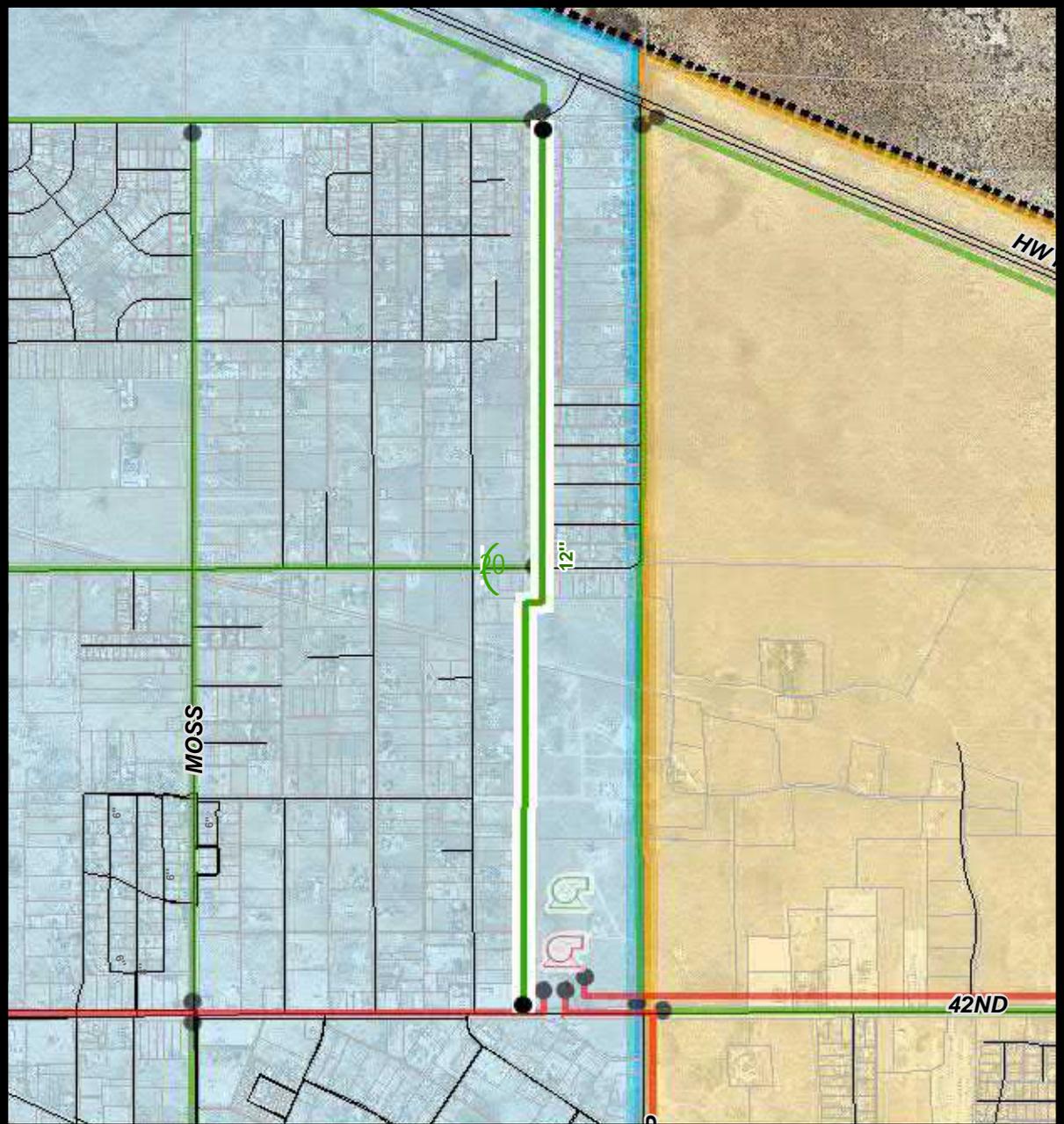
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1 inch = 2,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 10,820 LF of 12" water line along Greenway Avenue from 42nd Street to Yukon Road.

**Recommendation Comments:** Future Development Driven. This project closes the transmission loop from project #17 and #19. Is required if existing development along Greenway Avenue desire ECUD water.

**Pressure Plane:** West  
**Capital Cost:** \$1,700,000

**Project Name:** Greenway Avenue 12-inch Water Line

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                      |
|------------------------------------------------------|
| <b>Title: 20. Greenway Avenue 12-inch Water Line</b> |
|------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$12,000    | \$12,000  |
| 2        | Traffic Control                | 1        | LS   | \$23,000    | \$23,000  |
| 3        | Erosion Control                | 1        | LS   | \$23,000    | \$23,000  |
| 4        | 12" Water Pipe                 | 10,820   | LF   | \$85.00     | \$920,000 |
| 5        | Water Line Trench Safety       | 10,820   | LF   | \$2.00      | \$22,000  |
| 6        | 12" AWWA Gate Valve            | 6        | EA   | \$5,000.00  | \$32,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 22       | EA   | \$5,000.00  | \$109,000 |
| 9        | Ductile Iron Fittings          | 11       | TON  | \$5,000.00  | \$55,000  |
| 10       | Allowance                      | 1        | LS   | \$25,000.00 | \$25,000  |

|                                                         |                               |                    |
|---------------------------------------------------------|-------------------------------|--------------------|
| <b>Basis for Cost Projection:</b>                       |                               |                    |
| <input checked="" type="checkbox"/> No Design Completed | Subtotal:                     | \$1,231,000        |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20      \$246,275  |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15      \$184,725  |
|                                                         | <b>Total:</b>                 | <b>\$1,700,000</b> |

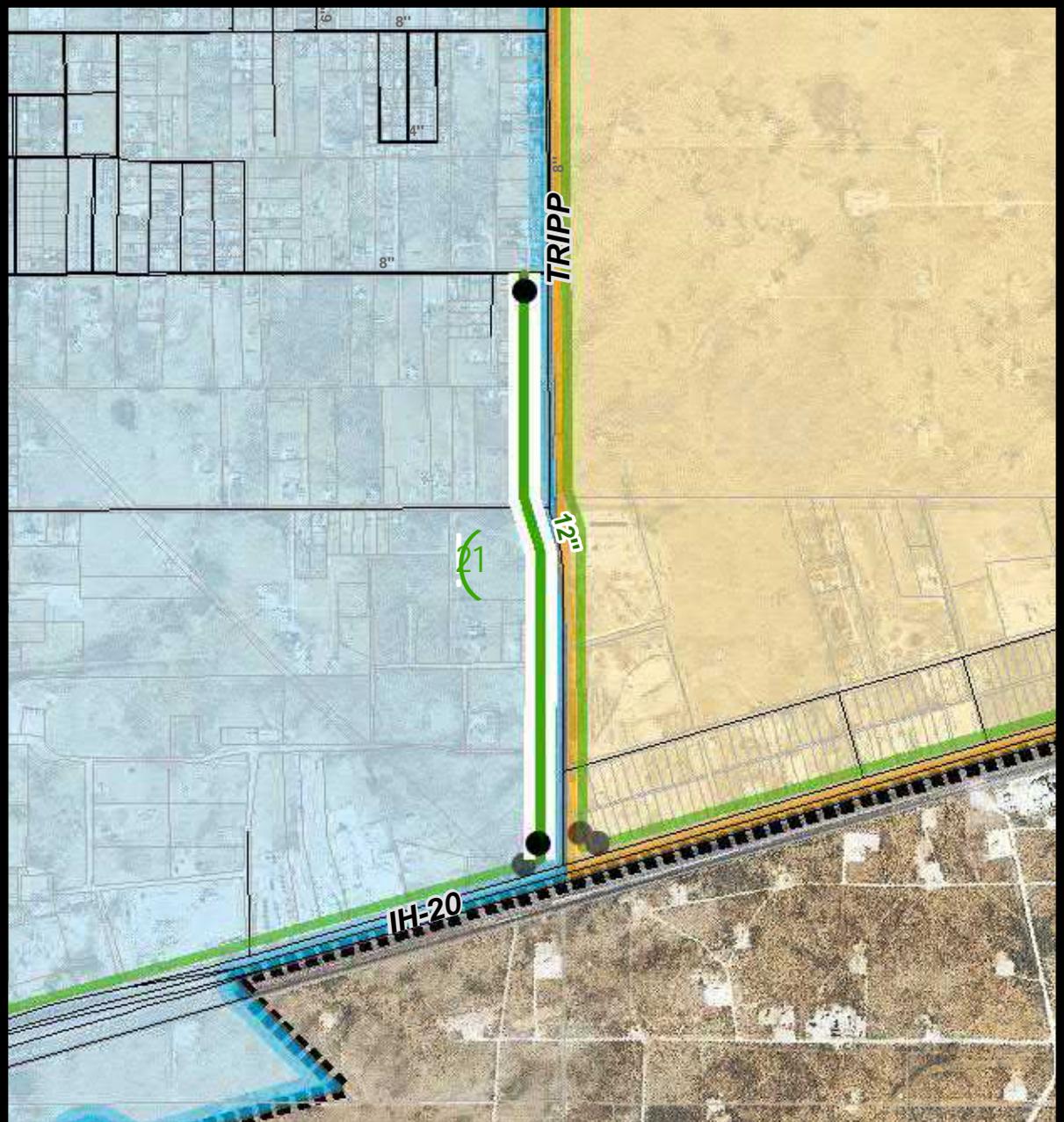
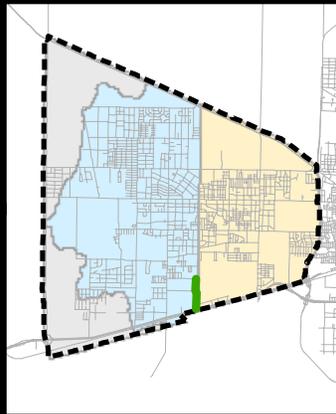
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1 inch = 1,500 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 5,250 LF of 12" water line along Tripp Avenue from I-20 to Hutson Road.

**Recommendation Comments:** Future Development Driven. Is required if existing or new development along I-20 west of Tripp Avenue desires ECUD water. This is the first project of two for looping transmission from the Hutson Road and Tripp Avenue intersection to the 12" near the Moss Avenue and I-20 intersection.

**Pressure Plane:** West

**Capital Cost:** \$1,100,000

**Project Name:** Tripp Avenue 12-inch Water Line (West Pressure Plane)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                                         |
|-------------------------------------------------------------------------|
| <b>Title: 21. Tripp Avenue 12-inch Water Line (West Pressure Plane)</b> |
|-------------------------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$13,000    | \$13,000  |
| 2        | Traffic Control                | 1        | LS   | \$15,000    | \$15,000  |
| 3        | Erosion Control                | 1        | LS   | \$15,000    | \$15,000  |
| 4        | 12" Water Pipe                 | 5,250    | LF   | \$85.00     | \$447,000 |
| 5        | Water Line Trench Safety       | 5,250    | LF   | \$2.00      | \$11,000  |
| 6        | 12" AWWA Gate Valve            | 4        | EA   | \$5,000.00  | \$21,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 11       | EA   | \$5,000.00  | \$53,000  |
| 9        | Ductile Iron Fittings          | 5        | TON  | \$5,000.00  | \$27,000  |
| 10       | Asphalt Pavement Repair        | 2,200    | SY   | \$60.00     | \$132,000 |
| 11       | Allowance                      | 1        | LS   | \$15,000.00 | \$15,000  |

|                                                         |                               |                    |
|---------------------------------------------------------|-------------------------------|--------------------|
| <b>Basis for Cost Projection:</b>                       |                               |                    |
| <input checked="" type="checkbox"/> No Design Completed | Subtotal:                     | \$759,000          |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20      \$151,975  |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15      \$114,025  |
|                                                         | <b>Total:</b>                 | <b>\$1,100,000</b> |

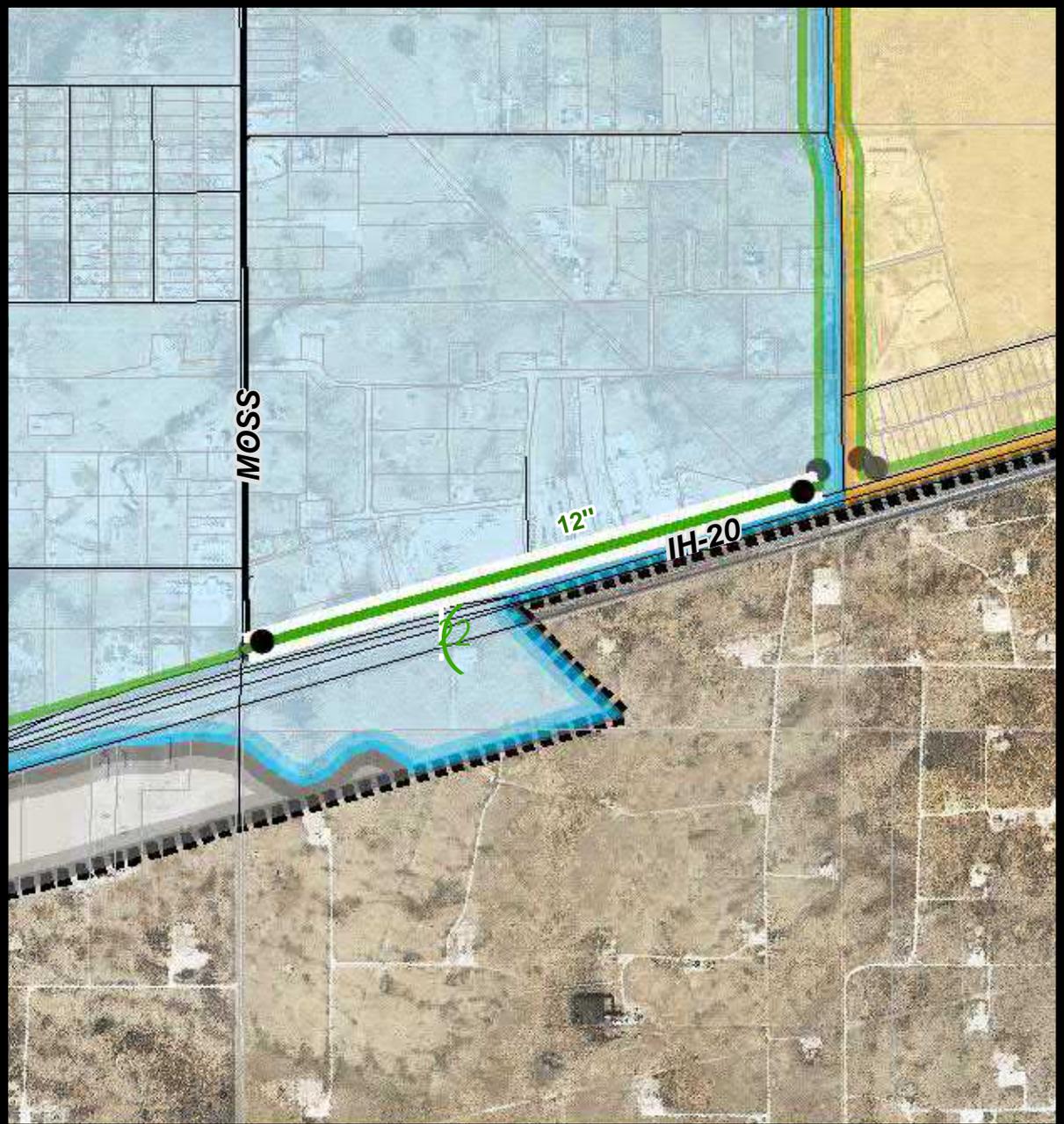
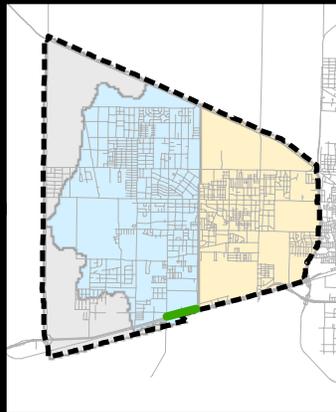
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1 inch = 1,500 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**

**June 2018**

**Phase:** Future Development

**Project Description:** This project consists of approximately 5,320 LF of 12-inch water line along I-20 from Tripp Avenue to Moss Avenue.

**Recommendation Comments:** Future Development Driven. Is required if existing or new development along I-20 west of Tripp Avenue desires ECUD water. This is the second project of two for looping transmission from the Hutson Road and Tripp Avenue intersection to the 12" near the Moss Avenue and I-20 intersection.

**Pressure Plane:** West

**Capital Cost:** \$900,000

**Project Name:** I-20 12-inch Water Line Phase 1 (West Pressure Plane)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                                         |
|-------------------------------------------------------------------------|
| <b>Title: 22. I-20 12-inch Water Line Phase 1 (West Pressure Plane)</b> |
|-------------------------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$7,000     | \$7,000   |
| 2        | Traffic Control                | 1        | LS   | \$12,000    | \$12,000  |
| 3        | Erosion Control                | 1        | LS   | \$12,000    | \$12,000  |
| 4        | 12" Water Pipe                 | 5,320    | LF   | \$85.00     | \$453,000 |
| 5        | Water Line Trench Safety       | 5,320    | LF   | \$2.00      | \$11,000  |
| 6        | 12" AWWA Gate Valve            | 4        | EA   | \$5,000.00  | \$21,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 11       | EA   | \$5,000.00  | \$54,000  |
| 9        | Ductile Iron Fittings          | 5        | TON  | \$5,000.00  | \$27,000  |
| 10       | Allowance                      | 1        | LS   | \$13,000.00 | \$13,000  |

|                                                         |                               |                   |
|---------------------------------------------------------|-------------------------------|-------------------|
| <b>Basis for Cost Projection:</b>                       |                               |                   |
| <input checked="" type="checkbox"/> No Design Completed | Subtotal:                     | \$620,000         |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20      \$124,000 |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15      \$93,000  |
|                                                         | <b>Total:</b>                 | <b>\$900,000</b>  |

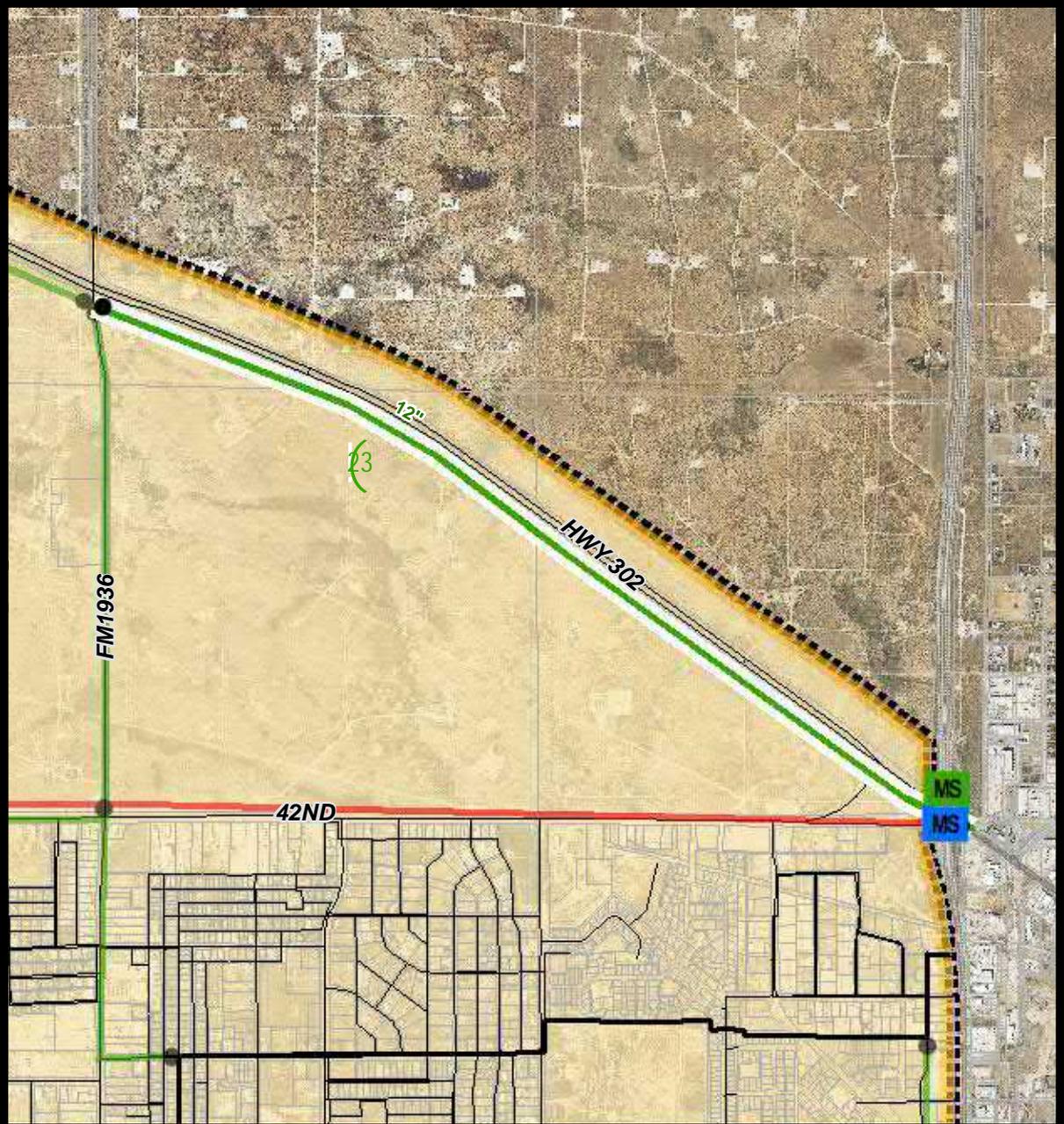
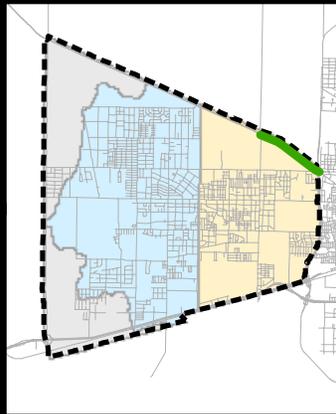
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1 inch = 2,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**

**June 2018**

**Phase:** Future Development

**Project Description:** This project consists of approximately 12,260 LF of 12" water line along Highway 302 from Loop 338 to FM 1936.

**Recommendation Comments:** Future Development Driven. Is required for new development along Highway 302 between Loop 338 and FM 1936. This is the first project of two for looping transmission from Loop 338 along Highway 302 to the FM 1936 and 42nd Street intersection.

**Pressure Plane:** East

**Capital Cost:** \$2,500,000

**Project Name:** Highway 302 12-inch Water Line Phase 1

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                                                                                                       |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Client:</b> Ector County Utility District<br><b>Project:</b> Water System Master Plan<br><b>KHA No.:</b> 063685005 | <b>Date:</b> 6/18/2018<br><b>Prepared By:</b> AWS<br><b>Checked By:</b> JRA |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

|                                                          |
|----------------------------------------------------------|
| <b>Title: 23. Highway 302 12-inch Water Line Phase 1</b> |
|----------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost   |
|----------|--------------------------------|----------|------|-------------|-------------|
| 1        | Mobilization                   | 1        | LS   | \$15,000    | \$15,000    |
| 2        | Traffic Control                | 1        | LS   | \$35,000    | \$35,000    |
| 3        | Erosion Control                | 1        | LS   | \$35,000    | \$35,000    |
| 4        | 12" Water Pipe                 | 12,260   | LF   | \$85.00     | \$1,043,000 |
| 5        | 24" Bore with Steel Casing     | 750      | LF   | \$500.00    | \$375,000   |
| 6        | Water Line Trench Safety       | 12,260   | LF   | \$2.00      | \$25,000    |
| 7        | 16" AWWA Gate Valve            | 7        | EA   | \$10,000.00 | \$70,000    |
| 8        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000    |
| 9        | Fire Hydrant Assembly          | 25       | EA   | \$5,000.00  | \$123,000   |
| 10       | Ductile Iron Fittings          | 12       | TON  | \$5,000.00  | \$62,000    |
| 11       | Allowance                      | 1        | LS   | \$36,000.00 | \$36,000    |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| Subtotal:                     |    | \$1,829,000        |
| Conting. (%,+/-)              | 20 | \$366,225          |
| Professional Services (%,+/-) | 15 | \$274,775          |
| <b>Total:</b>                 |    | <b>\$2,500,000</b> |

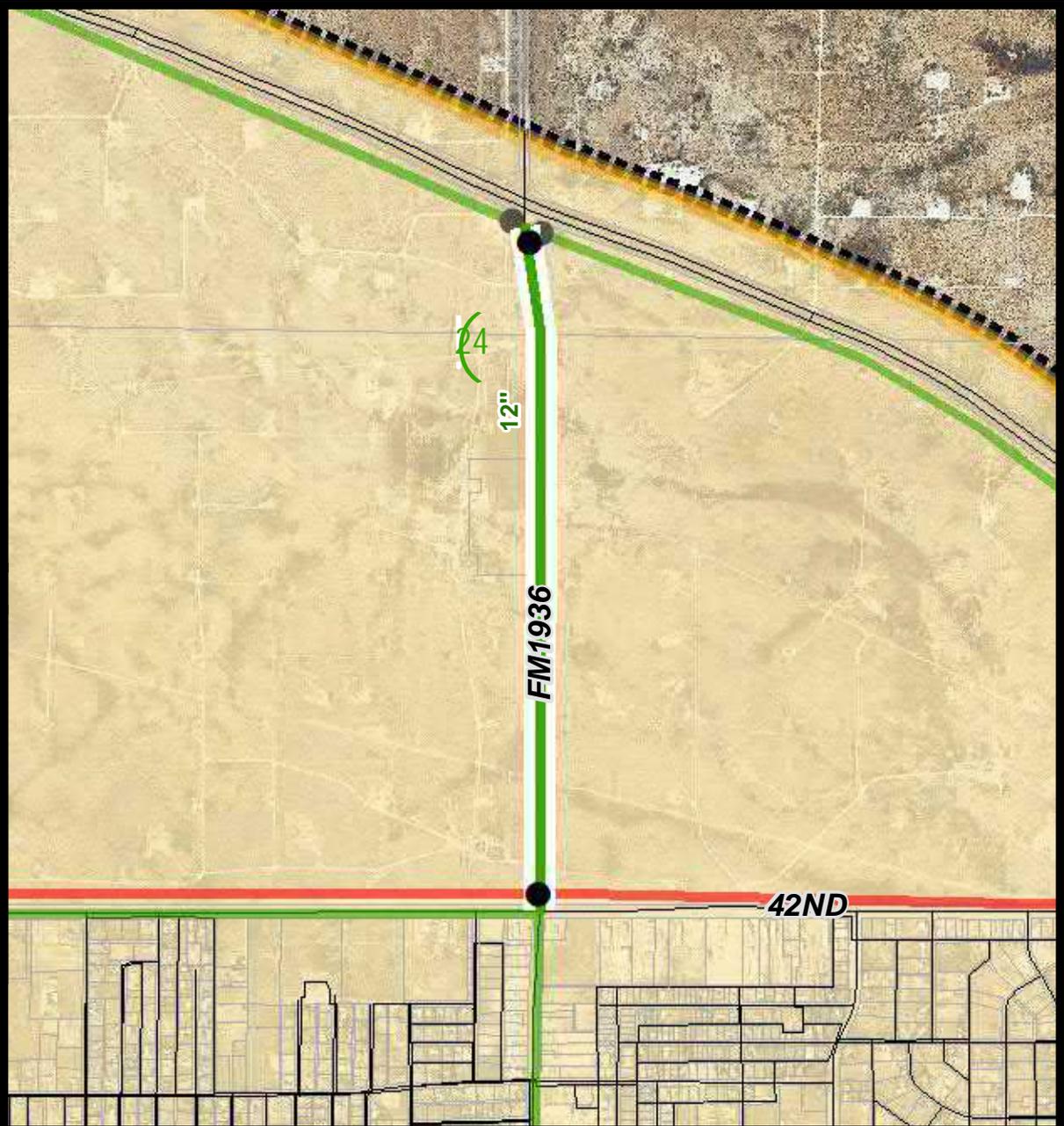
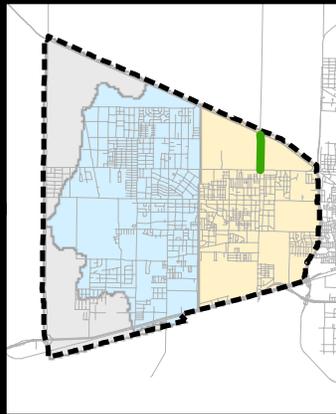
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1 inch = 1,500 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 6,110 LF of 12" water line along FM 1936 from 42nd Street to Highway 302.

**Recommendation Comments:** Future Development Driven. Is required for new development along FM 1936 between 42nd Street and Highway 302. This is the second project of two for looping transmission from Loop 338 along Highway 302 and FM 1936 to the FM 1936 and 42nd Street intersection.

**Pressure Plane:** East  
**Capital Cost:** \$1,100,000

**Project Name:** FM 1936 12-inch Water Line

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                                                                                                       |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Client:</b> Ector County Utility District<br><b>Project:</b> Water System Master Plan<br><b>KHA No.:</b> 063685005 | <b>Date:</b> 6/18/2018<br><b>Prepared By:</b> AWS<br><b>Checked By:</b> JRA |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

|                                              |
|----------------------------------------------|
| <b>Title:</b> 24. FM 1936 12-inch Water Line |
|----------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$11,000    | \$11,000  |
| 2        | Traffic Control                | 1        | LS   | \$15,000    | \$15,000  |
| 3        | Erosion Control                | 1        | LS   | \$15,000    | \$15,000  |
| 4        | 12" Water Pipe                 | 6,110    | LF   | \$85.00     | \$520,000 |
| 5        | Water Line Trench Safety       | 6,110    | LF   | \$2.00      | \$13,000  |
| 6        | 12" AWWA Gate Valve            | 4        | EA   | \$5,000.00  | \$23,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 12       | EA   | \$5,000.00  | \$62,000  |
| 9        | Ductile Iron Fittings          | 6        | TON  | \$5,000.00  | \$31,000  |
| 10       | Asphalt Pavement Repair        | 1,100    | SY   | \$60.00     | \$66,000  |
| 11       | Allowance                      | 1        | LS   | \$16,000.00 | \$16,000  |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| Subtotal:                     |    | \$782,000          |
| Conting. (%,+/-)              | 20 | \$156,550          |
| Professional Services (%,+/-) | 15 | \$117,450          |
| <b>Total:</b>                 |    | <b>\$1,100,000</b> |

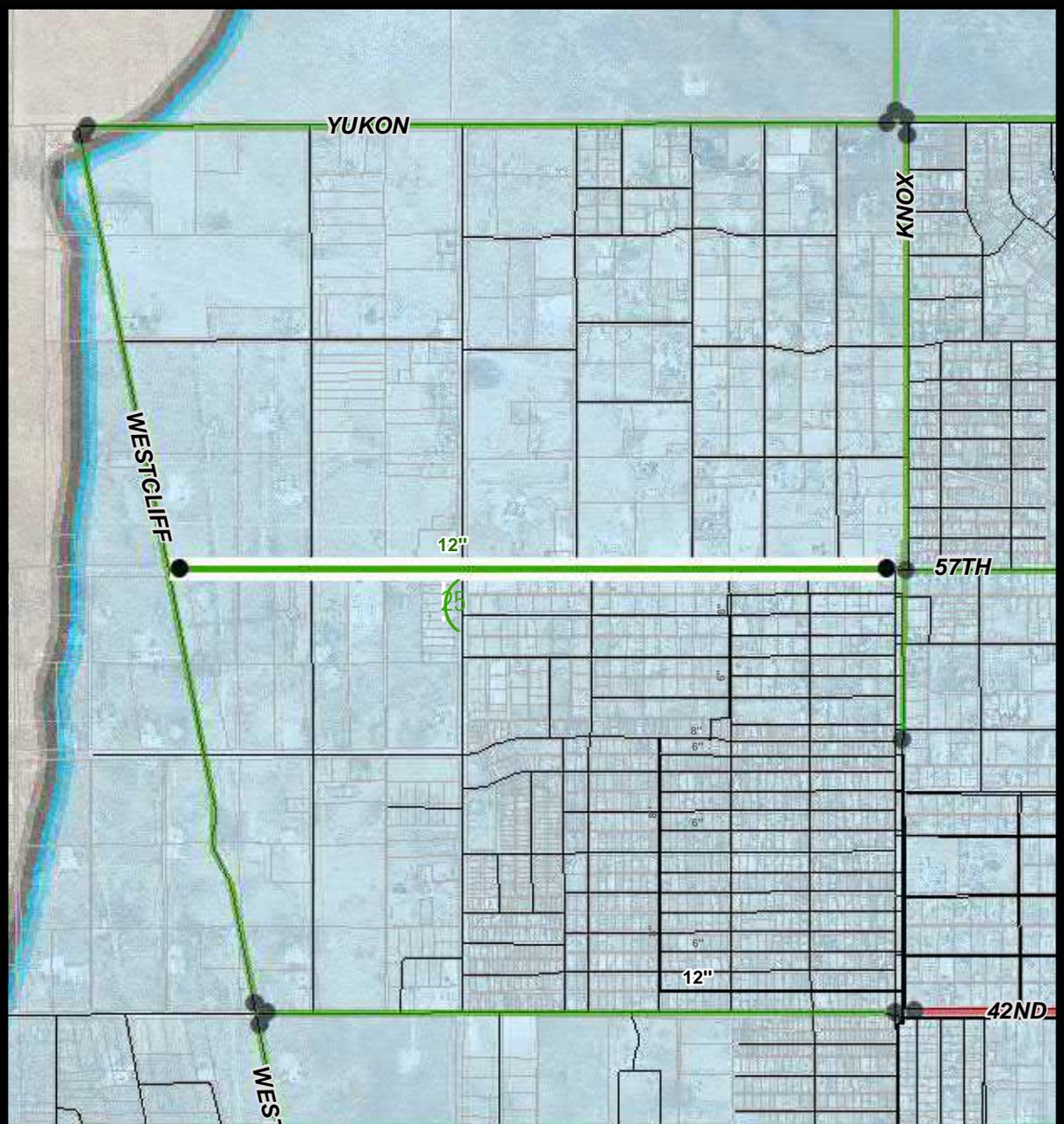
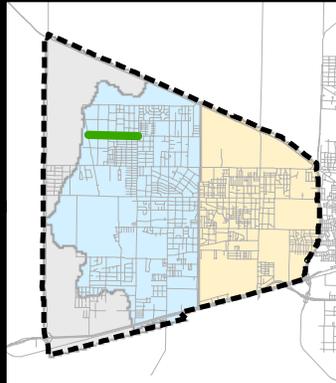
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1 inch = 2,000 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 8,650 LF of 12" water line along 57th Street from Knox Avenue to Westcliff Road.

**Recommendation Comments:** Future Development Driven. Is required if existing or new development along 57th Street west of Knox Avenue desires ECUD water.

**Pressure Plane:** West  
**Capital Cost:** \$1,400,000

**Project Name:** 57th Street 12-inch Water Line Phase 2

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                                                                                                       |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Client:</b> Ector County Utility District<br><b>Project:</b> Water System Master Plan<br><b>KHA No.:</b> 063685005 | <b>Date:</b> 6/18/2018<br><b>Prepared By:</b> AWS<br><b>Checked By:</b> JRA |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

**Title: 25. 57th Street 12-inch Water Line Phase 2**

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$10,000    | \$10,000  |
| 2        | Traffic Control                | 1        | LS   | \$19,000    | \$19,000  |
| 3        | Erosion Control                | 1        | LS   | \$19,000    | \$19,000  |
| 4        | 12" Water Pipe                 | 8,650    | LF   | \$85.00     | \$736,000 |
| 5        | Water Line Trench Safety       | 8,650    | LF   | \$2.00      | \$18,000  |
| 6        | 12" AWWA Gate Valve            | 5        | EA   | \$5,000.00  | \$28,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 17       | EA   | \$5,000.00  | \$87,000  |
| 9        | Ductile Iron Fittings          | 9        | TON  | \$5,000.00  | \$44,000  |
| 10       | Allowance                      | 1        | LS   | \$20,000.00 | \$20,000  |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| Subtotal:                     |    | \$991,000          |
| Conting. (%,+/-)              | 20 | \$198,275          |
| Professional Services (%,+/-) | 15 | \$148,725          |
| <b>Total:</b>                 |    | <b>\$1,400,000</b> |

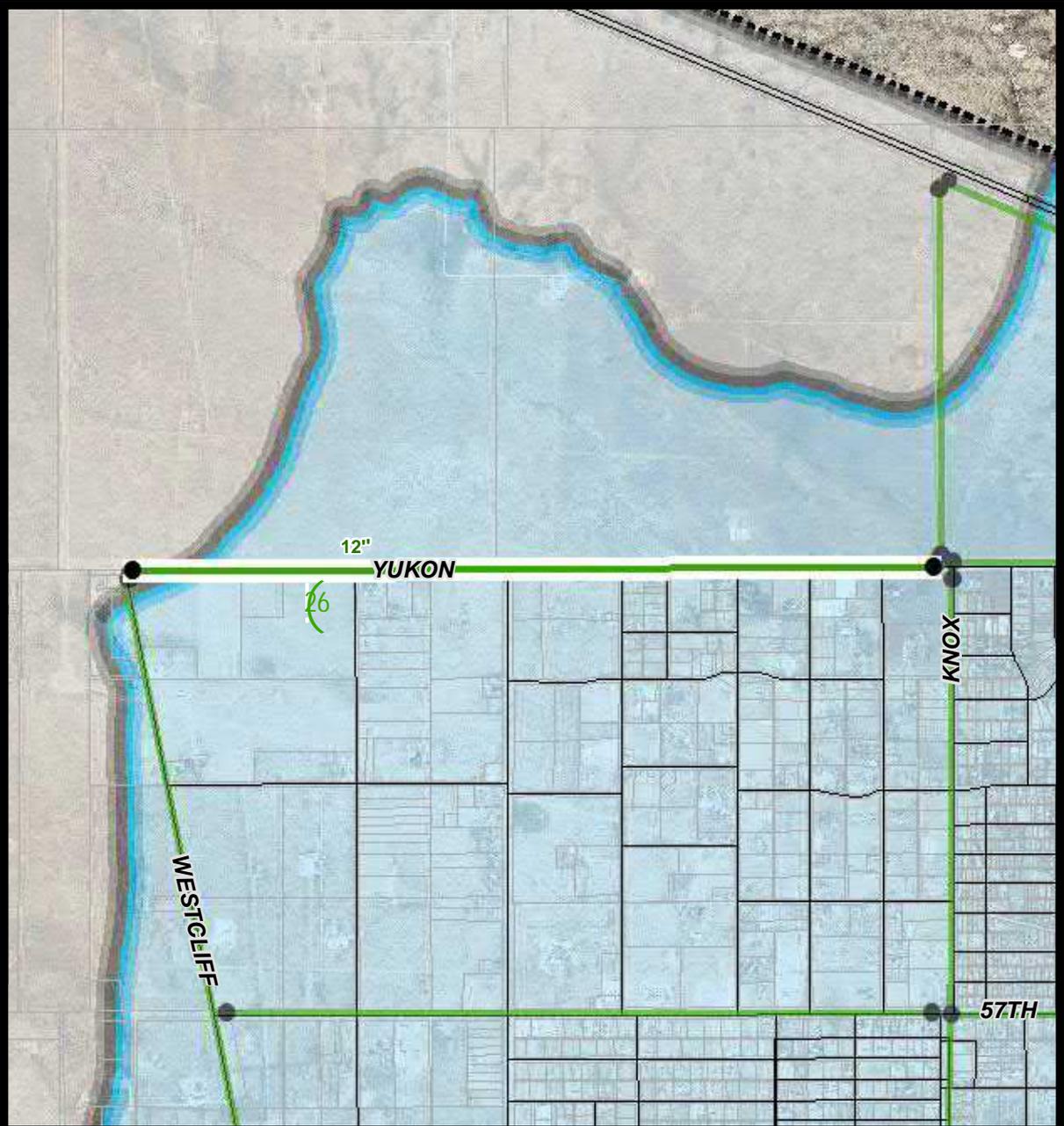
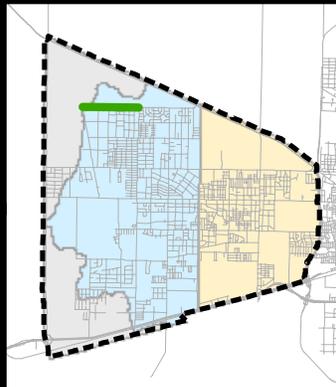
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1 inch = 2,000 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 9,760 LF of 12" water line along Yukon Road from Knox Avenue to Westcliff Road.

**Recommendation Comments:** Future Development Driven. Is required if existing or new development along Yukon Road west of Knox Avenue desires ECUD water.

**Pressure Plane:** West  
**Capital Cost:** \$1,600,000

**Project Name:** Yukon Road 12-inch Water Line Phase 2

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                                                                                                       |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Client:</b> Ector County Utility District<br><b>Project:</b> Water System Master Plan<br><b>KHA No.:</b> 063685005 | <b>Date:</b> 6/18/2018<br><b>Prepared By:</b> AWS<br><b>Checked By:</b> JRA |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

|                                                         |
|---------------------------------------------------------|
| <b>Title:</b> 26. Yukon Road 12-inch Water Line Phase 2 |
|---------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$11,000    | \$11,000  |
| 2        | Traffic Control                | 1        | LS   | \$21,000    | \$21,000  |
| 3        | Erosion Control                | 1        | LS   | \$21,000    | \$21,000  |
| 4        | 12" Water Pipe                 | 9,760    | LF   | \$85.00     | \$830,000 |
| 5        | Water Line Trench Safety       | 9,760    | LF   | \$2.00      | \$20,000  |
| 6        | 12" AWWA Gate Valve            | 6        | EA   | \$5,000.00  | \$30,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 20       | EA   | \$5,000.00  | \$98,000  |
| 9        | Ductile Iron Fittings          | 10       | TON  | \$5,000.00  | \$49,000  |
| 10       | Allowance                      | 1        | LS   | \$22,000.00 | \$22,000  |

|                                                         |                               |                    |
|---------------------------------------------------------|-------------------------------|--------------------|
| <b>Basis for Cost Projection:</b>                       |                               |                    |
| <input checked="" type="checkbox"/> No Design Completed | Subtotal:                     | \$1,112,000        |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20      \$222,800  |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15      \$167,200  |
|                                                         | <b>Total:</b>                 | <b>\$1,600,000</b> |

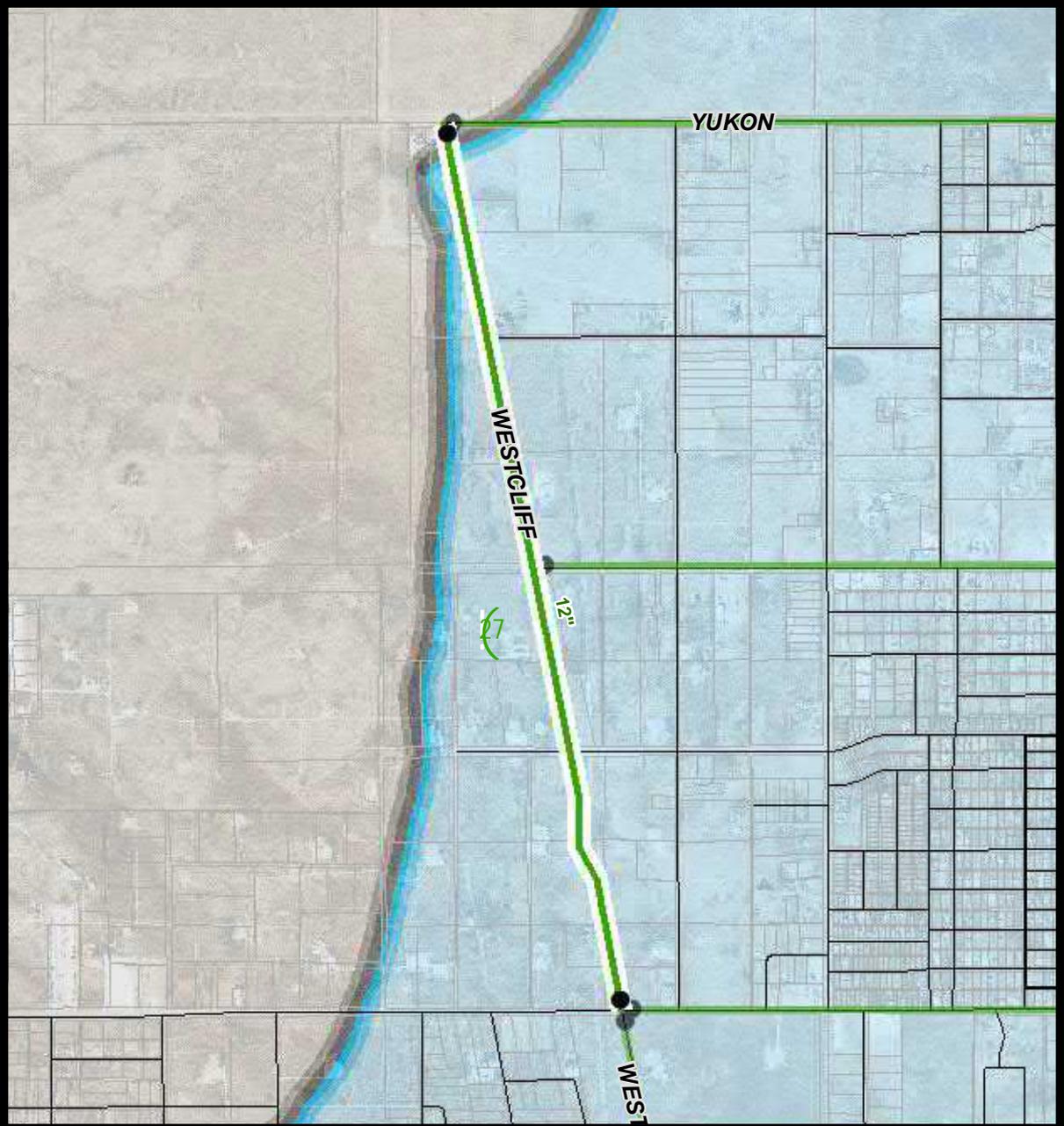
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1 inch = 2,000 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**

**June 2018**

**Phase:** Future Development

**Project Description:** This project consists of approximately 10,780 LF of 12" water line along Westcliff Road from 42nd Street to Yukon Road.

**Recommendation Comments:** Future Development Driven. Is required if existing or new development along Westcliff Road north of 42nd Street desires ECUD water.

**Pressure Plane:** West

**Capital Cost:** \$1,700,000

**Project Name:** Westcliff Road 12-inch Water Line (North)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                             |
|-------------------------------------------------------------|
| <b>Title: 27. Westcliff Road 12-inch Water Line (North)</b> |
|-------------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$12,000    | \$12,000  |
| 2        | Traffic Control                | 1        | LS   | \$24,000    | \$24,000  |
| 3        | Erosion Control                | 1        | LS   | \$24,000    | \$24,000  |
| 4        | 12" Water Pipe                 | 10,780   | LF   | \$85.00     | \$917,000 |
| 5        | Water Line Trench Safety       | 10,780   | LF   | \$2.00      | \$22,000  |
| 6        | 12" AWWA Gate Valve            | 7        | EA   | \$5,000.00  | \$37,000  |
| 7        | Connect to Existing Water Line | 3        | EA   | \$5,000.00  | \$15,000  |
| 8        | Fire Hydrant Assembly          | 22       | EA   | \$5,000.00  | \$108,000 |
| 9        | Ductile Iron Fittings          | 11       | TON  | \$5,000.00  | \$54,000  |
| 10       | Allowance                      | 1        | LS   | \$25,000.00 | \$25,000  |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| Subtotal:                     |    | \$1,238,000        |
| Conting. (%,+/-)              | 20 | \$247,950          |
| Professional Services (%,+/-) | 15 | \$186,050          |
| <b>Total:</b>                 |    | <b>\$1,700,000</b> |

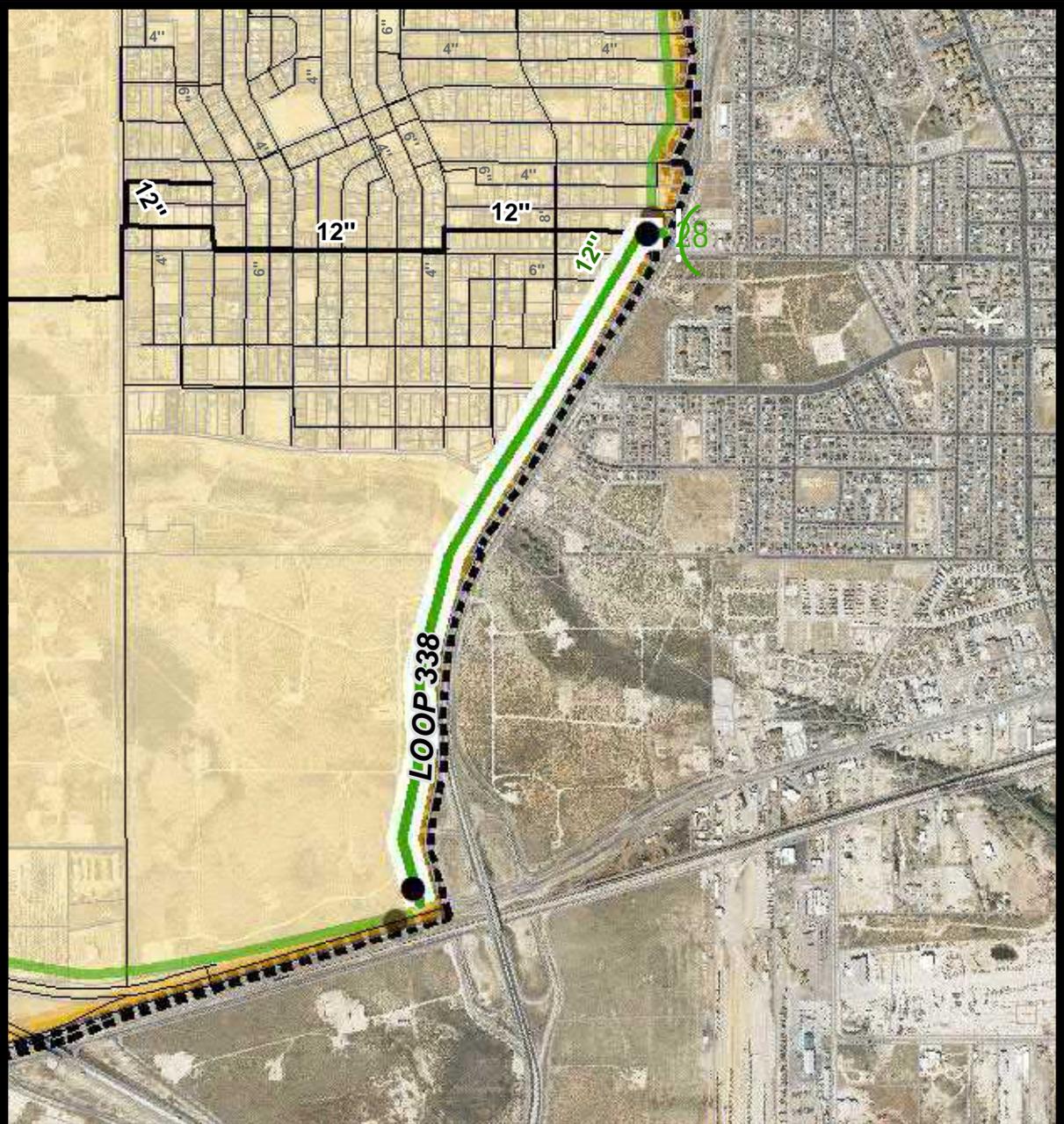
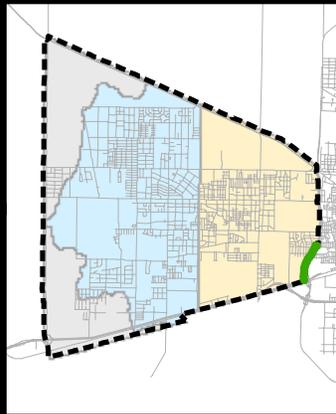
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1 inch = 1,500 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 6,740 LF of 12" water line along Loop 338 from I-20, north along Loop 338 to a connection to the existing 12" water line north of the Loop 338/10th Street intersection.

**Recommendation Comments:** Future Development Driven. Is required for new development along the west side of Loop 338 south of 10th Street. This is the first project of two for looping transmission from 10th Street along Loop 338 to I-20.

**Pressure Plane:** East  
**Capital Cost:** \$1,400,000

**Project Name:** Loop 338 12-inch Water Line (South)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                       |
|-------------------------------------------------------|
| <b>Title: 28. Loop 338 12-inch Water Line (South)</b> |
|-------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$9,000     | \$9,000   |
| 2        | Traffic Control                | 1        | LS   | \$19,000    | \$19,000  |
| 3        | Erosion Control                | 1        | LS   | \$19,000    | \$19,000  |
| 4        | 12" Water Pipe                 | 6,740    | LF   | \$85.00     | \$573,000 |
| 5        | 24" Bore with Steel Casing     | 400      | LF   | \$500.00    | \$200,000 |
| 6        | Water Line Trench Safety       | 6,740    | LF   | \$2.00      | \$14,000  |
| 7        | 12" AWWA Gate Valve            | 7        | EA   | \$5,000.00  | \$34,000  |
| 8        | Connect to Existing Water Line | 4        | EA   | \$5,000.00  | \$20,000  |
| 9        | Fire Hydrant Assembly          | 13       | EA   | \$5,000.00  | \$68,000  |
| 10       | Ductile Iron Fittings          | 7        | TON  | \$5,000.00  | \$34,000  |
| 11       | Allowance                      | 1        | LS   | \$20,000.00 | \$20,000  |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| Subtotal:                     |    | \$1,010,000        |
| Conting. (%,+/-)              | 20 | \$202,250          |
| Professional Services (%,+/-) | 15 | \$151,750          |
| <b>Total:</b>                 |    | <b>\$1,400,000</b> |

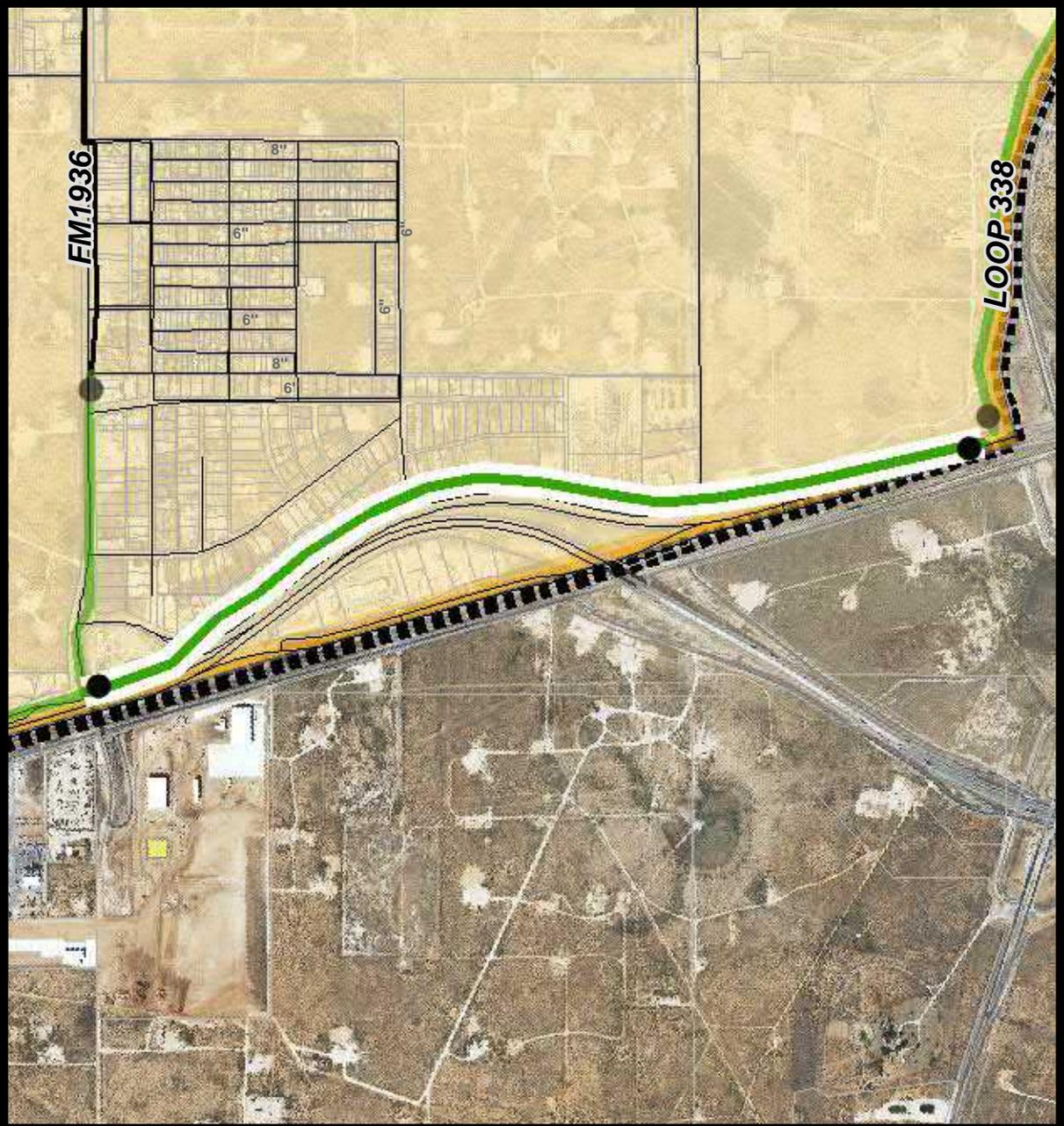
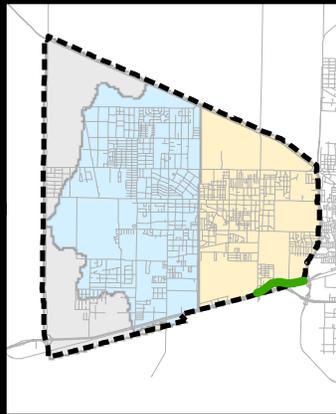
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1 inch = 1,500 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 8,670 LF of 12" water line along I-20 from FM 1936 to Loop 338.

**Recommendation Comments:** Future Development Driven. Is required for existing and new development along the north side of I-20 between Loop 338 and FM 1936. This is the second project of two for looping transmission from 10th Street along Loop 338 and I-20 to FM 1936.

**Pressure Plane:** East

**Capital Cost:** \$1,600,000

**Project Name:** I-20 12-inch Water Line (East Pressure Plane)

| Kimley-Horn & Associates, Inc.                                  |                                      | Opinion of Probable Construction Cost |                  |             |                    |           |
|-----------------------------------------------------------------|--------------------------------------|---------------------------------------|------------------|-------------|--------------------|-----------|
| <b>Client:</b>                                                  | <b>Ector County Utility District</b> | <b>Date:</b>                          | <b>6/18/2018</b> |             |                    |           |
| <b>Project:</b>                                                 | <b>Water System Master Plan</b>      | <b>Prepared By:</b>                   | <b>AWS</b>       |             |                    |           |
| <b>KHA No.:</b>                                                 | <b>063685005</b>                     | <b>Checked By:</b>                    | <b>JRA</b>       |             |                    |           |
| <b>Title: 29. I-20 12-inch Water Line (East Pressure Plane)</b> |                                      |                                       |                  |             |                    |           |
| Item No.                                                        | Item Description                     | Quantity                              | Unit             | Unit Price  | Item Cost          |           |
| 1                                                               | Mobilization                         | 1                                     | LS               | \$13,000    | \$13,000           |           |
| 2                                                               | Traffic Control                      | 1                                     | LS               | \$22,000    | \$22,000           |           |
| 3                                                               | Erosion Control                      | 1                                     | LS               | \$22,000    | \$22,000           |           |
| 4                                                               | 12" Water Pipe                       | 8,670                                 | LF               | \$85.00     | \$737,000          |           |
| 5                                                               | 24" Bore with Steel Casing           | 200                                   | LF               | \$500.00    | \$100,000          |           |
| 6                                                               | Water Line Trench Safety             | 8,670                                 | LF               | \$2.00      | \$18,000           |           |
| 7                                                               | 12" AWWA Gate Valve                  | 5                                     | EA               | \$5,000.00  | \$28,000           |           |
| 8                                                               | Connect to Existing Water Line       | 2                                     | EA               | \$5,000.00  | \$10,000           |           |
| 9                                                               | Fire Hydrant Assembly                | 17                                    | EA               | \$5,000.00  | \$87,000           |           |
| 10                                                              | Ductile Iron Fittings                | 9                                     | TON              | \$5,000.00  | \$44,000           |           |
| 11                                                              | Asphalt Pavement Repair              | 900                                   | SY               | \$60.00     | \$54,000           |           |
| 12                                                              | Allowance                            | 1                                     | LS               | \$23,000.00 | \$23,000           |           |
| <b>Basis for Cost Projection:</b>                               |                                      | Subtotal:                             |                  |             | \$1,158,000        |           |
| <input checked="" type="checkbox"/>                             | No Design Completed                  | Conting. (%,+/-)                      |                  |             | 20                 | \$231,950 |
| <input type="checkbox"/>                                        | Preliminary Design                   | Professional Services (%,+/-)         |                  |             | 15                 | \$174,050 |
| <input type="checkbox"/>                                        | Final Design                         | <b>Total:</b>                         |                  |             | <b>\$1,600,000</b> |           |

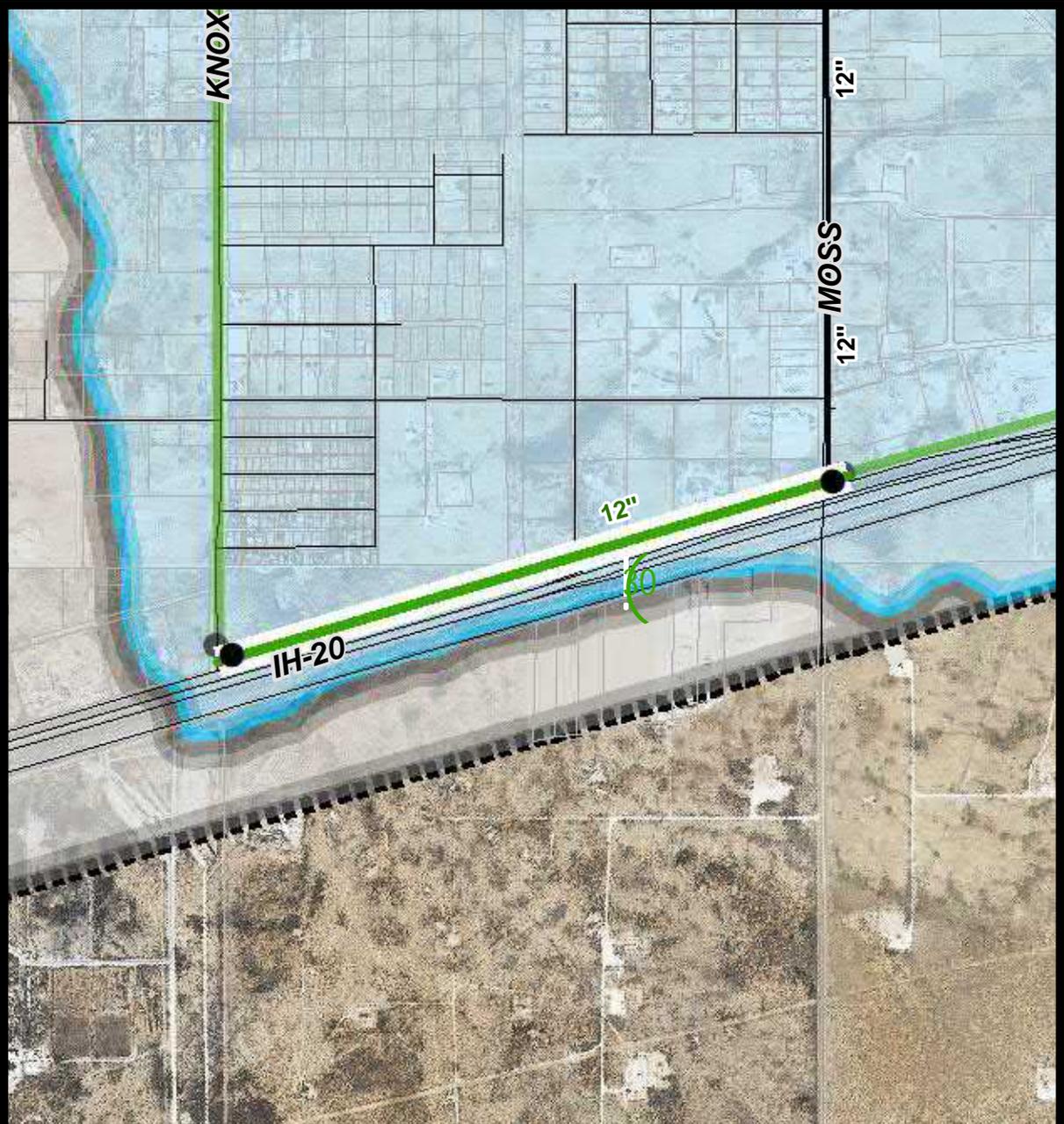
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1 inch = 1,500 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**

**June 2018**

**Phase:** Future Development

**Project Description:** This project consists of approximately 5,880 LF of 12" water line along I-20 from Moss Avenue to Knox Avenue.

**Recommendation Comments:** Future Development Driven. Is required if existing or new development along I-20 between Moss Avenue and Knox Avenue desires ECUD water.

**Pressure Plane:** West

**Capital Cost:** \$1,000,000

**Project Name:** I-20 12-inch Water Line Phase 2 (West Pressure Plane)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                                         |
|-------------------------------------------------------------------------|
| <b>Title: 30. I-20 12-inch Water Line Phase 2 (West Pressure Plane)</b> |
|-------------------------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$7,000     | \$7,000   |
| 2        | Traffic Control                | 1        | LS   | \$14,000    | \$14,000  |
| 3        | Erosion Control                | 1        | LS   | \$14,000    | \$14,000  |
| 4        | 12" Water Pipe                 | 5,880    | LF   | \$85.00     | \$500,000 |
| 5        | 24" Bore with Steel Casing     | 100      | LF   | \$500.00    | \$50,000  |
| 6        | Water Line Trench Safety       | 5,880    | LF   | \$2.00      | \$12,000  |
| 7        | 12" AWWA Gate Valve            | 4        | EA   | \$5,000.00  | \$22,000  |
| 8        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 9        | Fire Hydrant Assembly          | 12       | EA   | \$5,000.00  | \$59,000  |
| 10       | Ductile Iron Fittings          | 6        | TON  | \$5,000.00  | \$30,000  |
| 11       | Allowance                      | 1        | LS   | \$15,000.00 | \$15,000  |

|                                                         |                               |                    |
|---------------------------------------------------------|-------------------------------|--------------------|
| <b>Basis for Cost Projection:</b>                       |                               |                    |
| <input checked="" type="checkbox"/> No Design Completed | Subtotal:                     | \$733,000          |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20      \$146,825  |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15      \$110,175  |
|                                                         | <b>Total:</b>                 | <b>\$1,000,000</b> |

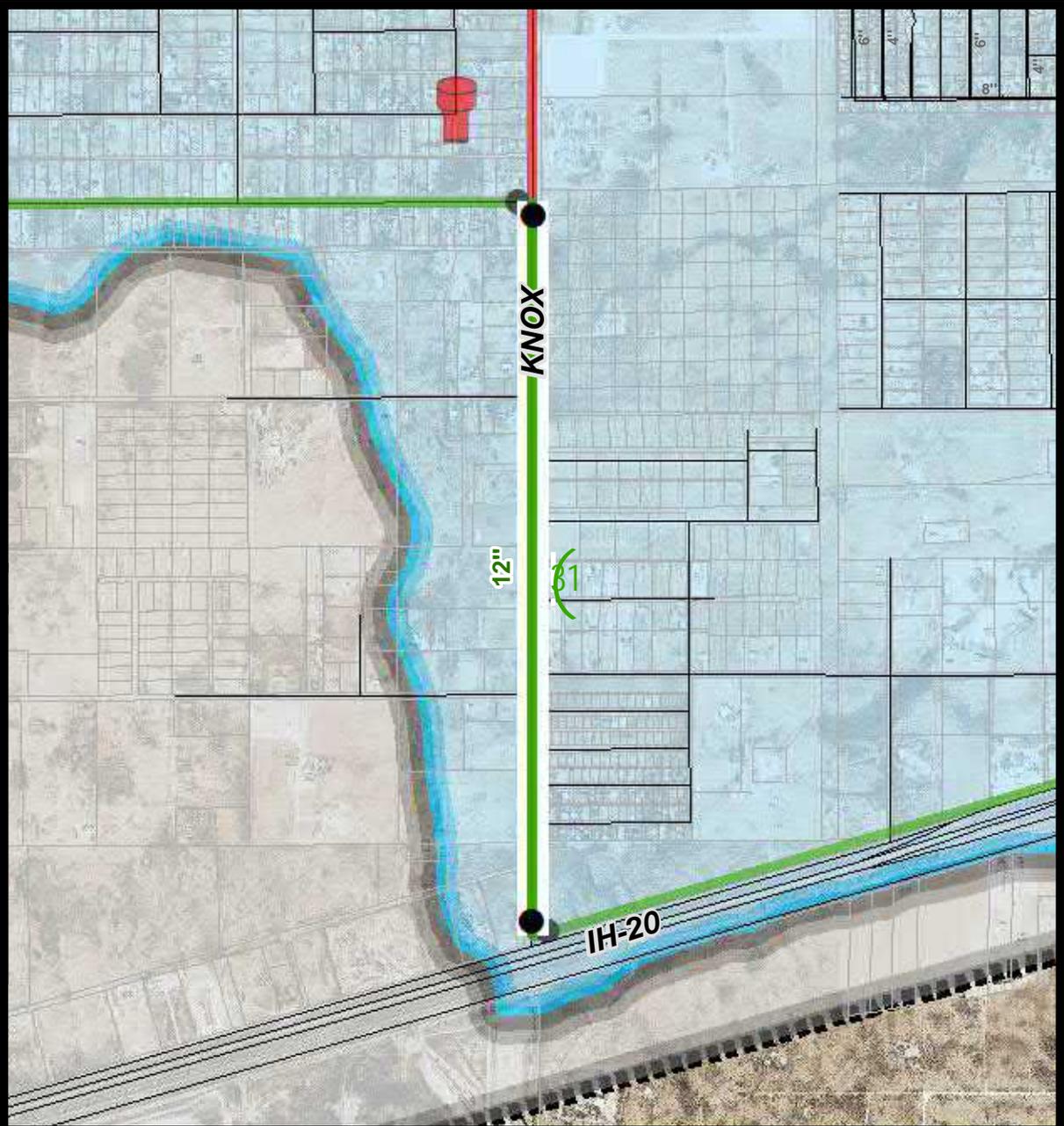
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1 inch = 1,500 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 6,560 LF of 12" water line along Knox Avenue from I-20 to 3rd Street.

**Recommendation Comments:** Future Development Driven. Is required if existing or new development along I-20 between Moss Avenue and Knox Avenue desires ECUD water.

**Pressure Plane:** West

**Capital Cost:** \$1,100,000

**Project Name:** Knox Avenue 12-Inch Water Line (South)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                              |                         |
|----------------------------------------------|-------------------------|
| <b>Client:</b> Ector County Utility District | <b>Date:</b> 6/18/2018  |
| <b>Project:</b> Water System Master Plan     | <b>Prepared By:</b> AWS |
| <b>KHA No.:</b> 063685005                    | <b>Checked By:</b> JRA  |

|                                                          |
|----------------------------------------------------------|
| <b>Title:</b> 31. Knox Avenue 12-Inch Water Line (South) |
|----------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$8,000     | \$8,000   |
| 2        | Traffic Control                | 1        | LS   | \$15,000    | \$15,000  |
| 3        | Erosion Control                | 1        | LS   | \$15,000    | \$15,000  |
| 4        | 12" Water Pipe                 | 6,560    | LF   | \$85.00     | \$558,000 |
| 5        | Water Line Trench Safety       | 6,560    | LF   | \$2.00      | \$14,000  |
| 6        | 12" AWWA Gate Valve            | 5        | EA   | \$5,000.00  | \$24,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 13       | EA   | \$5,000.00  | \$66,000  |
| 9        | Ductile Iron Fittings          | 7        | TON  | \$5,000.00  | \$33,000  |
| 10       | Allowance                      | 1        | LS   | \$15,000.00 | \$15,000  |

|                                                         |                               |    |                    |
|---------------------------------------------------------|-------------------------------|----|--------------------|
| <b>Basis for Cost Projection:</b>                       |                               |    |                    |
| <input checked="" type="checkbox"/> No Design Completed | Subtotal:                     |    | \$758,000          |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20 | \$151,950          |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15 | \$114,050          |
|                                                         | <b>Total:</b>                 |    | <b>\$1,100,000</b> |

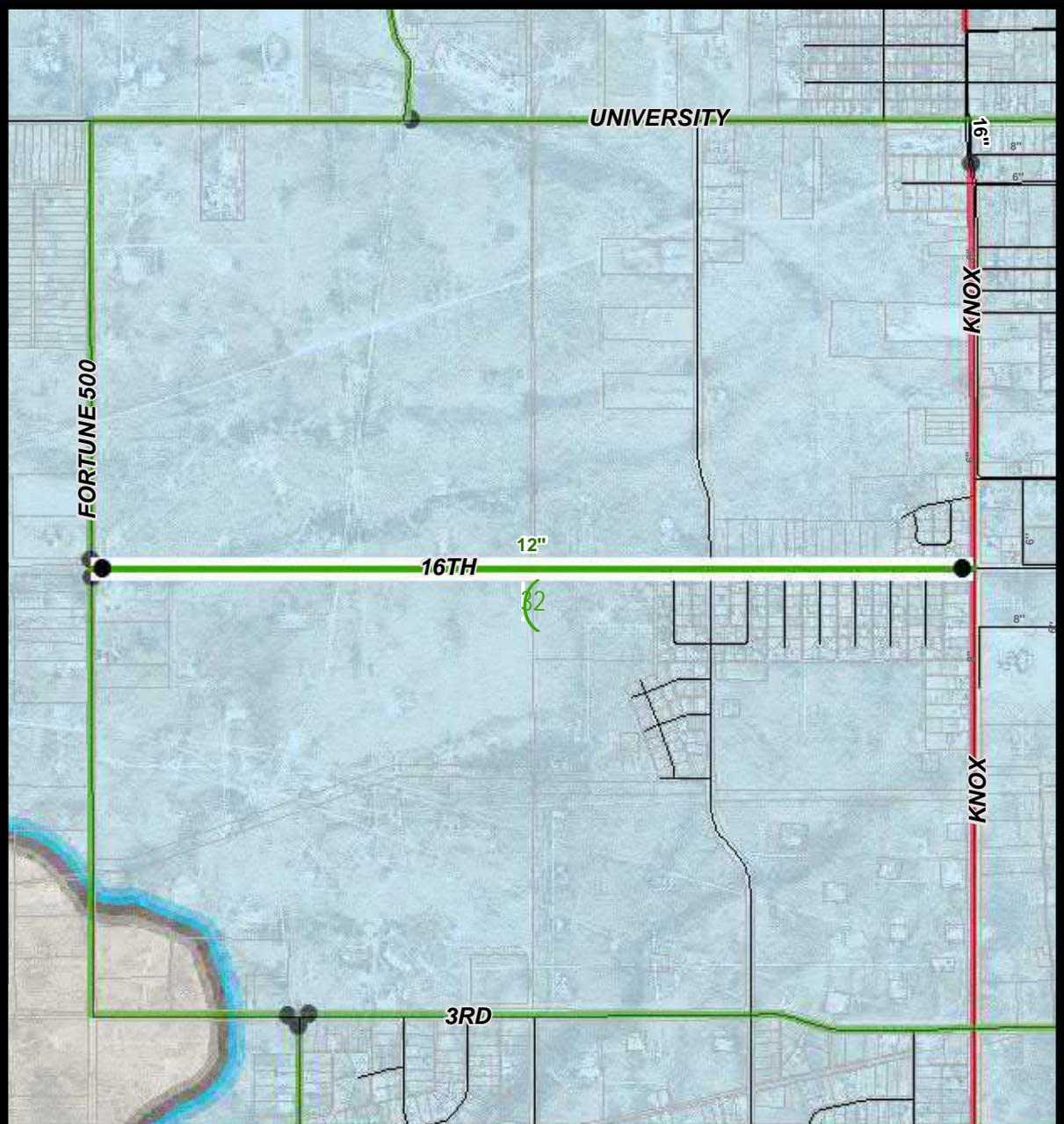
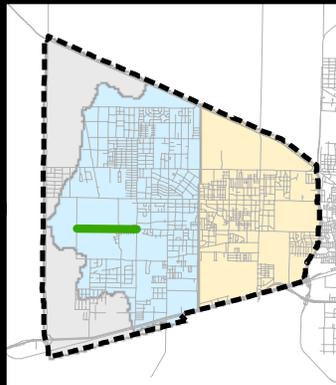
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1 inch = 2,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**

June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 10,510 LF of 12" water line along 16th Street from Knox Avenue to Fortune 500 Avenue.

**Recommendation Comments:** Future Development Driven. Is required for existing or new development along 16th Street.

**Pressure Plane:** West

**Capital Cost:** \$1,700,000

**Project Name:** 16th Street 12-Inch Water Line (West)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                                                                                                       |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Client:</b> Ector County Utility District<br><b>Project:</b> Water System Master Plan<br><b>KHA No.:</b> 063685005 | <b>Date:</b> 6/18/2018<br><b>Prepared By:</b> AWS<br><b>Checked By:</b> JRA |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

**Title:** 32. 16th Street 12-Inch Water Line (West)

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$56,000    | \$56,000  |
| 2        | Traffic Control                | 1        | LS   | \$23,000    | \$23,000  |
| 3        | Erosion Control                | 1        | LS   | \$23,000    | \$23,000  |
| 4        | 12" Water Pipe                 | 10,510   | LF   | \$85.00     | \$894,000 |
| 5        | Water Line Trench Safety       | 10,510   | LF   | \$2.00      | \$22,000  |
| 6        | 12" AWWA Gate Valve            | 6        | EA   | \$5,000.00  | \$32,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 21       | EA   | \$5,000.00  | \$106,000 |
| 9        | Ductile Iron Fittings          | 11       | TON  | \$5,000.00  | \$53,000  |
| 10       | Allowance                      | 1        | LS   | \$25,000.00 | \$25,000  |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| <b>Subtotal:</b>              |    | <b>\$1,244,000</b> |
| Conting. (%,+/-)              | 20 | \$249,100          |
| Professional Services (%,+/-) | 15 | \$186,900          |
| <b>Total:</b>                 |    | <b>\$1,700,000</b> |

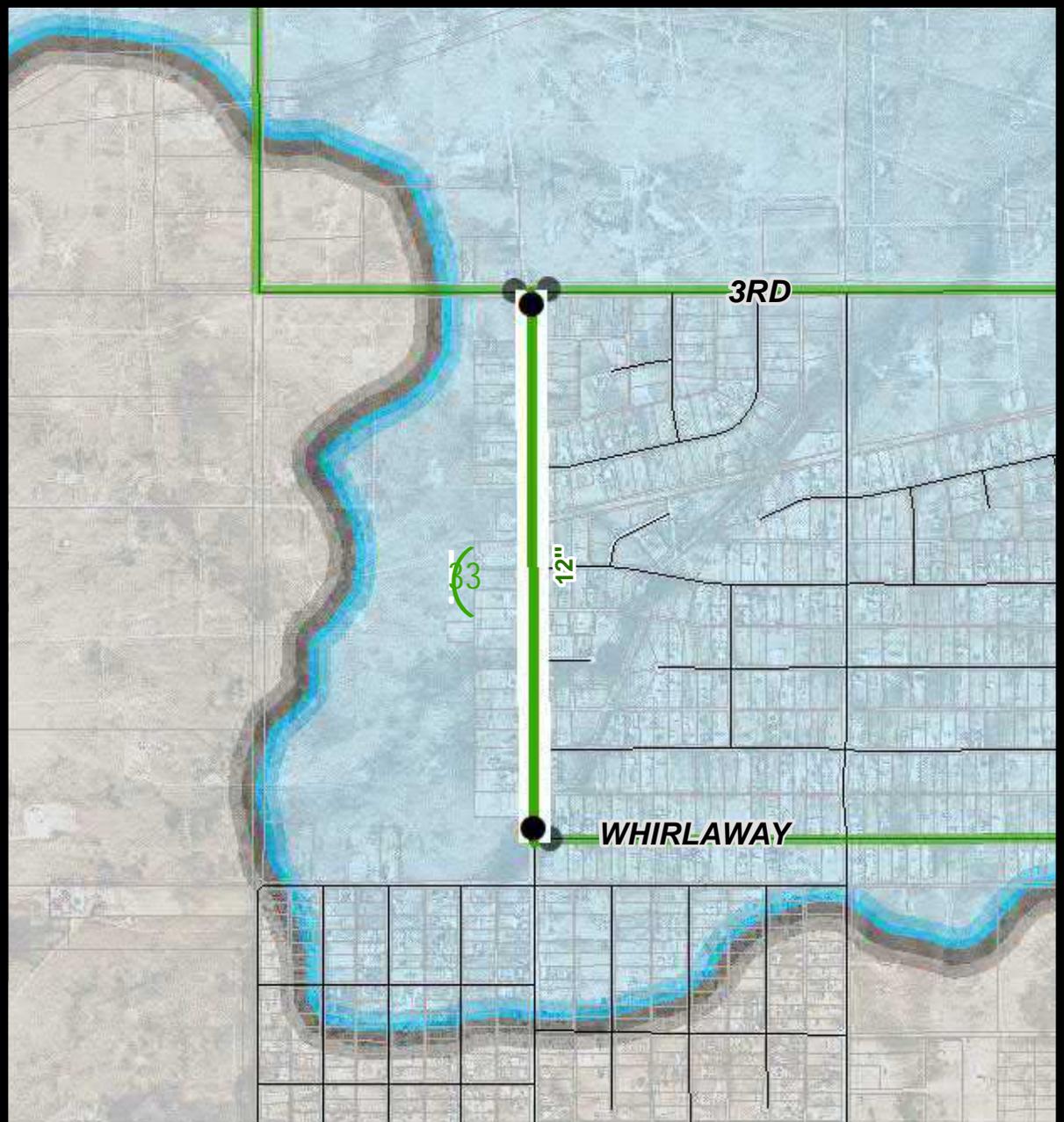
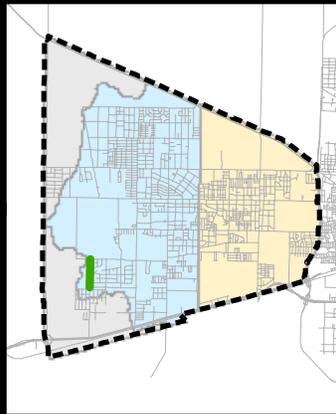
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1 inch = 1,500 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**

**June 2018**

**Phase:** Future Development

**Project Description:** This project consists of approximately 4,940 LF of 12" water line along Westcliff Road from Whirlaway Drive to 3rd Street.

**Recommendation Comments:** Future Development Driven. Is required for existing or new development along Westcliff Road between 3rd Street and Whirlaway Drive. This is the first project of two for looping transmission from the 3rd Street and Westcliff Road intersection to the Westcliff and Stagecoach Drive intersection.

**Pressure Plane:** West

**Capital Cost:** \$800,000

**Project Name:** Westcliff Road 12-inch Water Line (South)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                                                                                                       |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Client:</b> Ector County Utility District<br><b>Project:</b> Water System Master Plan<br><b>KHA No.:</b> 063685005 | <b>Date:</b> 6/18/2018<br><b>Prepared By:</b> AWS<br><b>Checked By:</b> JRA |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

|                                                             |
|-------------------------------------------------------------|
| <b>Title:</b> 33. Westcliff Road 12-inch Water Line (South) |
|-------------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$6,000     | \$6,000   |
| 2        | Traffic Control                | 1        | LS   | \$11,000    | \$11,000  |
| 3        | Erosion Control                | 1        | LS   | \$11,000    | \$11,000  |
| 4        | 12" Water Pipe                 | 4,940    | LF   | \$85.00     | \$420,000 |
| 5        | Water Line Trench Safety       | 4,940    | LF   | \$2.00      | \$10,000  |
| 6        | 12" AWWA Gate Valve            | 4        | EA   | \$5,000.00  | \$20,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 10       | EA   | \$5,000.00  | \$50,000  |
| 9        | Ductile Iron Fittings          | 5        | TON  | \$5,000.00  | \$25,000  |
| 10       | Allowance                      | 1        | LS   | \$12,000.00 | \$12,000  |

|                                                         |                               |                   |
|---------------------------------------------------------|-------------------------------|-------------------|
| <b>Basis for Cost Projection:</b>                       |                               |                   |
| <input checked="" type="checkbox"/> No Design Completed | Subtotal:                     | \$575,000         |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20      \$115,375 |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15      \$86,625  |
|                                                         | <b>Total:</b>                 | <b>\$800,000</b>  |

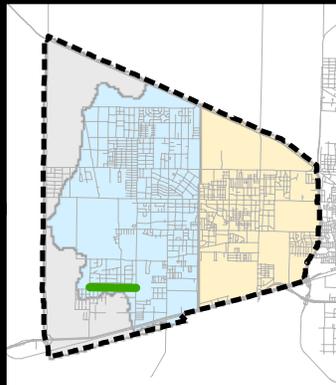
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1 inch = 1,500 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**

June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 8,030 LF of 12" water line along Whirlaway Drive from Westcliff Road to Knox Avenue.

**Recommendation Comments:** Future Development Driven. Is required for existing or new development along Whirlaway Drive between Westcliff Road and Knox Avenue. This is the second project of two for looping transmission from the Whirlaway Drive and Westcliff Road intersection to the Whirlaway Drive and Knox Avenue intersection.

**Pressure Plane:** West

**Capital Cost:** \$1,400,000

**Project Name:** Whirlaway Drive 12-inch Water Line

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                      |
|------------------------------------------------------|
| <b>Title: 34. Whirlaway Drive 12-inch Water Line</b> |
|------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$9,000     | \$9,000   |
| 2        | Traffic Control                | 1        | LS   | \$20,000    | \$20,000  |
| 3        | Erosion Control                | 1        | LS   | \$20,000    | \$20,000  |
| 4        | 12" Water Pipe                 | 8,030    | LF   | \$85.00     | \$683,000 |
| 5        | 24" Bore with Steel Casing     | 200      | LF   | \$500.00    | \$100,000 |
| 6        | Water Line Trench Safety       | 8,030    | LF   | \$2.00      | \$17,000  |
| 7        | 12" AWWA Gate Valve            | 5        | EA   | \$5,000.00  | \$27,000  |
| 8        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 9        | Fire Hydrant Assembly          | 16       | EA   | \$5,000.00  | \$81,000  |
| 10       | Ductile Iron Fittings          | 8        | TON  | \$5,000.00  | \$41,000  |
| 11       | Allowance                      | 1        | LS   | \$21,000.00 | \$21,000  |

|                                                         |                               |                    |
|---------------------------------------------------------|-------------------------------|--------------------|
| <b>Basis for Cost Projection:</b>                       |                               |                    |
| <input checked="" type="checkbox"/> No Design Completed | Subtotal:                     | \$1,029,000        |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20      \$206,225  |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15      \$154,775  |
|                                                         | <b>Total:</b>                 | <b>\$1,400,000</b> |

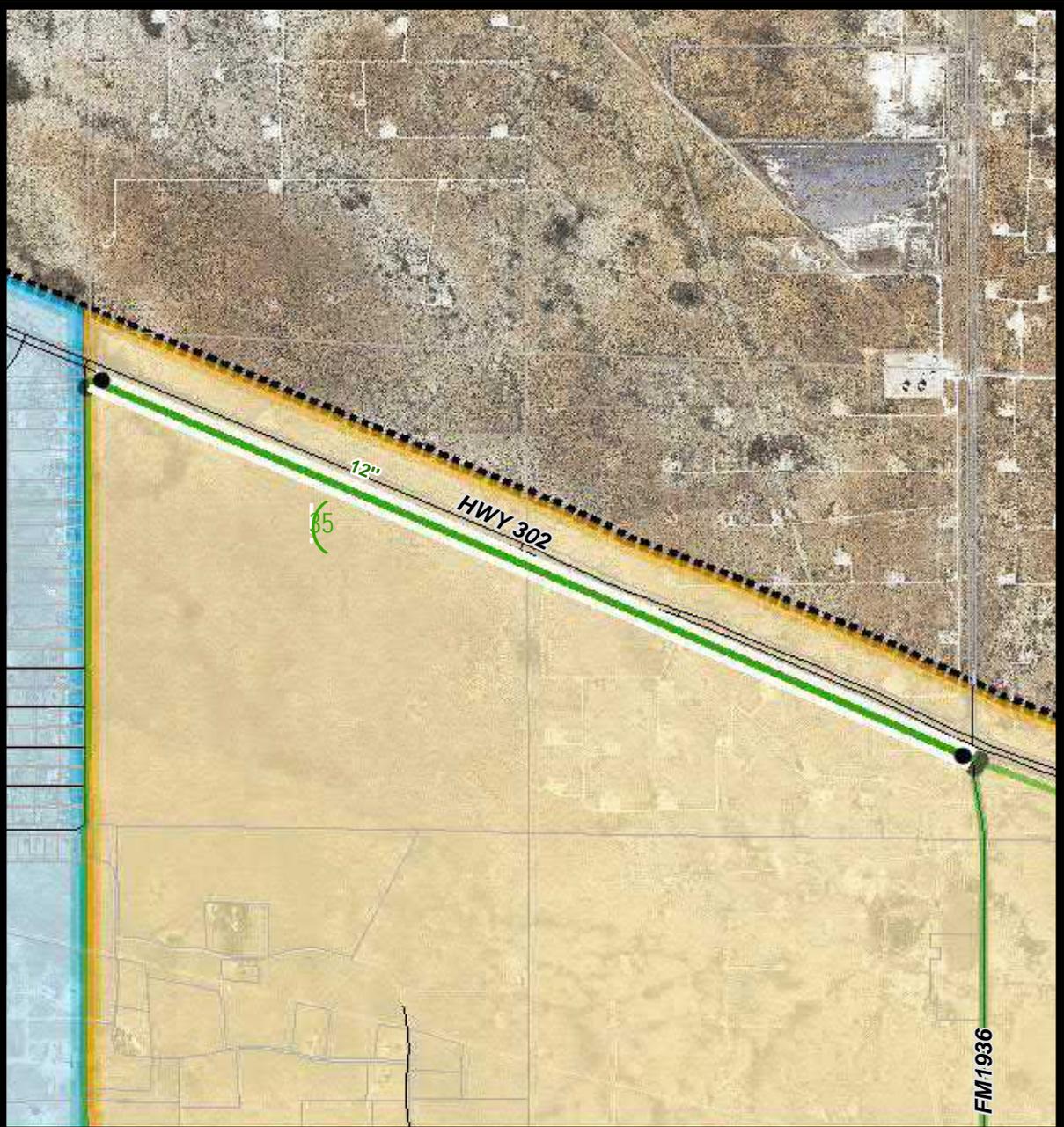
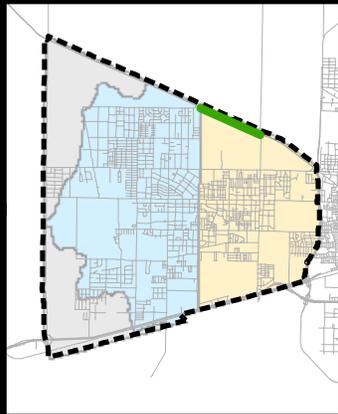
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1 inch = 2,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 11,420 LF of 12" water line along Highway 302 from FM 1936 to Tripp Avenue.

**Recommendation Comments:** Future Development Driven. Is required for new development along Highway 302 between FM 1936 and Tripp Avenue.

**Pressure Plane:** East  
**Capital Cost:** \$1,900,000

**Project Name:** Highway 302 12-inch Water Line Phase 2

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                                                                                                       |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Client:</b> Ector County Utility District<br><b>Project:</b> Water System Master Plan<br><b>KHA No.:</b> 063685005 | <b>Date:</b> 6/18/2018<br><b>Prepared By:</b> AWS<br><b>Checked By:</b> JRA |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

|                                                          |
|----------------------------------------------------------|
| <b>Title:</b> 35. Highway 302 12-inch Water Line Phase 2 |
|----------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$12,000    | \$12,000  |
| 2        | Traffic Control                | 1        | LS   | \$27,000    | \$27,000  |
| 3        | Erosion Control                | 1        | LS   | \$27,000    | \$27,000  |
| 4        | 12" Water Pipe                 | 11,420   | LF   | \$85.00     | \$971,000 |
| 5        | 24" Bore with Steel Casing     | 200      | LF   | \$500.00    | \$100,000 |
| 6        | Water Line Trench Safety       | 11,420   | LF   | \$2.00      | \$23,000  |
| 7        | 12" AWWA Gate Valve            | 7        | EA   | \$5,000.00  | \$33,000  |
| 8        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 9        | Fire Hydrant Assembly          | 23       | EA   | \$5,000.00  | \$115,000 |
| 10       | Ductile Iron Fittings          | 11       | TON  | \$5,000.00  | \$58,000  |
| 11       | Allowance                      | 1        | LS   | \$28,000.00 | \$28,000  |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| Subtotal:                     |    | \$1,404,000        |
| Conting. (%,+/-)              | 20 | \$281,100          |
| Professional Services (%,+/-) | 15 | \$210,900          |
| <b>Total:</b>                 |    | <b>\$1,900,000</b> |

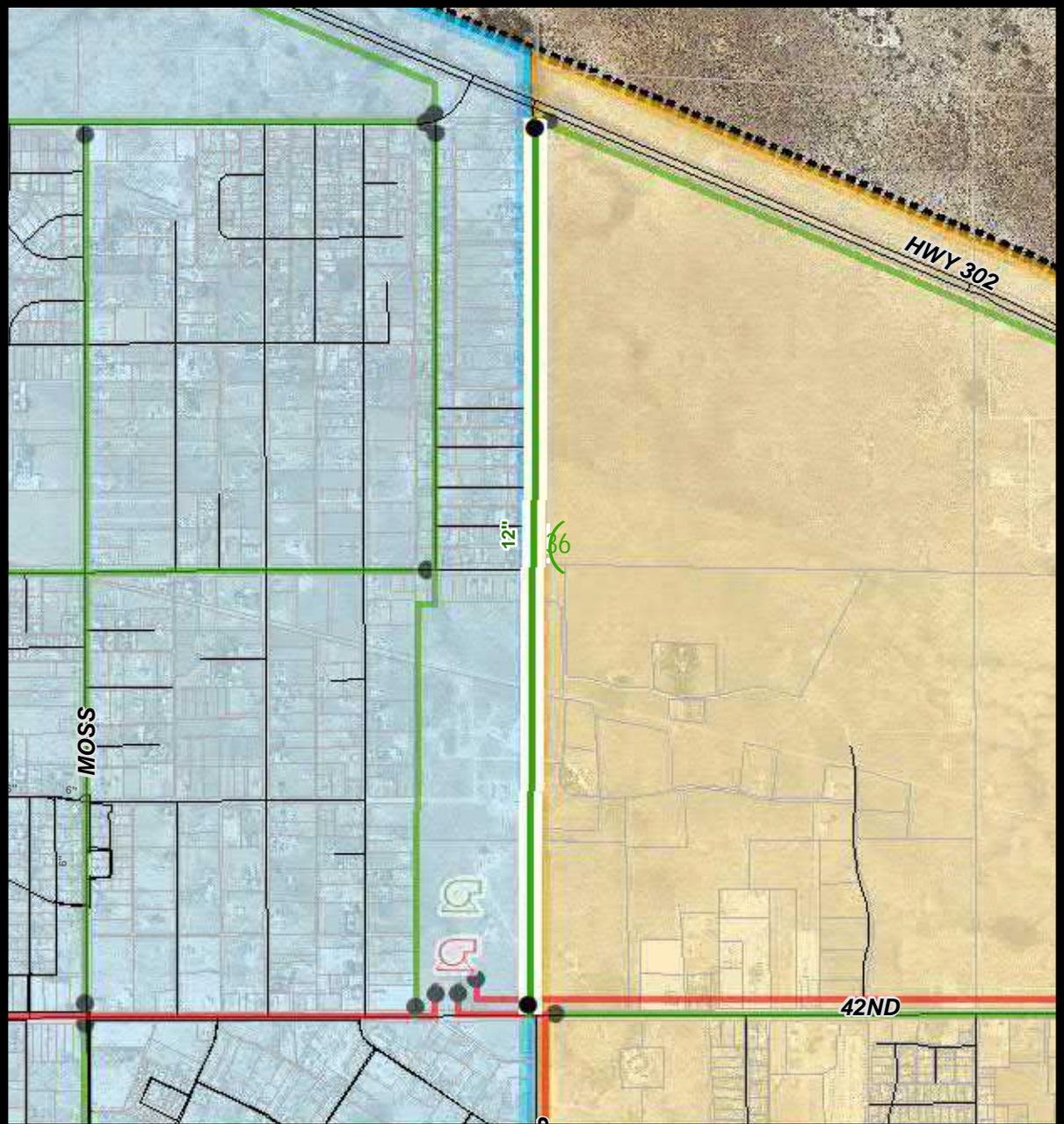
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1 inch = 2,000 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 10,650 LF of 12" water line along Tripp Avenue from Highway 302 to 57th Street; then continuing south in an easement from 57th Street to 42nd Street.

**Recommendation Comments:** Future Development Driven. This project closes the transmission loop from projects #35 and #9. Is required if development north of 42nd Street between FM 1936 and Tripp Avenue takes place.

**Pressure Plane:** East  
**Capital Cost:** \$2,600,000

**Project Name:** Far North Tripp Avenue 12-inch Water Line (East Pressure Plane)

| Kimley-Horn & Associates, Inc.                                                    |                                      | Opinion of Probable Construction Cost |                  |             |                    |           |
|-----------------------------------------------------------------------------------|--------------------------------------|---------------------------------------|------------------|-------------|--------------------|-----------|
| <b>Client:</b>                                                                    | <b>Ector County Utility District</b> | <b>Date:</b>                          | <b>6/18/2018</b> |             |                    |           |
| <b>Project:</b>                                                                   | <b>Water System Master Plan</b>      | <b>Prepared By:</b>                   | <b>AWS</b>       |             |                    |           |
| <b>KHA No.:</b>                                                                   | <b>063685005</b>                     | <b>Checked By:</b>                    | <b>JRA</b>       |             |                    |           |
| <b>Title: 36. Far North Tripp Avenue 12-inch Water Line (East Pressure Plane)</b> |                                      |                                       |                  |             |                    |           |
| Item No.                                                                          | Item Description                     | Quantity                              | Unit             | Unit Price  | Item Cost          |           |
| 1                                                                                 | Mobilization                         | 1                                     | LS               | \$40,000    | \$40,000           |           |
| 2                                                                                 | Traffic Control                      | 1                                     | LS               | \$36,000    | \$36,000           |           |
| 3                                                                                 | Erosion Control                      | 1                                     | LS               | \$36,000    | \$36,000           |           |
| 4                                                                                 | 12" Water Pipe                       | 10,650                                | LF               | \$85.00     | \$906,000          |           |
| 5                                                                                 | 24" Bore with Steel Casing           | 100                                   | LF               | \$500.00    | \$50,000           |           |
| 6                                                                                 | Water Line Trench Safety             | 10,650                                | LF               | \$2.00      | \$22,000           |           |
| 7                                                                                 | 12" AWWA Gate Valve                  | 6                                     | EA               | \$5,000.00  | \$32,000           |           |
| 8                                                                                 | Connect to Existing Water Line       | 2                                     | EA               | \$5,000.00  | \$10,000           |           |
| 9                                                                                 | Fire Hydrant Assembly                | 21                                    | EA               | \$5,000.00  | \$107,000          |           |
| 10                                                                                | Ductile Iron Fittings                | 11                                    | TON              | \$5,000.00  | \$54,000           |           |
| 11                                                                                | Asphalt Pavement Repair              | 9,500                                 | SY               | \$60.00     | \$570,000          |           |
| 12                                                                                | Allowance                            | 1                                     | LS               | \$38,000.00 | \$38,000           |           |
| <b>Basis for Cost Projection:</b>                                                 |                                      | Subtotal:                             |                  |             | \$1,901,000        |           |
| <input checked="" type="checkbox"/>                                               | No Design Completed                  | Conting. (%,+/-)                      |                  |             | 20                 | \$380,525 |
| <input type="checkbox"/>                                                          | Preliminary Design                   | Professional Services (%,+/-)         |                  |             | 15                 | \$285,475 |
| <input type="checkbox"/>                                                          | Final Design                         | <b>Total:</b>                         |                  |             | <b>\$2,600,000</b> |           |

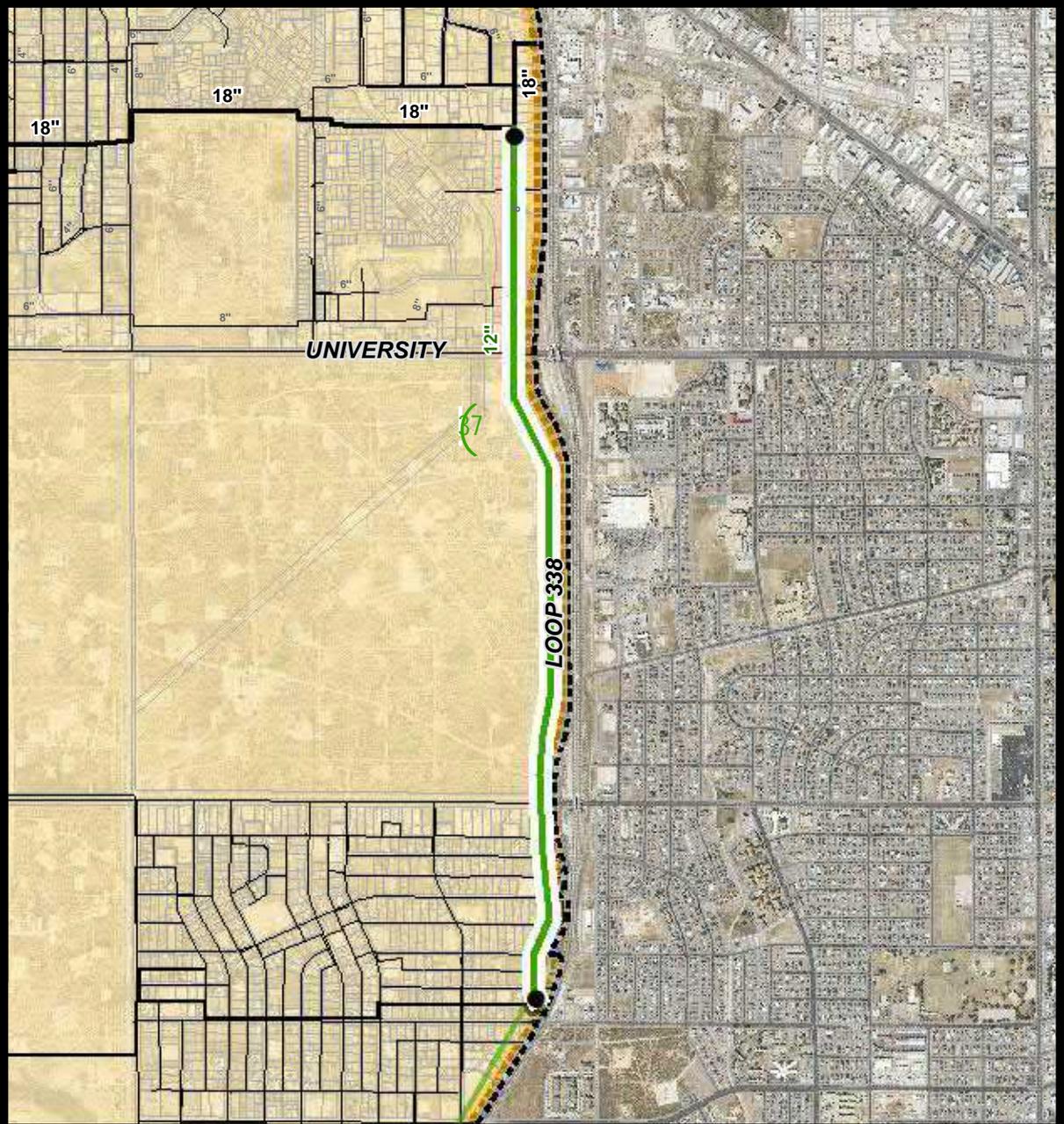
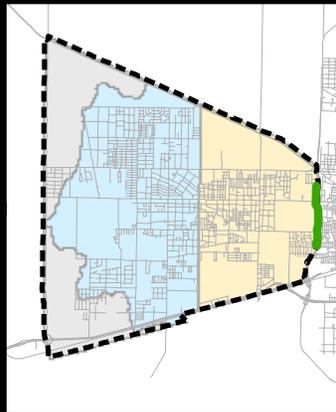
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1 inch = 2,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**

**June 2018**

**Phase:** Future Development

**Project Description:** This project consists of approximately 10,630 LF of 16" water line along Loop 338 from a connection to the existing 18" water line north of the Loop 338/Arcadia Street intersection; south along Loop 338 to a connection to the existing 12" water line north of the Loop 338/10th Street intersection.

**Recommendation Comments:** Future Development Driven. This project closes the transmission loop along Loop 338 from projects #23 and #28.

**Pressure Plane:** East

**Capital Cost:** \$3,900,000

**Project Name:** Loop 338 12-inch Water Line (North)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                                                                                                       |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Client:</b> Ector County Utility District<br><b>Project:</b> Water System Master Plan<br><b>KHA No.:</b> 063685005 | <b>Date:</b> 6/18/2018<br><b>Prepared By:</b> AWS<br><b>Checked By:</b> JRA |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

|                                                       |
|-------------------------------------------------------|
| <b>Title:</b> 37. Loop 338 12-inch Water Line (North) |
|-------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost   |
|----------|--------------------------------|----------|------|-------------|-------------|
| 1        | Mobilization                   | 1        | LS   | \$35,000    | \$35,000    |
| 2        | Traffic Control                | 1        | LS   | \$53,000    | \$53,000    |
| 3        | Erosion Control                | 1        | LS   | \$53,000    | \$53,000    |
| 4        | 12" Water Pipe                 | 10,630   | LF   | \$85.00     | \$904,000   |
| 5        | 24" Bore with Steel Casing     | 2,050    | LF   | \$500.00    | \$1,025,000 |
| 6        | Water Line Trench Safety       | 10,630   | LF   | \$2.00      | \$22,000    |
| 7        | 12" AWWA Gate Valve            | 7        | EA   | \$5,000.00  | \$37,000    |
| 8        | Connect to Existing Water Line | 3        | EA   | \$5,000.00  | \$15,000    |
| 9        | Fire Hydrant Assembly          | 21       | EA   | \$5,000.00  | \$107,000   |
| 10       | Ductile Iron Fittings          | 11       | TON  | \$5,000.00  | \$54,000    |
| 11       | Asphalt Pavement Repair        | 7,700    | SY   | \$60.00     | \$462,000   |
| 12       | Allowance                      | 1        | LS   | \$56,000.00 | \$56,000    |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| Subtotal:                     |    | \$2,823,000        |
| Conting. (%,+/-)              | 20 | \$565,075          |
| Professional Services (%,+/-) | 15 | \$423,925          |
| <b>Total:</b>                 |    | <b>\$3,900,000</b> |

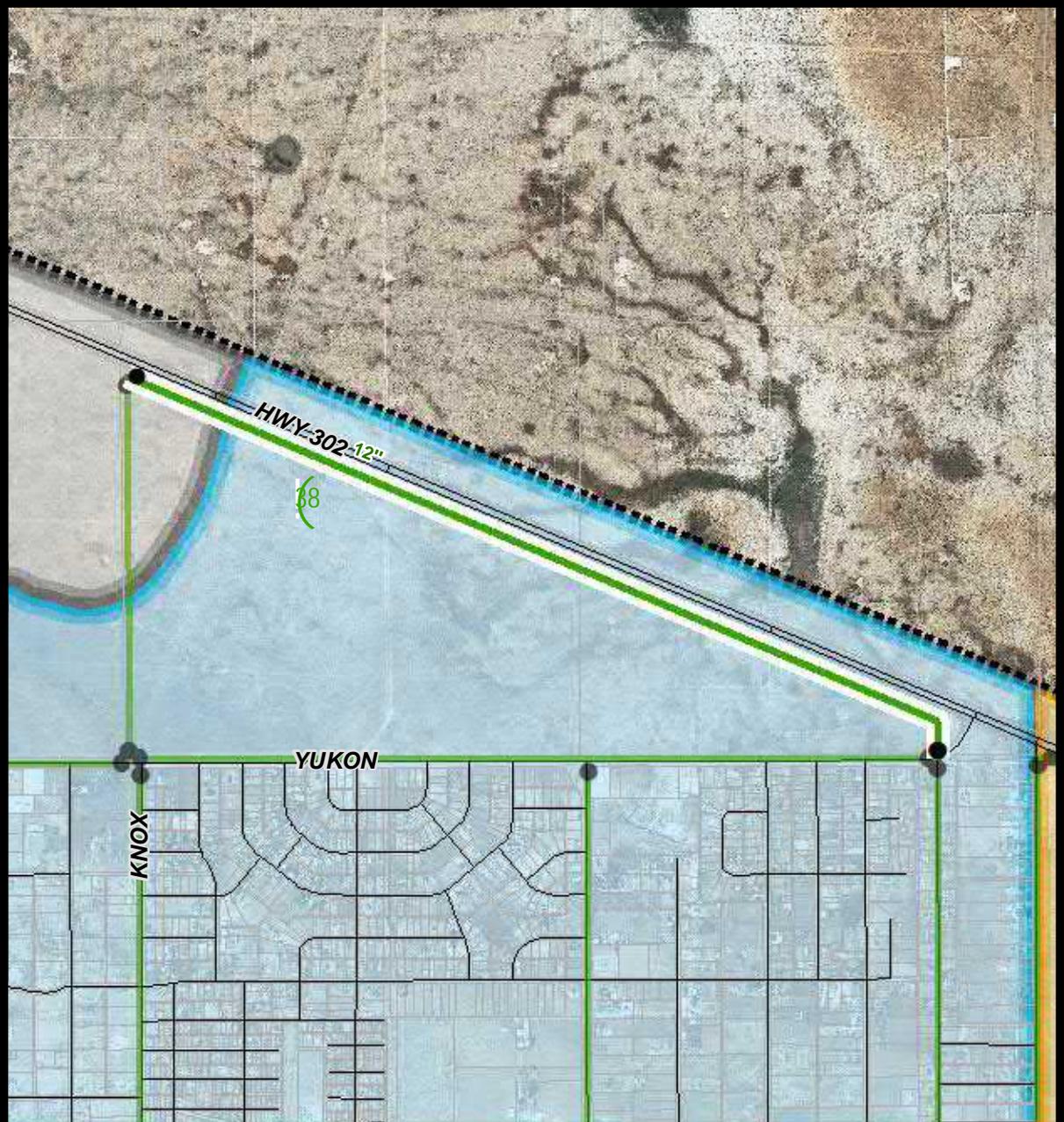
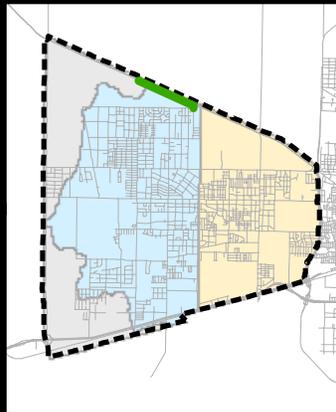
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1 inch = 2,000 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 10,950 LF of 12" water line along Highway 302 between Greenway Avenue and Knox Avenue.

**Recommendation Comments:** Future Development Driven. Is required for new development along Highway 302 between Greenway Avenue and Knox Avenue.

**Pressure Plane:** West  
**Capital Cost:** \$1,800,000

**Project Name:** Highway 302 12-inch Water Line (West)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                                                                                                       |                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Client:</b> Ector County Utility District<br><b>Project:</b> Water System Master Plan<br><b>KHA No.:</b> 063685005 | <b>Date:</b> 6/18/2018<br><b>Prepared By:</b> AWS<br><b>Checked By:</b> JRA |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|

|                                                         |
|---------------------------------------------------------|
| <b>Title:</b> 38. Highway 302 12-Inch Water Line (West) |
|---------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$58,000    | \$58,000  |
| 2        | Traffic Control                | 1        | LS   | \$24,000    | \$24,000  |
| 3        | Erosion Control                | 1        | LS   | \$24,000    | \$24,000  |
| 4        | 12" Water Pipe                 | 10,950   | LF   | \$85.00     | \$931,000 |
| 5        | Water Line Trench Safety       | 10,950   | LF   | \$2.00      | \$22,000  |
| 6        | 12" AWWA Gate Valve            | 6        | EA   | \$5,000.00  | \$32,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 22       | EA   | \$5,000.00  | \$110,000 |
| 9        | Ductile Iron Fittings          | 11       | TON  | \$5,000.00  | \$55,000  |
| 10       | Allowance                      | 1        | LS   | \$26,000.00 | \$26,000  |

**Basis for Cost Projection:**

- No Design Completed
- Preliminary Design
- Final Design

|                               |    |                    |
|-------------------------------|----|--------------------|
| Subtotal:                     |    | \$1,292,000        |
| Conting. (%,+/-)              | 20 | \$258,800          |
| Professional Services (%,+/-) | 15 | \$194,200          |
| <b>Total:</b>                 |    | <b>\$1,800,000</b> |

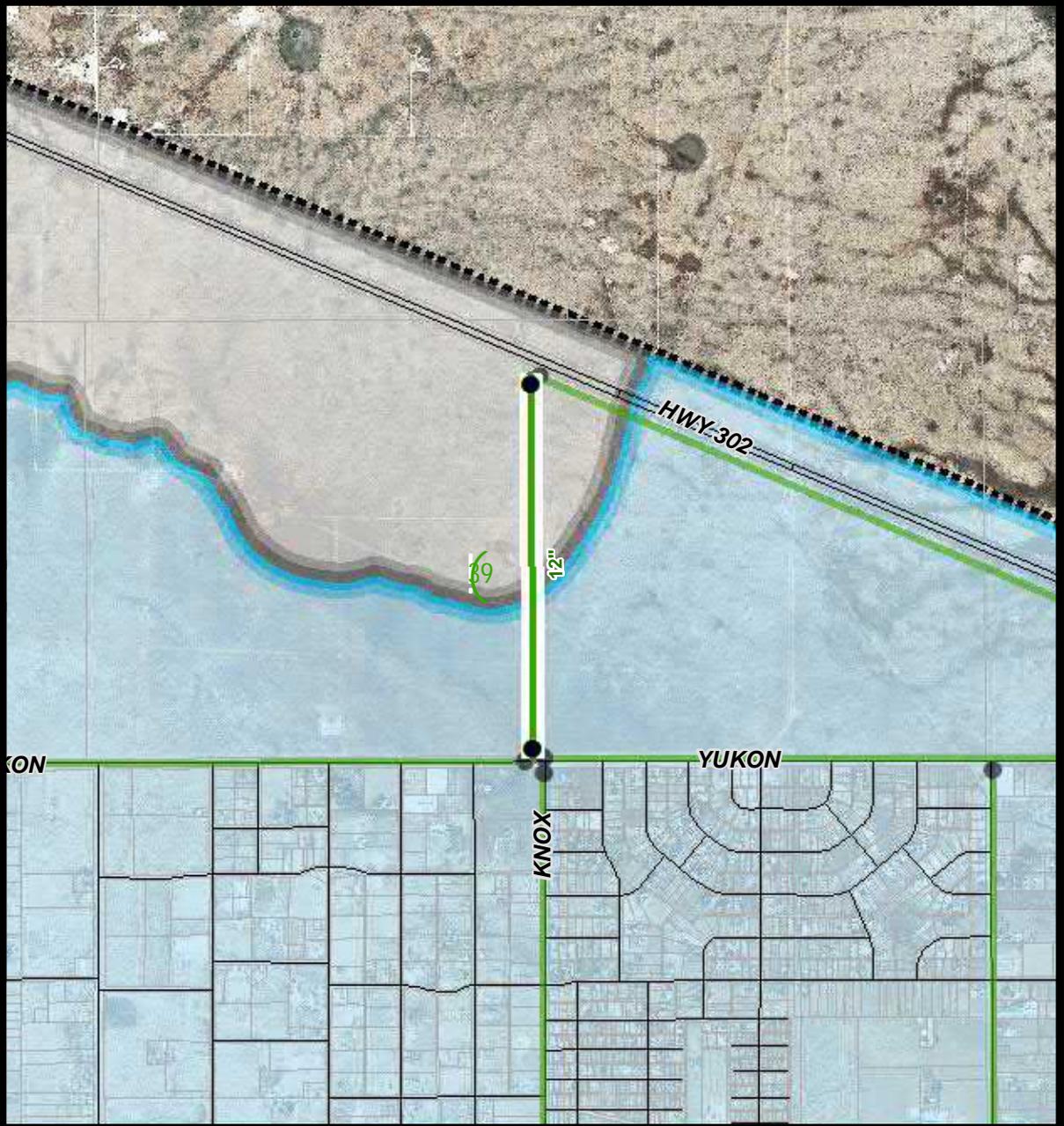
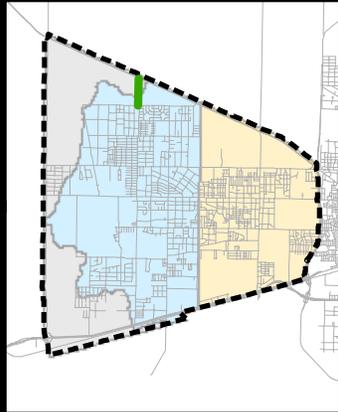
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1 inch = 2,000 feet

**Legend**

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**  
June 2018

**Phase:** Future Development

**Project Description:** This project consists of approximately 4,570 LF of 12" water line along Knox Avenue between Highway 302 and Yukon Road.

**Recommendation Comments:** Future Development Driven. Is required for new development along Knox Avenue between Highway 302 and Yukon Road.

**Pressure Plane:** West

**Capital Cost:** \$800,000

**Project Name:** Knox Avenue 12-inch Water Line Phase 2 (North)

|                                           |                                              |
|-------------------------------------------|----------------------------------------------|
| <b>Kimley-Horn &amp; Associates, Inc.</b> | <b>Opinion of Probable Construction Cost</b> |
|-------------------------------------------|----------------------------------------------|

|                                       |                  |
|---------------------------------------|------------------|
| Client: Ector County Utility District | Date: 6/18/2018  |
| Project: Water System Master Plan     | Prepared By: AWS |
| KHA No.: 063685005                    | Checked By: JRA  |

|                                                                  |
|------------------------------------------------------------------|
| <b>Title: 39. Knox Avenue 12-Inch Water Line Phase 2 (North)</b> |
|------------------------------------------------------------------|

| Item No. | Item Description               | Quantity | Unit | Unit Price  | Item Cost |
|----------|--------------------------------|----------|------|-------------|-----------|
| 1        | Mobilization                   | 1        | LS   | \$25,000    | \$25,000  |
| 2        | Traffic Control                | 1        | LS   | \$10,000    | \$10,000  |
| 3        | Erosion Control                | 1        | LS   | \$10,000    | \$10,000  |
| 4        | 12" Water Pipe                 | 4,570    | LF   | \$85.00     | \$389,000 |
| 5        | Water Line Trench Safety       | 4,570    | LF   | \$2.00      | \$10,000  |
| 6        | 12" AWWA Gate Valve            | 4        | EA   | \$5,000.00  | \$20,000  |
| 7        | Connect to Existing Water Line | 2        | EA   | \$5,000.00  | \$10,000  |
| 8        | Fire Hydrant Assembly          | 9        | EA   | \$5,000.00  | \$46,000  |
| 9        | Ductile Iron Fittings          | 5        | TON  | \$5,000.00  | \$23,000  |
| 10       | Allowance                      | 1        | LS   | \$11,000.00 | \$11,000  |

|                                                         |                               |                   |
|---------------------------------------------------------|-------------------------------|-------------------|
| <b>Basis for Cost Projection:</b>                       |                               |                   |
| <input checked="" type="checkbox"/> No Design Completed | Subtotal:                     | \$554,000         |
| <input type="checkbox"/> Preliminary Design             | Conting. (%,+/-)              | 20      \$110,850 |
| <input type="checkbox"/> Final Design                   | Professional Services (%,+/-) | 15      \$83,150  |
|                                                         | <b>Total:</b>                 | <b>\$800,000</b>  |

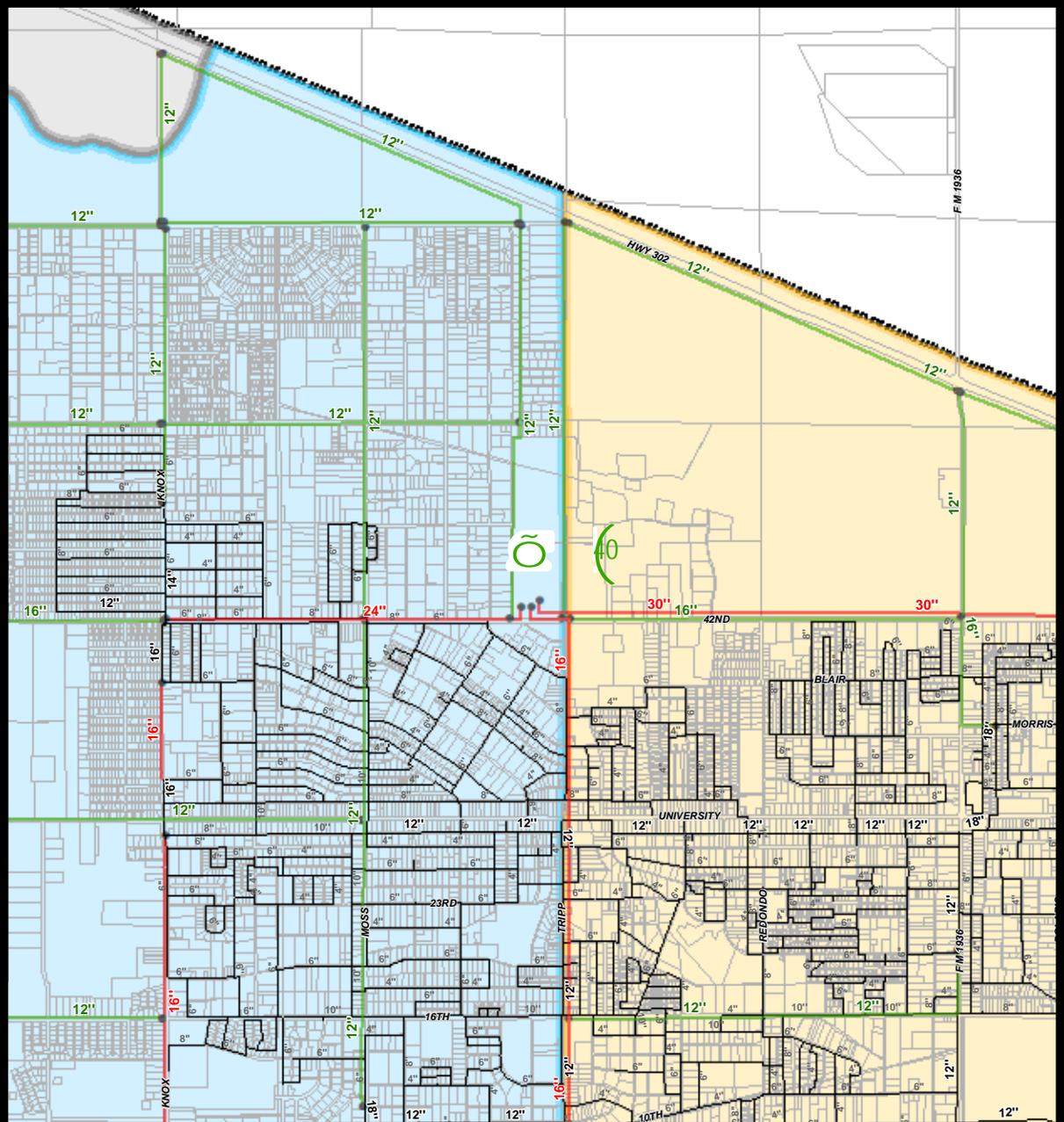
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 4,500 feet

### Legend

-  Future Development
-  TCEQ Compliance
-  Existing Water Line
-  West Pressure Plane
-  East Pressure Plane
-  Upper Pressure Plane
-  ECUD Boundary



**Kimley»Horn**

**June 2018**

**Phase:** Future Development

**Project Description:** This project consists of adding an additional 4 MG ground storage tank and an additional firm pumping capacity of 3.5 MGD to the existing 42nd Street Pump Station.

**Recommendation Comments:** Future Development Driven. As peak hour demands continue to increase in the West Pressure Plane the proposed 3-2,300 gallon per minute pumps will require replacement with 3-3,500 gallon per minute pumps. The replacement for these pumps is required based on state standards. These pump replacements will need to be in service before the West Pressure Plane reaches peak hour demands of 6.6 MGD. Utilizing the requirement to meet peak hourly demands at each pressure plane TCEQ criterion, the replacement pumps are sized to 10.1 MGD in the West Pressure Plane.

**Pressure Plane:** East/West

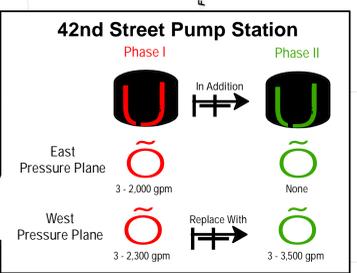
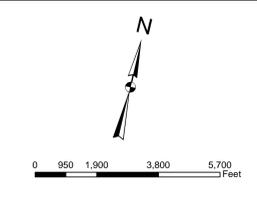
**Capital Cost:** \$9,000,000

**Project Name:** 42nd Street Pump Station Phase 2

| Kimley-Horn & Associates, Inc.                                         |                                 | Opinion of Probable Construction Cost |      |                |             |                    |
|------------------------------------------------------------------------|---------------------------------|---------------------------------------|------|----------------|-------------|--------------------|
| Client: Ector County Utility District                                  |                                 | Date: 6/18/2018                       |      |                |             |                    |
| Project: Water System Master Plan                                      |                                 | Prepared By: AWS                      |      |                |             |                    |
| KHA No.: 063685005                                                     |                                 | Checked By: JRA                       |      |                |             |                    |
| <b>Title: 40. 42nd Street Pump Station Phase 2 &amp; Meter Upgrade</b> |                                 |                                       |      |                |             |                    |
| Item No.                                                               | Item Description                | Quantity                              | Unit | Unit Price     | Item Cost   |                    |
| 1                                                                      | Bonds, Insurance                | 1                                     | LS   | \$200,000.00   | \$200,000   |                    |
| 2                                                                      | Mobilization                    | 1                                     | LS   | \$200,000.00   | \$200,000   |                    |
| 3                                                                      | Site Grading                    | 1                                     | LS   | \$50,000.00    | \$50,000    |                    |
| 4                                                                      | Landscaping                     | 1                                     | LS   | \$10,000.00    | \$10,000    |                    |
| 5                                                                      | 24" Tank Supply Line            | 200                                   | LF   | \$300.00       | \$60,000    |                    |
| 6                                                                      | 24" Gate Valve and Vault        | 2                                     | EA   | \$25,000.00    | \$50,000    |                    |
| 7                                                                      | 4 MG Ground Storage Tank        | 1                                     | EA   | \$4,000,000.00 | \$4,000,000 |                    |
| 8                                                                      | Excavation                      | 2,000                                 | CY   | \$30.00        | \$60,000    |                    |
| 9                                                                      | Select Backfill                 | 1,300                                 | CY   | \$30.00        | \$39,000    |                    |
| 10                                                                     | 3,500 gpm pump and 350 hp motor | 3                                     | EA   | \$300,000.00   | \$900,000   |                    |
| 11                                                                     | 16" Gate Valve                  | 6                                     | EA   | \$15,000.00    | \$90,000    |                    |
| 12                                                                     | 16" Piping                      | 100                                   | LF   | \$200.00       | \$20,000    |                    |
| 13                                                                     | Air Release Valve               | 3                                     | EA   | \$10,000.00    | \$30,000    |                    |
| 14                                                                     | 16" Flow Control Valve          | 3                                     | EA   | \$50,000.00    | \$150,000   |                    |
| 15                                                                     | Electrical/SCADA/Power          | 1                                     | LS   | \$600,000.00   | \$600,000   |                    |
| 16                                                                     | Wholesale Meter Upgrade         | 1                                     | LS   | \$100,000.00   | \$100,000   |                    |
| 17                                                                     | Allowance                       | 1                                     | LS   | \$132,000.00   | \$132,000   |                    |
| <b>Basis for Cost Projection:</b>                                      |                                 | Subtotal:                             |      |                | \$6,691,000 |                    |
| <input checked="" type="checkbox"/>                                    | No Design Completed             | Conting. (%,+/-)                      |      |                | 20          | \$1,291,975        |
| <input type="checkbox"/>                                               | Preliminary Design              | Professional Services (%,+/-)         |      |                | 15          | \$969,025          |
| <input type="checkbox"/>                                               | Final Design                    | <b>Total:</b>                         |      |                |             | <b>\$9,000,000</b> |

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## **Appendix F - Capital Improvement Plan**

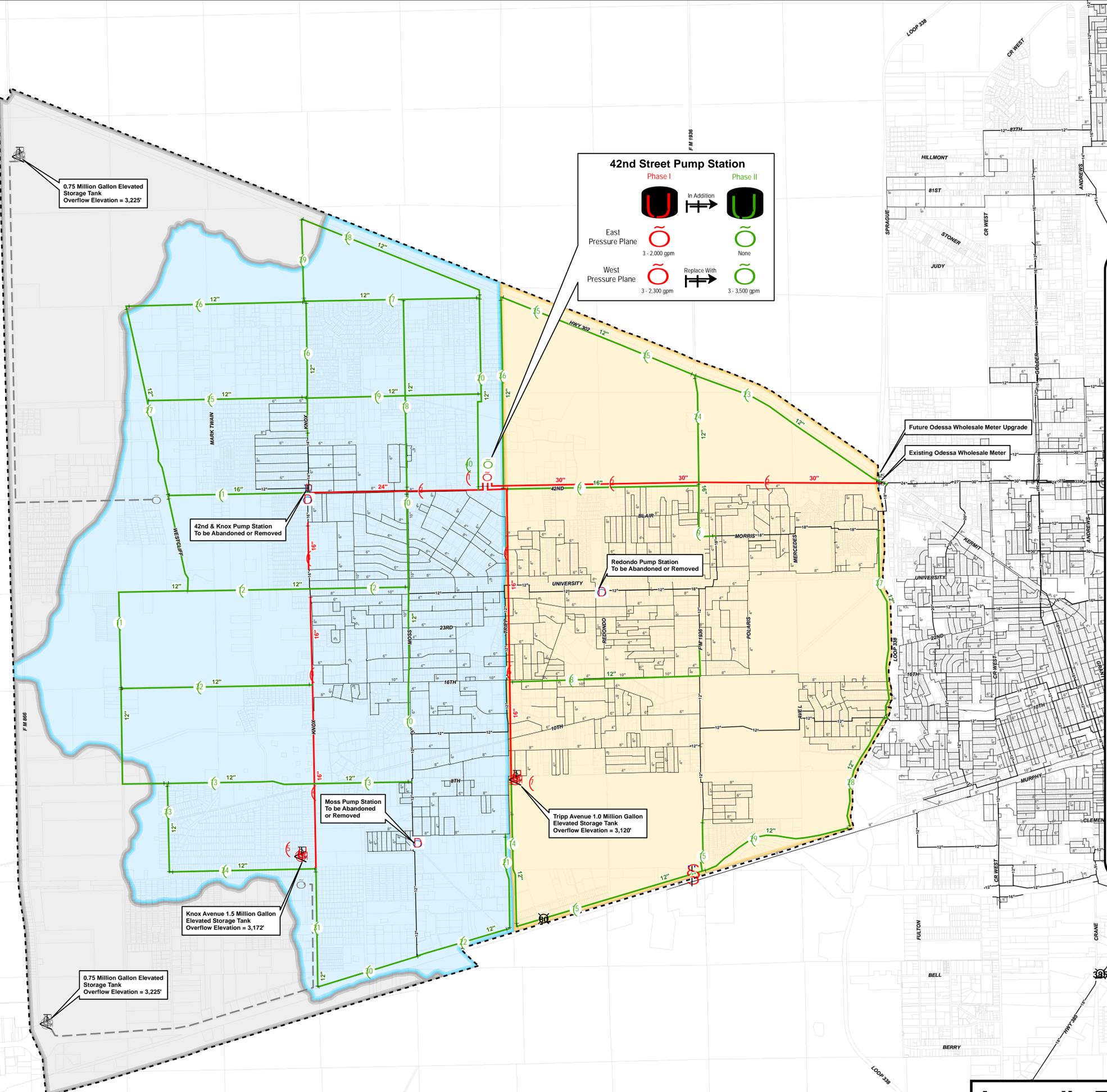


### Texas Commission on Environmental Quality (TCEQ) Compliance Projects

- #1 42nd Street Pump Station Phase 1
- #2 42nd Street 30-inch Transmission Line
- #3 42nd Street 24-inch Transmission Line
- #4 Knox Avenue 16-inch Water Line (South)
- #5 Knox Avenue 1.5 MG Elevated Storage Tank
- #6 Tripp Avenue 16-Inch Transmission Line to Tripp Avenue Tank
- #7 Tripp Avenue 1.0 MG Elevated Storage Tank

### Future Development Projects

- #8 16th Avenue/FM 1936 12-inch Water Line
- #9 42nd Street 16-inch Water Line
- #10 Moss Avenue 12-inch Water Line
- #11 Fortune 500/Westcliff 16/12-inch Water Line
- #12 University Boulevard 12-inch Water Line
- #13 Fortune 500/3rd Street 12-inch Water Line
- #14 Tripp Avenue 12-inch Water Line (East Pressure Plane)
- #15 I-20/FM 1936 12-inch Water Line (East Pressure Plane)
- #16 Knox Avenue 12-inch Water Line Phase 1 (North)
- #17 Yukon Road 12-inch Water Line Phase 1
- #18 Moss Avenue 12-inch Water Line
- #19 57th Street 12-inch Water Line Phase 1
- #20 Greenway Avenue 12-inch Water Line
- #21 Tripp Avenue 12-inch Water Line (West Pressure Plane)
- #22 I-20 12-inch Water Line Phase 1 (West Pressure Plane)
- #23 Highway 302 12-inch Water Line Phase 1
- #24 FM 1936 12-inch Water Line
- #25 57th Street 12-inch Water Line Phase 2
- #26 Yukon Road 12-inch Water Line Phase 2
- #27 Westcliff Road 12-inch Water Line (North)
- #28 Loop 338 12-inch Water Line (South)
- #29 I-20 12-inch Water Line (East Pressure Plane)
- #30 I-20 12-inch Water Line Phase 2 (West Pressure Plane)
- #31 Knox Avenue 12-Inch Water Line (South)
- #32 16th Street 12-Inch Water Line (West)
- #33 Westcliff Road 12-inch Water Line (South)
- #34 Whirlaway Drive 12-inch Water Line
- #35 Highway 302 12-inch Water Line Phase 2
- #36 Far North Tripp Avenue 12-inch Water Line (East Pressure Plane)
- #37 Loop 338 12-inch Water Line (North)
- #38 Highway 302 12-Inch Water Line (West)
- #39 Knox Avenue 12-Inch Water Line Phase 2 (North)
- #40 42nd Street Pump Station Phase 2 & Meter Upgrade



0.75 Million Gallon Elevated Storage Tank  
Overflow Elevation = 3,225'

42nd & Knox Pump Station  
To be Abandoned or Removed

Moss Pump Station  
To be Abandoned or Removed

Knox Avenue 1.5 Million Gallon  
Elevated Storage Tank  
Overflow Elevation = 3,172'

0.75 Million Gallon Elevated  
Storage Tank  
Overflow Elevation = 3,225'

Tripp Avenue 1.0 Million Gallon  
Elevated Storage Tank  
Overflow Elevation = 3,120'

Redondo Pump Station  
To be Abandoned or Removed

Future Odessa Wholesale Meter Upgrade  
Existing Odessa Wholesale Meter

## Appendix F - Capital Improvement Plan

June 2018

Kimley»Horn

### Legend

- Proposed ECUD CCN Boundary
- Existing Distribution Main
- Existing Transmission Main
- Existing Pump Station to be Abandoned or Removed
- Existing Ground Storage Tank to be Abandoned or Removed
- Existing Wholesale Meter Location
- Future Wholesale Meter Upgrade
- TCEQ Compliance Project - Proposed Water Line
- Future Development Project - Proposed Water Line
- TCEQ Compliance Project - Proposed Elevated Storage Tank
- Infrastructure Beyond Planning Window - Elevated Storage Tank
- TCEQ Compliance Project - Proposed Pump Station
- Future Development Project - Proposed Pump Station
- Infrastructure Beyond Planning Window - Pump Station
- West Pressure Plane
- East Pressure Plane
- Future Upper Pressure Plane