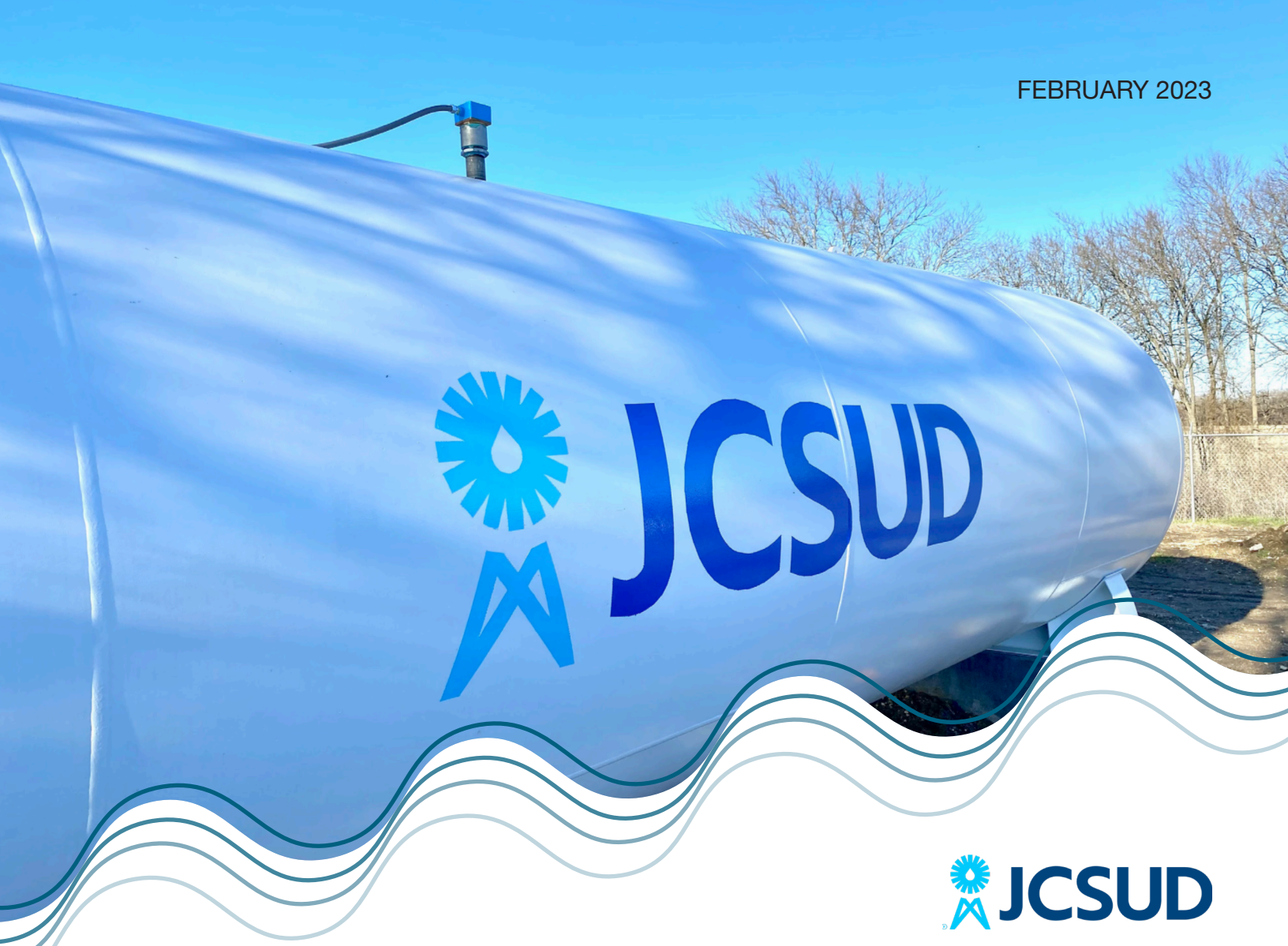
FEBRUARY 2023



JCSUD

Johnson County Special Utility District

2022 Water System Master Plan

Prepared by:

Kimley»Horn
Expect More. Experience Better.

Kimley-Horn and Associates, Inc.
TBPE No. 928
801 Cherry Street, Unit 11
Suite 1300
Fort Worth, TX 76132
817.335.6511

2/21/2023

STATE OF TEXAS
KYLE L. WELDEN
124805
LICENSED
PROFESSIONAL ENGINEER

P.E.

Table of Contents

1.0 Executive Summary 1-1

1.1 Bond Project Summary 1-3
1.2 5-Year Capital Improvement Plan Summary 1-4
1.3 10-Year Capital Improvement Plan Summary 1-4
1.4 15-Year Capital Improvement Plan Summary 1-5

2.0 Introduction 2-1

2.1 Objective and Scope of Study 2-1
2.2 Description of Study Area 2-1
2.3 Water System Definitions 2-1
2.4 Water System Abbreviations 2-2

3.0 Existing Water Infrastructure 3-1

3.1 Water Supply 3-1
3.2 Pressure Planes 3-3
3.3 Pumping and Ground Storage Facilities 3-4
3.4 Pressure Maintenance Facilities 3-5
3.5 Water System 3-5

4.0 Connections and Land Use 4-1

4.1 Historical Connections 4-1
4.2 Existing Land Use 4-1
4.3 Ultimate Land Use 4-2
4.4 Phasing and Growth Projections 4-3

5.0 Water Demand 5-1

5.1 Historical Water Demand 5-1
5.2 Water Demand Projections 5-6
5.3 Projected Water Demand and Connections 5-6

6.0 Methodology 6-1

6.1 Water System Modeling Methodology 6-1
6.2 Water System Model Calibration 6-1
6.3 System Analysis and Future Growth 6-1

7.0 Design Criteria 7-1

7.1 District Design Criteria 7-1
7.2 Texas Commission on Environmental Quality (TCEQ) Design Criteria 7-2
7.3 Design Criteria Summary 7-3

8.0 Future Infrastructure Analysis and Recommendations 8-1

8.1 Water Supply 8-1
8.2 Pressure Planes 8-3
8.3 Pumping Facilities 8-3
8.4 Elevated Storage 8-10
8.5 Total and Ground Storage 8-16
8.6 Transmission Lines 8-16

9.0 Capital Improvement Plan 9-1

9.1 Bond Projects 9-1
9.2 5-Year Capital Improvement Plan Projects 9-2
9.3 10-Year Capital Improvement Plan Projects 9-2
9.4 15-Year Capital Improvement Plan Projects 9-3

10.0 Appendices 10-1

Appendix A — Opinion of Probable Construction Costs 10-1
Appendix B — Boundary and Growth Map 10-1
Appendix C — Existing Land Use Map 10-1
Appendix D — Ultimate Land Use Map 10-1
Appendix E — Existing Water Infrastructure Map 10-1
Appendix F — System Heat Map 10-1
Appendix G — Proposed System Map 10-1
Appendix H — Capital Improvement Plan Map 10-1
Appendix I — North System Capital Improvement Plan Map 10-1
Appendix J — South System Capital Improvement Plan Map 10-1
Appendix K — East System Capital Improvement Plan Map 10-1
Appendix L — West System Capital Improvement Plan Map 10-1

1.0 Executive Summary

Introduction

This report presents the analysis, findings, and recommendations for Johnson County Special Utility District (District) to meet their water infrastructure needs over the next 15 years. The goal of the Water Master Plan was to develop a plan for the District to improve domestic service and fire flow capabilities to their current customers and to serve future projected residential and commercial developments within the study area. The planning timeframe for the master plan was 25 years, beginning with 2022 through the year 2047.

The scope of the study was to recreate and calibrate the District's existing hydraulic model, analyze the existing system for deficiencies, and to make recommendations to serve the projected developments through the 25-year planning period. The significant scope elements of this project are as follows:

1. Existing land use determination and ultimate land use projections
2. Historical water use analysis by unique land use category
3. Existing hydraulic model update and calibration
4. Existing water system analysis and deficiency identification
5. Future water demand projections through the 5-Year, 10-Year, 15-Year, and 25-Year planning periods
6. Capital Improvement Plan development for the 5-Year, 10-Year, and 15-Year scenarios.

Existing Water Infrastructure

The District's current water supply consists of surface water from the City of Mansfield, surface water from the Brazos Regional Public Utility Agency, and groundwater from eleven (11) well sites. Surface water from both Mansfield and Brazos Regional Public Utility Agency are treated prior to delivery to the District and groundwater is disinfected at the eleven (11) individual well sites.

The District's water distribution system is comprised of twelve (12) pressure planes, nineteen (19) ground storage tanks, sixteen (16) pump stations, eight (8) elevated storage tanks, seven (7) hydropneumatic pressure tanks, and approximately 990 miles of water lines ranging in size from 1-inch to 30-inch. Refer to **Appendix E - Existing Water Infrastructure Map** for an overview of the District's existing system.

Population and Land Use

The District has experienced a significant amount of growth over the last decade and in particular the last two to three years. The average annual growth rate from 2011 through 2021 was approximately 3.01% District wide. Due to the unique size of the District, growth rates vary significantly by Pressure Plane. With the aggressive growth in certain pressure planes over the past few years, growth rates were developed for a five-year period and then a separate rate for the time beyond five years by pressure plane. With the help of District Staff, individual growth rates were determined for each Pressure Plane which resulted in an overall District growth rate of 4.86% in the five-year period and 2.57% in the 25-year period.

Land use is an important element in determining the existing water use and patterns and making future water projections. Kimley-Horn worked with District staff to verify the existing land use within the study area and to develop a 25-year land use map to supplement the existing land use map.
Kimley-Horn worked with District staff to establish projected growth areas within the study area. Projecting where and when growth is anticipated to occur within the District is important for understanding where and when capital improvement projects will be necessary to provide water service. The growth areas were divided into five categories: Existing Development, 5-Year Development, 10-Year Development, 15-Year Development, and Buildout. See **Appendix B – Boundary and Growth Map** for an illustration of these growth areas.

Water Demand

The District's average water demand has fluctuated over the last decade. However, since 2017, average water demand has leveled out and has been increasing steadily. **Figure 1** shows the District's historical average day and maximum day demand over the past decade. **Table 1** summarizes the District's projected total average day demand, maximum day demand, and connections to 2047.

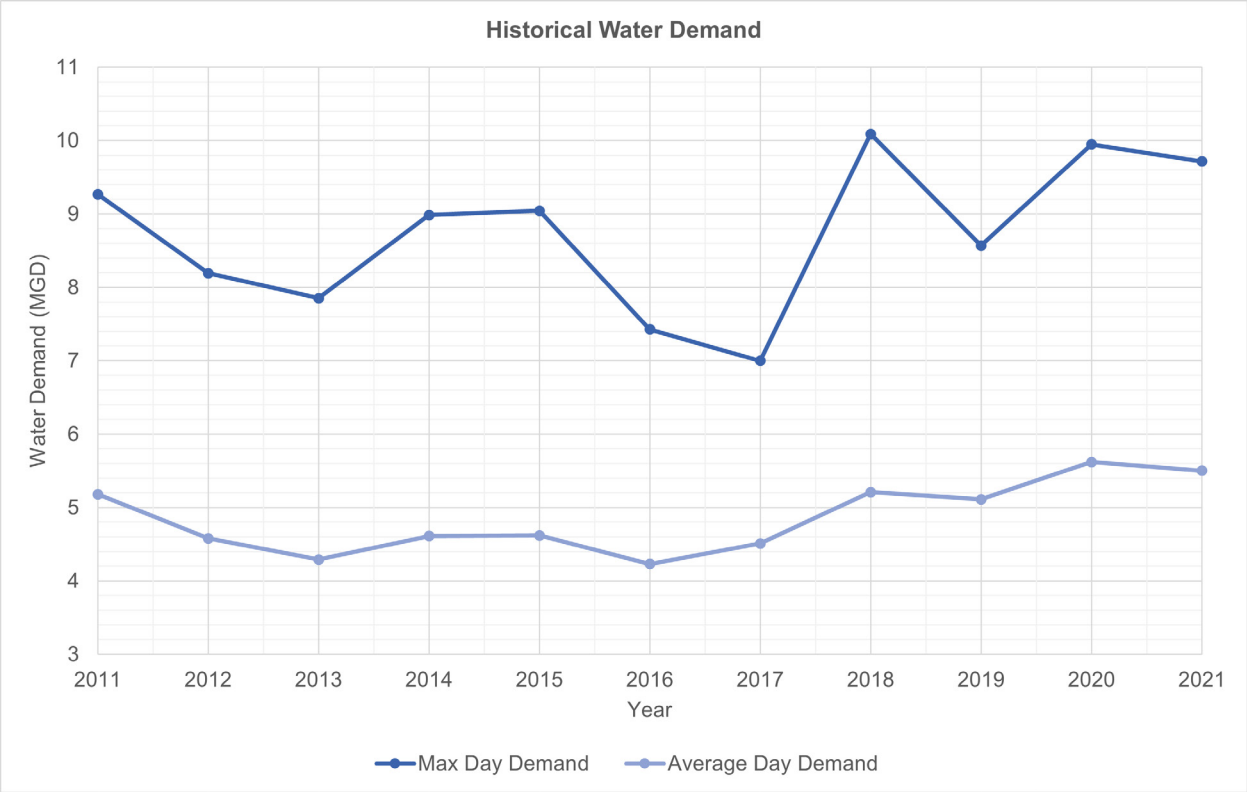


Figure 1 - Historical Water Demand

Table 1 - Projected Water Demand

Year	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Connections
2022	7.28	14.25	20,870
2027	10.46	20.46	26,456
2032	12.44	24.34	29,960
2037	14.69	28.75	33,991
2047	20.26	39.64	43,978

Infrastructure Analysis and Capital Improvement Plan

Elements of the water system, including supply, production capacity, 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. Projects included as Bond projects are currently under construction by the District. Projects included in the 5-, 10-, and 15-year categories are based on growth projections as part of this report. Improvements through the 15-year planning period are summarized below in **Table 2**, **Table 3**, **Table 4**, and **Table 5**, over the next 15 years.

1.1 BOND PROJECT SUMMARY

Table 2 - Bond Project Summary

Project No.	Project Name	
1	Pressure Plane 1 - CR 312 12” Water Line	
2	Pressure Plane 1 - CR 402 8” Water Line	
3	Pressure Plane 1 - FM 2415 12” Water Line	
4	Pressure Plane 1 - FM 4 12” Water Line	
5	Pressure Plane 8 - Caddo Road 12” Water Line	
6	Plant 8 - FM 917 12” Water Line	
7	Pressure Plane 8 - FM 1902 20” Water Line	
8	Plant 8 - FM 1902/CR 1019 20/24” Water Line	
9	Plant 8 - FM 1902/CR 1019 20/24” Water Line	
10	Pressure Plane 8 - FM 913/CR 1902 16”/20” Water Line	
11	Pressure Plane 8/13 – CR 913 16” Water Line	
12	Pressure Plane 13 - CR 1127/FM 2331 16” Water Line	
13	Pressure Plane 13 - CR 913 16” Water Line	
14	Pressure Plane 9 - CR 2331/CR 1226 12” Water Line	
	Bond Projects Sub-Total:	**$17,418,127**

1.2 5-YEAR CAPITAL IMPROVEMENT PLAN SUMMARY

Table 3 - 5-Year Capital Improvement Plan Summary

Project No.	Project Name	Project Cost
15	Pressure Plane 34- SH 174 16" Water Line	$1,750,000
16	Plant 16 - JCSUD MPSUD – 16” Fill Water Line	$1,355,293
17	Plant 27A Expansion	$785,300
18	Pressure Plane 13 - 1.5 MG EST	$10,840,000
19	Pressure Plane 8 to 34 Interconnect	$480,000
20	Pressure Plane 8 - 1.0 MG EST	$8,590,000
21	Plant 11A Expansion and 1.0 MG GST	$2,970,000
22	Plant 11B Pump Station	$11,000,000
23	Pressure Plane 13 - CR 1128/CR 913 16” Water Line	$6,670,000
24	Pressure Plane 13 - CR 1128/CR 2331 16” Water Line	$4,560,000
25	RO Treatment Plant	$91,960,000
26	Pressure Plane 13 - SH 171/CR 2331 16” Water Line	$2,430,000
27	Pressure Plane 1 – 0.75 MG EST	$7,140,000
28	Plant 17 16” Bypass	$290,000
29	Pressure Plane 25 - FM917/2738 16” Water Line	$4,470,000
30	Pressure Plane 25 - FM917 16” Water Line	$2,070,000
31	Pressure Plane 24 - CR 508 16” Water Line	$6,640,000
32	Pressure Plane 24 - CR 207 16” Water Line	$3,830,000
33	Pressure Plane 13 - CR 915/1005 16” Water Line	$6,780,000
34	Pressure Plane 8 - CR 1016 12” Water Line	$5,270,000
35	Pressure Plane 13 - CR 1233/1129 12” Water Line	$4,410,000
36	Pressure Plane 13 - SH 171 12” Water Line	$1,300,000
37	Pressure Plane 8 - CR 1010/904 12” Water Line	$6,120,000
38	Plant 21 Upgrades	$840,000
	5-Year Projects Sub-Total:	**$192,550,593**

1.3 10-YEAR CAPITAL IMPROVEMENT PLAN SUMMARY

Table 4 - 10-Year Capital Improvement Plan Summary

Project No.	Project Name	Project Cost
39	Plant 27B Pump Station and 2.5 MG GST	$18,590,000
40	Pressure Plane 13 - CR 1006 16” Water Line	$10,200,000
41	Pressure Plane 13 - SH 171 12” Water Line	$3,500,000
42	Pressure Plane 1 - CR 316 16” Water Line	$15,470,000
43	Pressure Plane 1 - FM 3136/2135 16” Water Line	$10,810,000
44	Pressure Plane 8 - CR 919/920 12” Water Line	$3,320,000
45	Pressure Plane 8 - CR920/1016 12” Water Line	$4,110,000
46	Pressure Plane 13 - CR 1232 12” Water Line	$8,300,000
	10-Year Projects Sub-Total:	**$74,300,000**

1.4 15-YEAR CAPITAL IMPROVEMENT PLAN SUMMARY

Table 5 - 15-Year Capital Improvement Plan Summary

Project No.	Project Name	Project Cost
47	Pressure Plane 8 - Pump Station and 1.0 MG GST	$13,470,000
48	Pressure Plane 8 - 1.0 MG EST	$8,590,000
49	Plant 27 to Plant 24 Transmission Main – 12”	$15,110,000
50	Plant 27B Expansion	$1,450,000
51	Pressure Plane 25 - 12” Water Line	$10,980,000
52	Pressure Plane 24 - 12” Water Line Loop	$25,250,000
53	Pressure Plane 1 - CR 405/311/406 16” Water Line	$11,300,000
54	Pressure Plane 3 - CR 313/107/204 12” Water Line	$7,590,000
55	Pressure Plane 3 - CR 204/105 12” Water Line	$6,900,000
56	Pressure Plane 3 - CR 105/401 12” Water Line	$10,960,000
57	Pressure Plane 1 - CR 305 12” Water Line	$3,220,000
58	Pressure Plane 1 - FM 4 16” Water Line	$6,560,000
59	Pressure Plane 1 - CR 308/423 16” Water Line	$12,080,000
60	Pressure Plane 1 - CR310/312 12” Water Line	$3,470,000
61	Pressure Plane 19 - CR 310 12” Water Line	$7,090,000
62	Pressure Plane 13 - 12” Water Line	$14,130,000
63	Pressure Plane 9 - 12” Water Line	$11,200,000
64	Pressure Plane 8 - W Cleburne 12” Water Line	$4,290,000
	15-Year Projects Sub-Total:	**$173,640,000**

2.0 Introduction

2.1 OBJECTIVE AND SCOPE OF STUDY

The goal of the Water Master Plan was to develop a plan for Johnson County Special Utility District (District) to meet the demands of their current customers and for the District to serve future projected residential and commercial developments within the study area. While infrastructure was planned through the 15-year period in the Capital Improvement Plan, infrastructure was sized for 25-year demands, through the year 2047.

The scope of the study was to recreate and calibrate the District's existing hydraulic model, analyze the existing system for deficiencies, and to make recommendations to serve the projected developments through the 15-year planning period. The significant scope elements of this project are as follows:

1. Existing land use determination and ultimate land use projections.
2. Historical water use analysis by unique land use category.
3. Existing hydraulic model update and calibration.
4. Existing water system analysis and deficiency identification.
5. Future water demand projections through the 5-Year, 10-Year, 15-Year, and 25-Year planning periods.
6. Capital Improvement Plan development for the 5-Year, 10-Year, and 15-Year scenarios.

2.2 DESCRIPTION OF STUDY AREA

Kimley-Horn worked with District staff to determine the study area, in which all development served by the District and within the 25-year planning period is anticipated to occur. The study area is approximately 17,320 acres (27 square miles) and includes approximately 12,050 acres (18.8 square miles) within the District's current CCN. The study area for this report included the District's ultimate service area which expands service outside of the current CCN. For the purposes of this study, much of the growth outside of the District's current CCN was not anticipated to occur within the 25-Year period. See **Appendix B – Boundary and Growth Map** for an illustration of the District's existing and proposed service areas.

2.3 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** - Annual water consumption divided by the number of days in a year. The average day water demand is the average water demand a system experiences over a one-day period. Typically measured in units of Million Gallons Per Day (MGD).
- **Capital Improvement Plan** - Recommended infrastructure improvements to the water system based on population and water demand projections for future conditions.
- **Demand (Consumption)** - Volume of water used for a given period. Typically measured in units of Million Gallons Per Day (MGD) or Gallons Per Minute (gpm).
- **Distribution System (Piping)** - Distribution piping typically consists of 12-inch diameter and smaller piping. Distribution piping functions primarily to serve local customer water connections.
- **Diurnal Curve** – A graph depicting typical or average water demand over a 24-hour period with water demand plotted on the y-axis and time plotted on the x-axis.
- **Firm Pumping Capacity** - The total pumping capacity that a pump station can deliver with the largest pump out of service.
- **Maximum Day Demand** - Water consumption, in volume of water, used on the highest consumption day in a year. Typically measured in units of Million Gallons Per Day (MGD).
- **Peak Hour Demand** - The maximum one-hour water demand that a system experienced or is anticipated to experience during a particular year or other time period. Typically measured in units of Million Gallons Per Day (MGD) or Gallons Per Minute (gpm).

- **Peaking Factor** - A 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.
- **Total Pumping Capacity** - The total pumping capacity that a pump station can deliver.
- **Transmission System (Piping)** - Transmission piping typically consists of 12-inch diameter and larger piping. Transmission piping has minimal service connections and functions primarily as the vehicle to move large quantities of water throughout the water system.

2.4 WATER SYSTEM ABBREVIATIONS

Table 6 - Abbreviations

Abbreviation	Meaning
ADD	Average Day Demand
CIP	Capital Improvement Plan
ETJ	Extra Territorial Jurisdiction
EST	Elevated Storage Tank
GIS	Geographic Information System
GPD	Gallons Per Day
gpm	Gallons Per Minute
GST	Ground Storage Tank
HGL	Hydraulic Grade Line (Feet)
In	Inch
LF	Linear Feet
MDD	Maximum Day Demand
MG	Million Gallons
MGD	Million Gallons Per Day
PHD	Peak Hour Demand
PRV	Pressure Reducing Valve
PS	Pump Station
PSI	Pounds Per Square Inch
SCADA	Supervisory Control and Data Acquisition
TCEQ	Texas Commission on Environmental Quality
WTP	Water Treatment Plant
SWATS	Surface Water Advanced Treatment System
TBTF	Trinity Basin Transmission Facilities
BRPUA	Brazos Regional Public Utility Agency

3.0 Existing Water Infrastructure

The District's current water supply consists of surface water from the City of Mansfield, surface water from the BRPUA, and groundwater from eleven (11) groundwater well sites. Water from both Mansfield and Brazos Regional Public Utility Agency are treated with chloramines prior to delivery to the District and groundwater is disinfected with chlorine at the majority of the eleven (11) individual well sites.

The District's water distribution system is comprised of twelve (12) pressure planes, nineteen (19) ground storage tanks, sixteen (16) pump stations, eight (8) elevated storage tanks, seven (7) hydropneumatic pressure tanks, and approximately 990 miles of water lines ranging in size from 1-inch to 30-inch. Refer to **Appendix E - Existing Water Infrastructure Map** for an overview of the District's existing system.

3.1 WATER SUPPLY

The District currently has wholesale agreements with maximum allowed daily demands of 25 MGD with the City of Mansfield and 7.19 MGD with the BRPUA. The District receives water from Mansfield at the Plant 25 Meter located near the intersection of Lone Star Road and S. Main Street. Water is delivered to Plant 27 prior to being pumped into the system. Water from BRPUA is treated at the BRPUA SWATS facility and delivered to the JCSUD High Service Pump Station where it is then pumped through the SWATS transmission main to the west side of the system. The District has a total of eighteen (18) groundwater wells located at eleven (11) different well sites. Eleven (11) of the groundwater wells pump water from the Trinity Aquifer, and seven (7) of the groundwater wells pump water from the Paluxy Aquifer. The District's groundwater supply is managed and coordinated with the Prairielands Groundwater Conservation District for all wells. Additionally, water supplies from surface water and groundwater are treated differently and special consideration must be provided when blending water from different sources. **Figure 2** below represents how water is transferred through the system and distributed through each pressure plane.

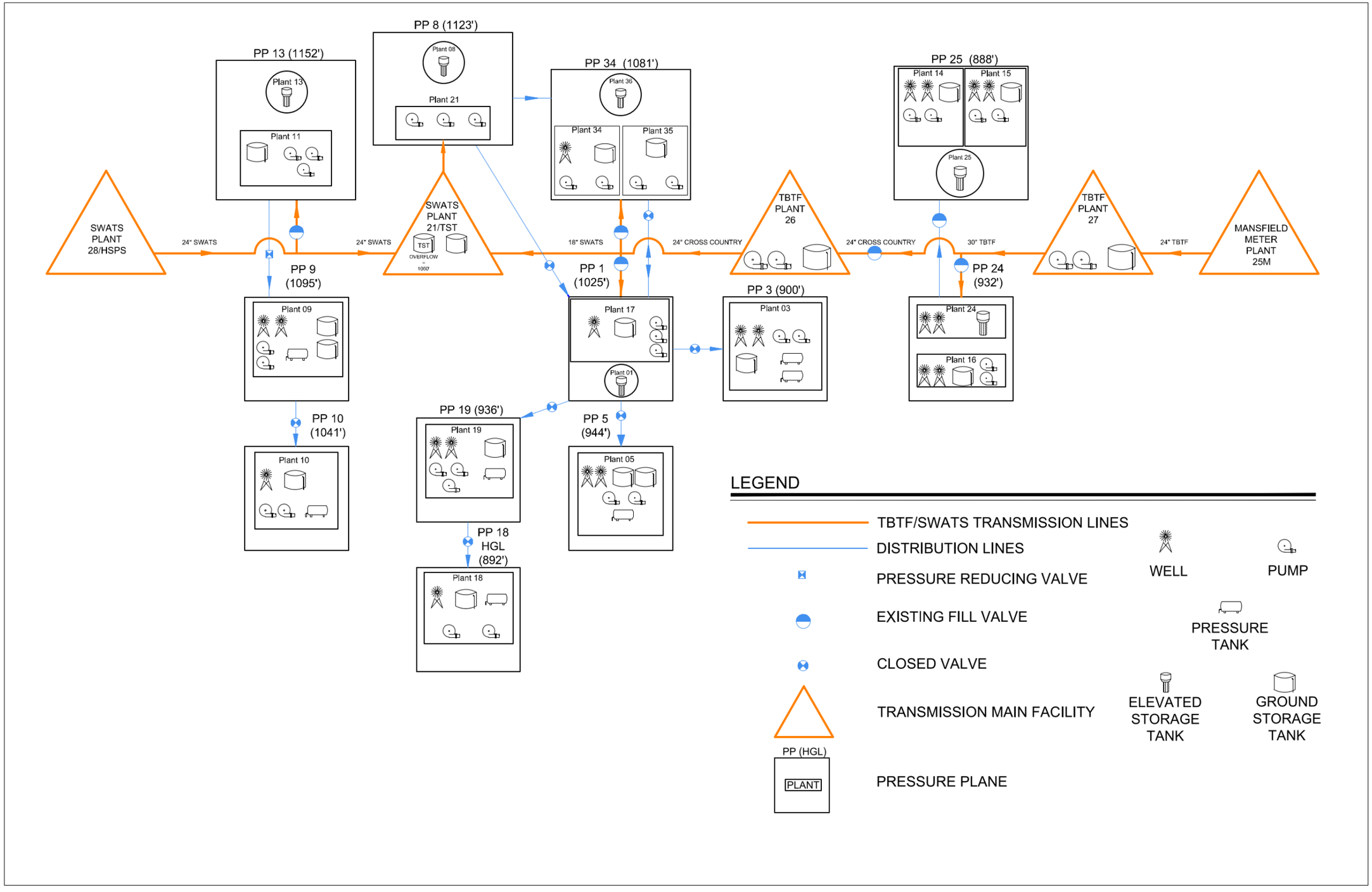


Figure 2 - Existing System Process Flow Diagram

See **Table 7** for a summary of the District's existing 2022 water supply capacity. As the capacity of the groundwater wells decrease, the District plans to supplement by increasing the amount of contracted wholesale surface water.

Table 7 - Water Supply Infrastructure

Groundwater Source	Capacity (MGD)	Capacity (gpm)	Pressure Plane
Well 3T	0.44	306	3
Well 3P	0.00	0	3
Well 5T	0.18	128	5
Well 5P	0.07	46	5
Well 9T	0.17	115	9
Well 9P	0.07	48	9
Well 10T	0.22	154	10
Well 14T	0.27	185	25
Well 14P	0.18	122	25
Well 15T	0.27	189	25
Well 15P	0.11	75	25
Well 16T	0.24	168	24
Well 16P	0.06	40	24
Well 17T	0.10	67	1
Well 18T	0.11	74	18
Well 19T	0.27	186	19
Well 19P	0.14	100	19
Well 24T	0.24	168	24
Well 24P	0.09	60	24
Total:	**3.21**	**2,231**	

3.2 PRESSURE PLANES

The District operates twelve pressure planes. Refer to **Appendix E – Existing Water Infrastructure Map** for the District's existing pressure plane boundaries.

The District operates a large number of pressure planes due to the large overall area of the District and the natural contours of the District's service area. In general, the District's more populated pressure planes, Pressure Planes 1, 8, 34, and 13, are served by surface water. The distribution of this water can be seen in **Figure 2**. The more rural pressure planes, Pressure Planes 3, 5, 19, 18, 9 and 10, are primarily served by groundwater wells. Individual pressure planes utilize pressure reducing valves to maintain acceptable pressures within certain parts of each pressure plane. Refer to **Appendix E – Existing Water Infrastructure Map** for the location of the pressure reducing valves.

3.3 PUMPING AND GROUND STORAGE FACILITIES

The District operates sixteen (16) pumping facilities throughout the system. Referred to as Water Plants (WP), the pumping facilities are as follows:

- Water Plant 3
- Water Plant 5
- Water Plant 9
- Water Plant 10
- Water Plant 11
- Water Plant 14
- Water Plant 15
- Water Plant 16
- Water Plant 17
- Water Plant 18
- Water Plant 19
- Water Plant 21/TST
- Water Plant 26
- Water Plant 27
- Water Plant 34
- Water Plant 35

Table 8 and **Table 9** summarize the District's pumping and ground storage facilities. Note that Water Plants 26, 27, and 21/TST supply water to multiple pressure planes.

Table 8 - Pump Station Facilities

Facility	Total Capacity (MGD)	Total Capacity (gpm)	Firm Capacity (gpm)	# of Pumps	Nearest Cross Street
WP 3	2.30	1,600	800	2	CR 313
WP 5	1.21	840	420	2	CR 305
WP 9	1.15	800	400	2	FM 2331
WP 10	0.63	440	220	2	CR 1224
WP 11	3.17	2,200	1,450	3	CR 1128
WP 14	1.41	980	490	2	CR 519
WP 15	1.41	980	490	2	CR 917
WP 16	0.86	600	300	2	CR 207
WP 17	5.18	3,600	2,400	3	CR 800
WP 18	0.86	600	300	2	HWY 174
WP 19	2.66	1,850	1,050	3	CR 310
WP 21/TST	6.39	4,440	2,570	3	Reservoir Rd
WP 26	14.98	10,400	5,200	2	CR 805
WP 27	8.06	5,600	2,800	2	CR 621
WP 34	2.35	1,630	815	2	N Main St
WP 35	2.16	1,500	750	2	Plum St
Total:	**54.78**	**38,060**	**20,455**	**36**	

Table 9 - Ground Storage Facilities

Facility	Capacity (MG)	Diameter (ft)	Pressure Plane
WP 3	0.50	60	3
WP 5	(2) 0.10	28	5
WP 9	(2) 0.05	17.5	9
WP 10	0.10	28	10
WP 11	0.25	37.67	13
WP 14	0.10	26	25
WP 15	0.10	26	25
WP 16	0.20	38	24
WP 17	0.50	60	1
WP 18	0.10	26	18
WP 19	0.50	55	19
WP 21	0.50	40	8
WP TST	3.00	82.5	8
WP 26	1.00	75.53	TBTF
WP 27	1.00	65.33	TBTF
WP 34	0.20	40	34
WP 35	0.15	33	34
Sub-Total	**8.50**		

3.4 PRESSURE MAINTENANCE FACILITIES

The District operates eight (8) elevated storage tanks (EST) and seven (7) hydropneumatic pressure tanks for pressure maintenance within the system. **Table 10** summarizes the District's Elevated Storage Tank facilities, while **Table 11** summarizes the District's Hydropneumatic Pressure Tank facilities.

Table 10 - Elevated Storage Tank Facilities

Facility	Size (MG)	HGL Setting or Overflow Elevation (ft)	Head Range	Pressure Plane
WP 1	1.0	1025	40	1
WP 8	1.0	1123	35	8
WP 13	0.75	1152	35	13
WP 24	0.50	932	30	24
WP 25	0.50	888	30	25
WP 34	0.75	1083	35	34

Table 11 - Hydropneumatic Pressure Tank Facilities

Facility	Size (MG)	Max HGL Setting (ft)	Pressure Plane
WP 3	0.12	900	3
WP 3	0.10	900	3
WP 5	0.05	944	5
WP 9	0.08	1095	9
WP 10	0.12	1041	10
WP 18	0.50	892	18
WP 19	0.18	936	19

3.5 WATER SYSTEM

The District's existing water transmission and distribution system consists of pipe sizes ranging from 1-inch to 30-inch in diameter. **Table 12** summarizes the District's water main linear footage.

Table 12 - Water Mains

Type of Pipe	Approximate Mileage (mi)
Distribution Main	941
Transmission Main	49
Total:	**990**

For the purposes of this report distribution piping is considered water mains 10-inch and smaller and transmission mains are considered water mains larger than 10-inches. The District's transmission system is comprised of multiple water mains but it's most critical transmission mains are the primary spine of the system that carries water from it's wholesale providers on the east and the west. These primary transmission mains are called the TBTF, Cross Country, and SWATS mains and are identified as orange linework in **Appendix E – Existing Water Infrastructure Map**.

4.0 Connections and Land Use

4.1 HISTORICAL CONNECTIONS

The District has experienced modest growth over the last decade and more significant in the last two to three years. The average annual growth rate from 2011 through existing was approximately 3.01%. **Table 13** summarizes the annual connection counts data from 2011 through 2021.

Table 13 - Historical Connections

Year	Connections	Annual Growth Rate
2011	15,519	
2012	15,652	8.45%
2013	15,786	0.79%
2014	15,968	1.23%
2015	16,091	1.17%
2016	16,368	2.01%
2017	16,718	2.51%
2018	17,142	3.33%
2019	17,634	3.40%
2020	18,336	4.17%
2021	18,991	2.47%
Existing	20,870	8.46%
Average		3.01%

4.2 EXISTING LAND USE

The existing land use of the study area is an important component in determining the existing water use and patterns within the study area. Kimley-Horn utilized land use information available from the Johnson County Appraisal District as the starting point for the existing land use map. Kimley-Horn utilized this data, recent aerials, and worked with District staff to verify the existing land use within the study area. The majority of the developed study area is rural residential and single-family residential development. Commercial and industrial developments exist along the major thoroughfares and intersections especially along State Highway 171, Interstate Highway 35, State Highway 74, and Chisolm Trail Parkway.

Refer to **Appendix C – Existing Land Use Map** for an illustration of the existing land use. **Table 14** summarizes the existing distribution of land use within the study area.

Table 14 - Existing Land Use Summary

Land Use	Acreage (ac)	% of Total
Agricultural	38,985	11.00%
Commercial	3,537	1.00%
Industrial	1,853	0.52%
Miscellaneous	152	0.04%
Multi-Family	147	0.04%
Public	2,749	0.78%
Rural	54,336	15.33%
Single-Family	8,178	2.31%
Utility	153	0.04%
Vacant	244,450	68.95%
Total	**354,540**	100.0

4.3 ULTIMATE LAND USE

The ultimate land use is an important element in making future water projections and in forecasting water distribution across the Study Area. Kimley-Horn worked with District staff to develop an ultimate land use map to supplement the existing land use map. The majority of the open or vacant lots in the study area are expected to develop into rural residential or a more dense single-family residential. For future single-family and planned development areas, an assumption of 0.35 acres per residential parcel was used. This assumption was based on average lot size for developments occurring within the District and accounts for public right-of-way within these new developments. Commercial growth is projected to continue to border major thoroughfares in accordance with the existing land use patterns.

Refer to Appendix D – Ultimate Land Use Map for the ultimate land use map. **Table 15** summarizes the breakdown of the anticipated land use in the District's selected Study Area.

Table 15 - Ultimate Land Use Summary

Land Use Type	Acreage (ac)	% of Total
Agricultural	0	0.00%
Commercial	3,537	1.00%
Industrial	2,165	0.61%
Miscellaneous	152	0.04%
Multi-Family	147	0.04%
Public	2,749	0.78%
Rural	0	0.00%
Single-Family	8,178	2.31%
Utility	153	0.04%
Vacant	0	0.00%
Rural Residential	187,147	52.79%
Medium Residential	149,688	42.22%
High Residential	624	0.18%
Total	**354,540**	100.0

Future land use allocations were determined during meetings held with District Staff. Since a comprehensive plan is not available for the District as a whole land use was allocated based on development density. The individual breakdowns can be found in **Table 16** below. Areas considered rural residential were generally located south of Highway 67, medium residential were generally located north of Highway 67, and high residential were located near Burleson and Mansfield.

Table 16 - Proposed Land Use Types

Land Use Type	Future Land Use Allocations			
	Commercial	High Single Family	Low Single Family	Multi-Family
Rural Residential	5%	20%	75%	0%
Medium Residential	15%	75%	10%	0%
High Residential	15%	60%	10%	15%

4.4 PHASING AND GROWTH PROJECTIONS

Kimley-Horn coordinated with District staff to establish projected growth areas within the study area. Projecting where and when growth is anticipated to occur in the District is important for understanding where and when capital improvement projects will be necessary to provide water service.

The growth areas were divided into five categories: Existing Development, 5-Year Development, 10-Year Development, 15-Year Development and Buildout. See **Appendix B – Boundary and Growth Map** for an illustration of these growth areas. Refer to **Table 17** for descriptions of each growth area.

Table 17 - Growth Area Descriptions

Growth Area	Description
Existing Development	Limits are approximately defined as within or adjacent to the core of existing development. Additional growth in this area will be infill of open/vacant lots.
5-Year	Limits are defined as planned developments known to the District. This area is anticipated to begin development within the next five (5) years and continue through the planning period.
10-Year	Limits are approximately defined as development of open tracts adjacent to the Existing Development and 5-Year growth areas and along major corridors. This area is anticipated to begin development after five (5) years (Year 2027) and continue through the planning period.
15-Year	Limits are approximately defined as development of greenfield tracts outside of the core of existing developments. This area is anticipated to begin development after ten (10) years (Year 2032) and continue through the planning period.
Buildout	Limits are approximately defined as development of greenfield tracts outside of the core of existing developments and the District's current CCN. This area is anticipated to begin development after 15 years and beyond the planning period.

Due to the unique size of the District and the vast differences in growth rates throughout the system, it was determined that the most efficient way to set growth rates was based on individual pressure planes. In addition, due to recent significant growth, it was calculated that the five-year planning window should have a more aggressive growth rate in appropriate pressure planes from known development being planned with the District. These growth rates were coordinated with District staff and historical growth for the District. **Table 18** provides the growth rates used for the 5-year period and the period beyond 5-years for each pressure plane. **Table 19** provides connection counts for each Pressure Plane in the 5-, 10-, 15-, and 25-year periods.

Table 18 - Connection Growth Rates by Pressure Plane

Pressure Plane	Historical	5-Year Growth Rate	Beyond 5-Year Growth Rate
1	2.03%	4.14%	2.03%
3	1.98%	1.98%	1.41%
5	2.99%	2.99%	1.58%
8	3.13%	4.51%	3.43%
9	1.80%	1.80%	2.00%
10	2.99%	2.99%	1.48%
13	11.76%	11.76%	3.00%
18	4.10%	4.10%	2.00%
19	1.10%	1.10%	3.00%
24	1.65%	5.24%	3.00%
25	0.85%	3.68%	1.50%
34	1.02%	1.54%	1.02%
Average	**3.01%**	**4.86%**	**2.57%**

Table 19 - Connection Counts by Pressure Plane

Pressure Plane	Existing	5-Year	10-Year	15-Year	25-Year
1	3,160	3,871	4,281	4,734	5,788
3	624	688	738	792	910
5	235	272	294	318	372
8	5,807	7,240	8,570	10,144	14,212
9	236	258	285	315	383
10	139	161	173	186	216
13	2,605	4,542	5,265	6,104	8,203
18	192	235	259	286	349
19	439	464	538	624	838
24	2,356	3,041	3,525	4,086	5,492
25	1,717	2,057	2,216	2,387	2,770
34	3,360	3,627	3,816	4,015	4,445
Total	**20,870**	**26,456**	**29,960**	**33,991**	**43,978**

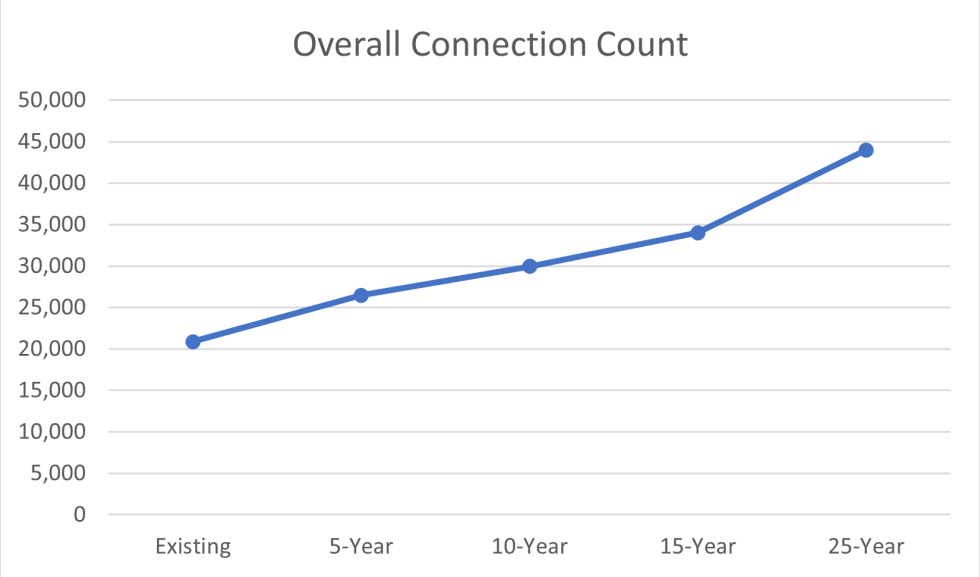


Figure 3 – Overall Connection Count

The resulting 5-year average growth rate across the District is 4.86%. The average growth rate across the District beyond the 5-year planning window is 2.57%.

5.0 Water Demand

5.1 HISTORICAL WATER DEMAND

The District's average water demand has fluctuated over the last decade. However, since 2017 average water demand has been showing a steady increase. **Figure 4** shows the District's historical average day and maximum day demand over the past decade.

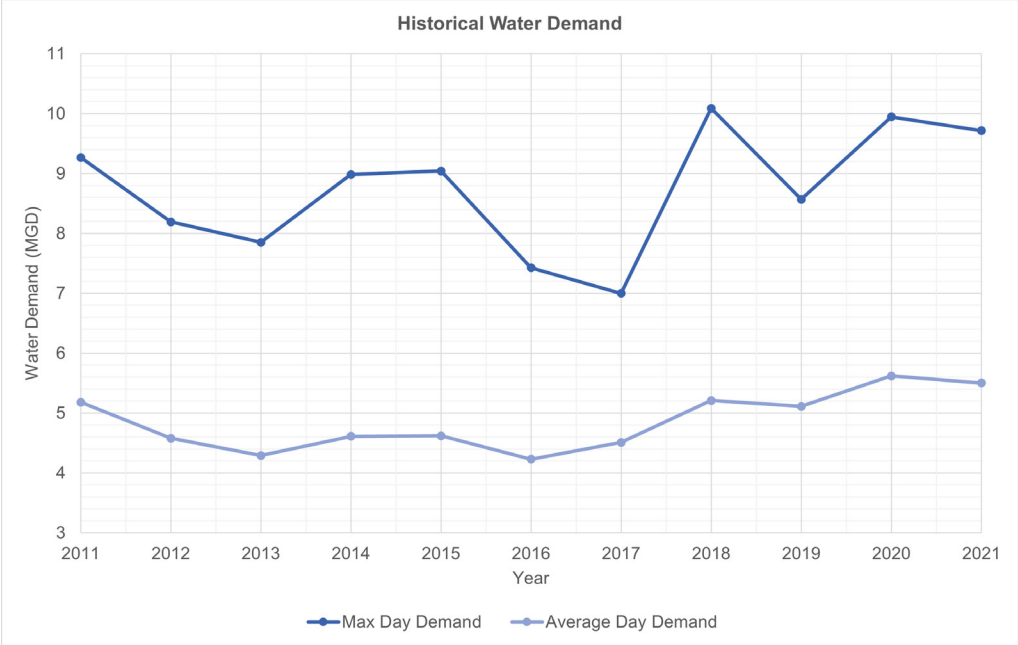


Figure 4 – Historical Water Demand

Table 20 summarizes the District's historical average day and maximum day water demands. The greatest average day to maximum day peaking factor experienced by the District was 1.96 in 2015. Because the water system must be designed to provide the maximum day demand, this historical peaking factor is important for projecting future average day and maximum day demands.

Table 20 - Historical Water Demand

Year	Average Day Demand (MGD)	Average Day Demand Percent Change (%)	Max Day Demand (MGD)	Average Day to Maximum Day Peaking Factor
2011	5.18	-	-	-
2012	4.58	-11.6%	8.19	1.79
2013	4.29	-6.3%	7.85	1.83
2014	4.61	7.5%	8.99	1.95
2015	4.62	0.2%	9.04	1.96
2016	4.23	-8.4%	7.43	1.76
2017	4.51	6.6%	6.99	1.55
2018	5.21	15.5%	10.09	1.94
2019	5.11	-1.9%	8.57	1.68
2020	5.62	10.0%	9.95	1.77
2021	5.50	-2.1%	9.71	1.77
2020	5.62	10.0%	9.95	1.77
2021	5.50	-2.1%	9.71	1.77

The District provides water to multiple wholesale customers. **Table 21** shows the District's existing wholesale customer's contracted max day demand and max allowed flow rate.

Table 21 - Wholesale Customer Demands

Wholesale Customer	Max Day Demand (MGD)	Max Allowed Flow Rate (gpm)
*City of Godley	-	-
Bell Manor	0.03	20
Ridgecrest	0.11	75
City of Keene	1.00	694
Mountain Peak SUD	1.50	1,388
City of Alvarado	2.00	1,388
Homestead	0.36	250
Bethany SUD	1.00	694
Sundance	0.05	35
*Sanderview	-	-

*DENOTES EMERGENCY FEED ONLY

A diurnal curve is important for understanding the water demand variations over 24 hours, most importantly the peak hour demand. Using the historical SCADA information, a typical system unitless diurnal curve was created for the six largest pressure planes: 1, 8, 13, 24, 25, and 34. Pressure Planes 9 and 10 utilize the Pressure Plane 13 diurnal curve and Pressure planes 3, 5, 18, and 19 utilize the Pressure Plane 1 diurnal curve. The individual diurnal curves were utilized in the hydraulic model to analyze the system in existing and proposed scenarios over a 24-hour period. See **Figures 5 through 10** for the individual pressure plane diurnal curves.

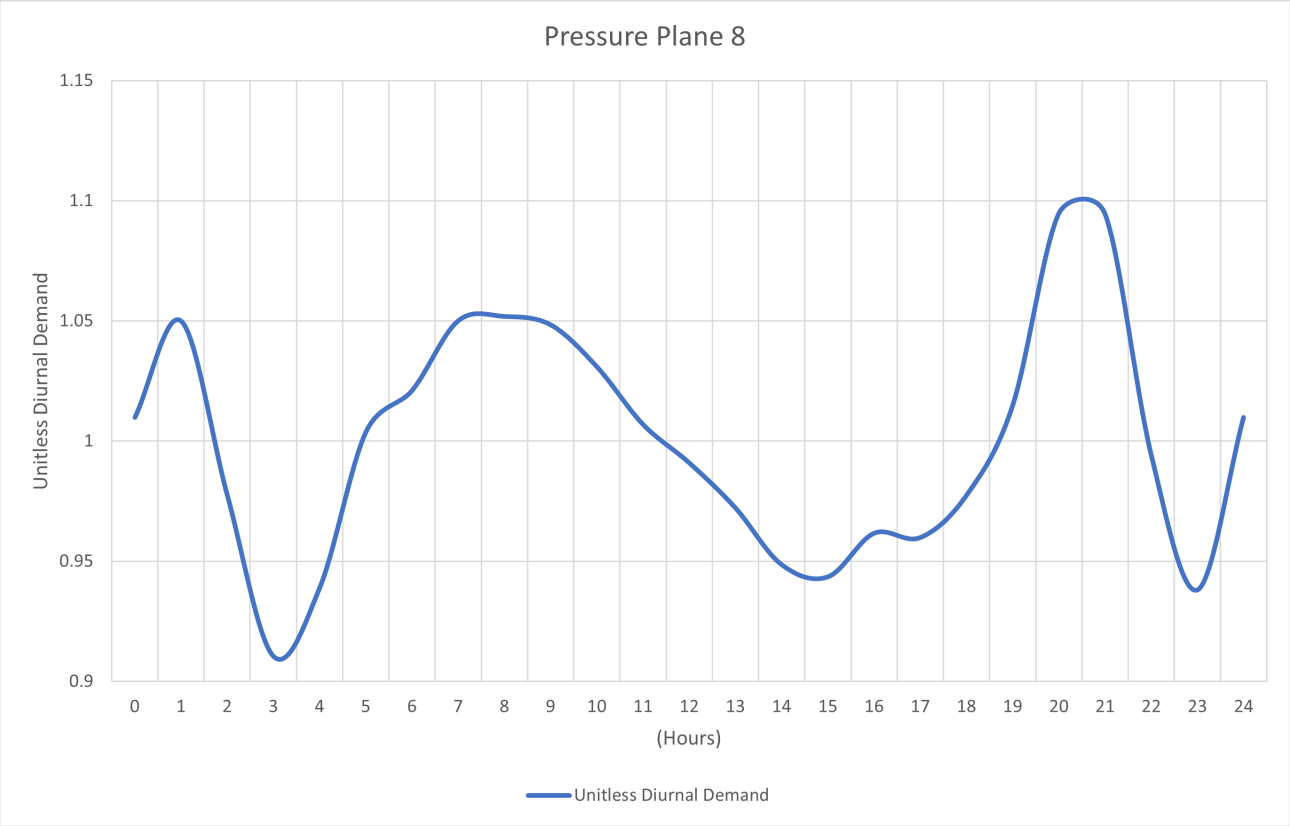


Figure 5 – Pressure Plane 8 System Diurnal Curve

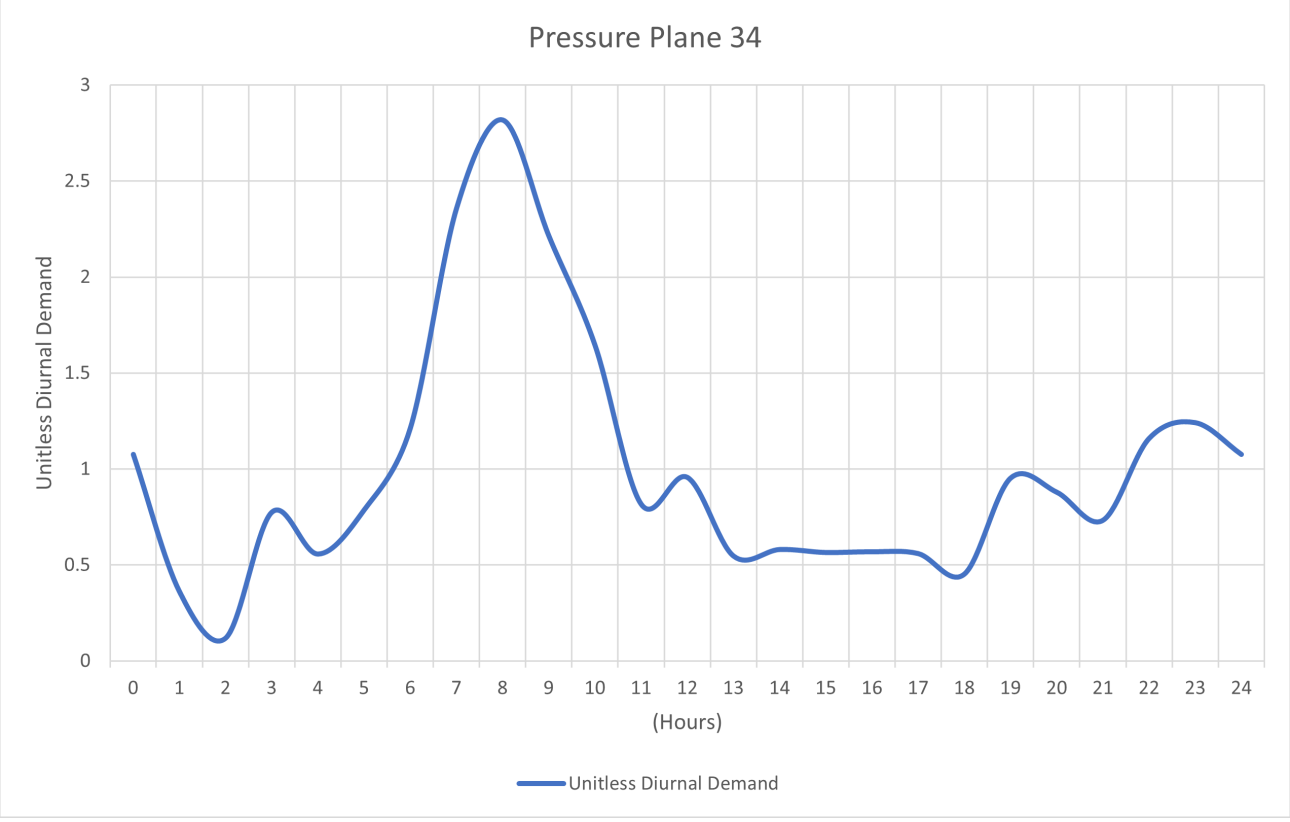


Figure 6 – Pressure Plane 34 System Diurnal Curve

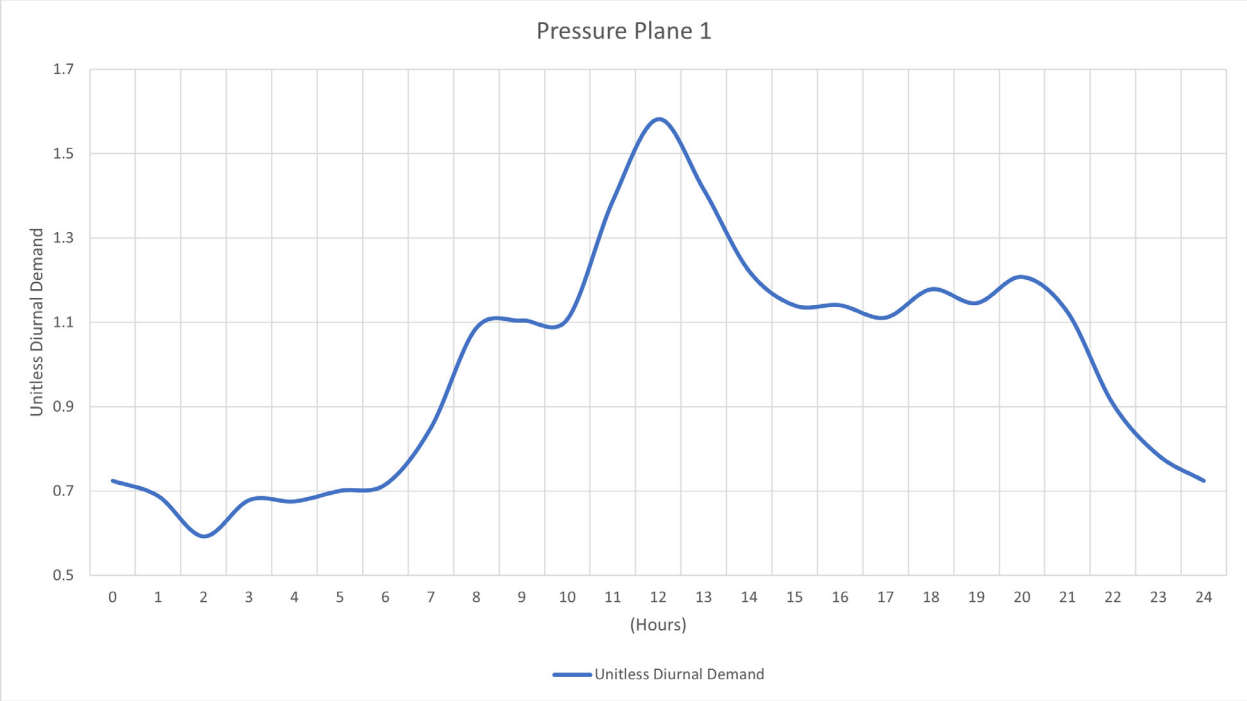


Figure 7 – Pressure Plane 1 System Diurnal Curve

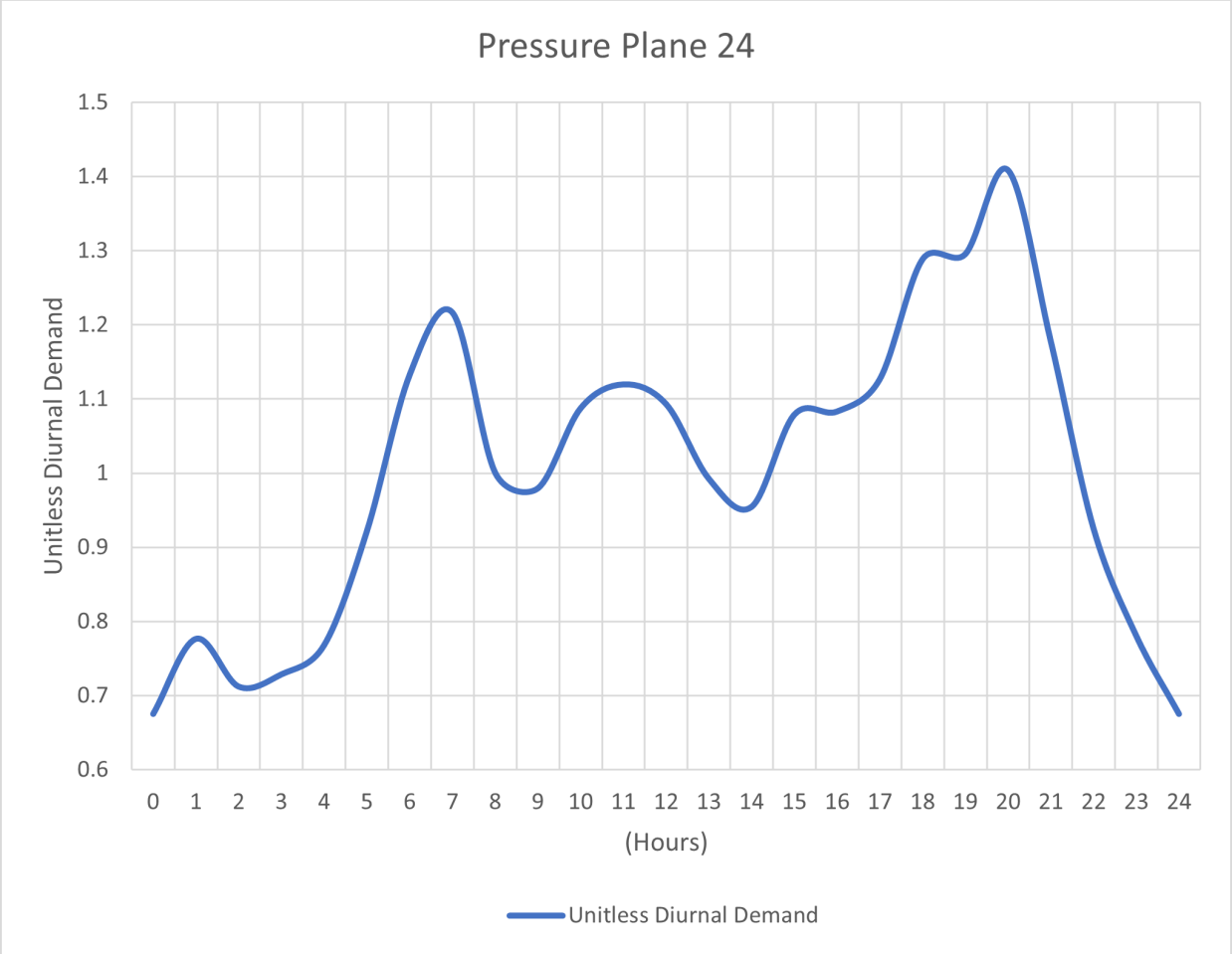


Figure 8 – Pressure Plane 24 System Diurnal Curve

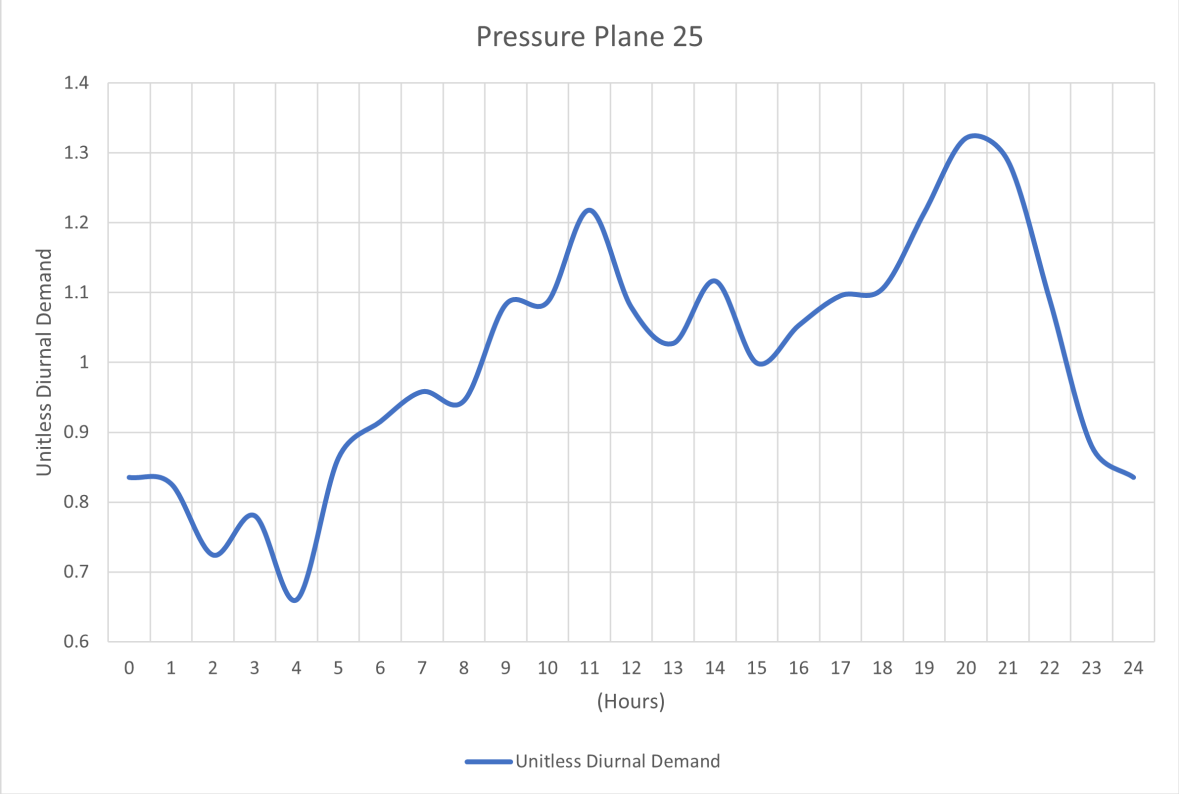


Figure 9 – Pressure Plane 25 System Diurnal Curve

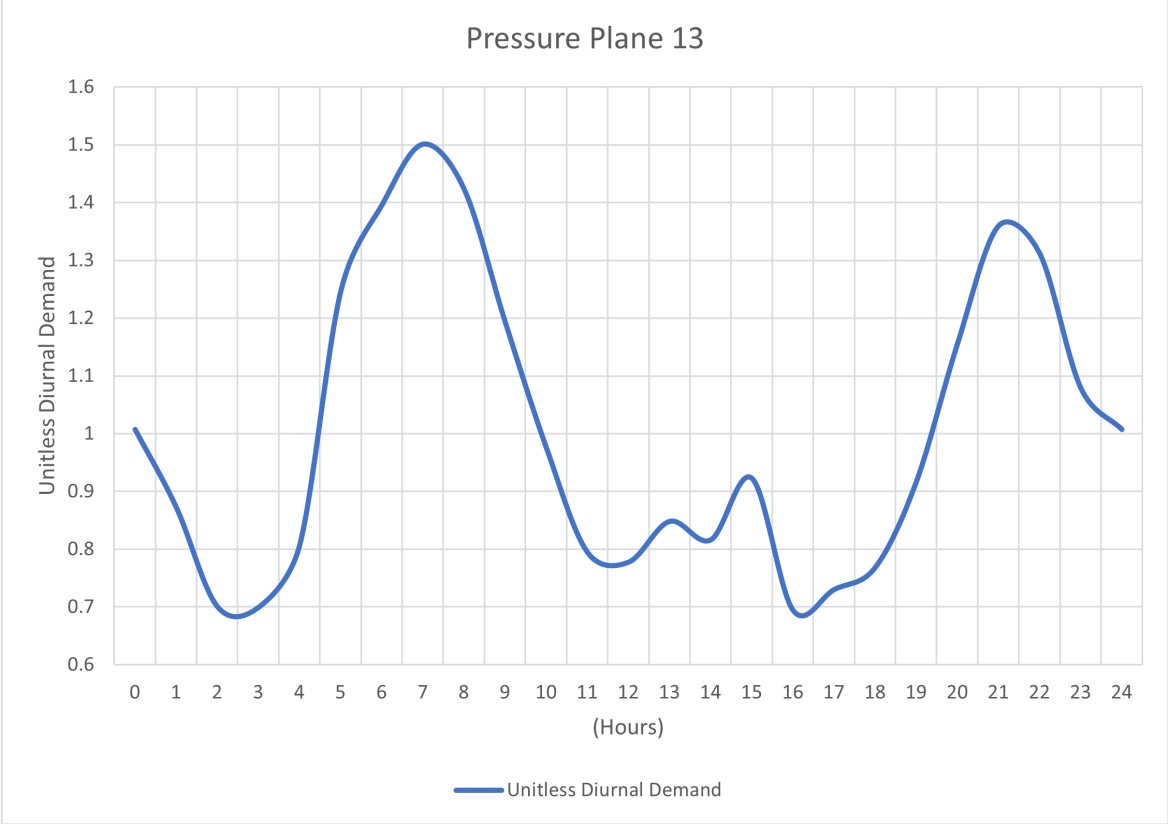


Figure 10 – Pressure Plane 13 System Diurnal Curve

5.2 WATER DEMAND PROJECTIONS

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 most appropriate way to project future water demands.

Land Use Demand

District staff provided historical customer water usage for 2021. The customer data was used to match a billed amount of water to an address and its corresponding existing land use. Using the water demands associated with each land use type and the areas of these corresponding parcels, an average day water demand loading factor (GPD/Acre) was calculated for each land use.

These calculated existing water demand loading factors were used for projecting future water demands. **Table 22** lists the average day water demand loading factors for each land use type. It should be noted that the existing water model was loaded with the actual 2021 water demand information available for each customer account. See **Section 6 - Methodology** for a discussion of modeling methodology.

Table 22 - Average Water Loading Factors

Land Use Type	Average Day Demand Loading Factors (GPD/Acre)
Rural Residential	725.0
Medium Residential	2,194.0
High Residential	3,295.9

5.3 PROJECTED WATER DEMAND AND CONNECTIONS

Refer to **Section 4.4 – Phasing and Growth Projections** for a discussion on the growth and components used to develop the projected average day demand. **Tables 23 through 26** summarize the projected average day demand, max day demand, and connections for the District by pressure plane for the existing, 5-, 10-, and 15-year planning periods, respectively. It is important to note that these demand projections by pressure plane do not account for any wholesale agreements.

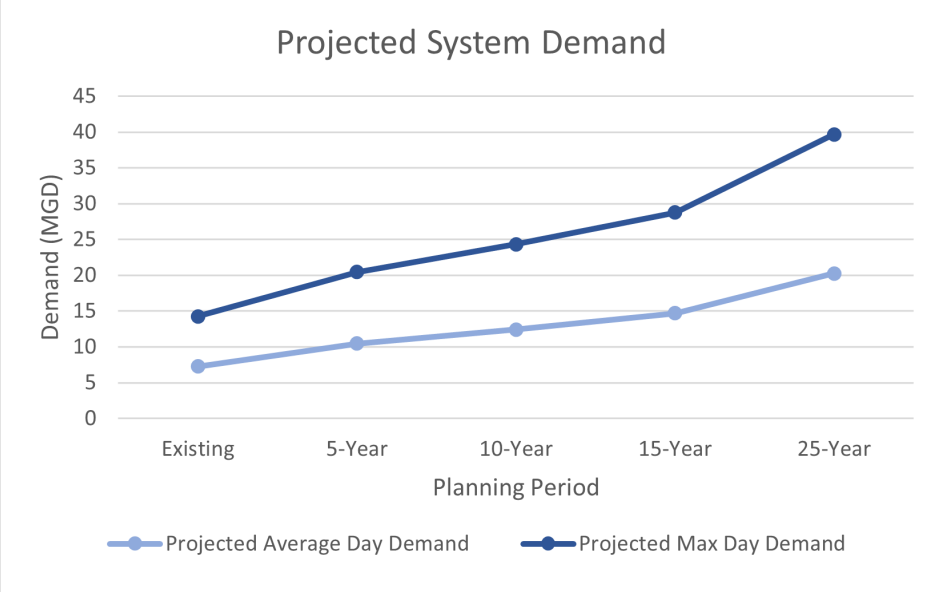


Figure 11 - Projected System Demand

Table 23 – Existing Water Demand

Pressure Plane	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Connections
1	0.16	0.32	3,160
3	0.07	0.13	624
5	0.01	0.01	235
8	1.05	2.06	5,807
9	0.08	0.15	236
10	0.10	0.20	139
13	0.40	0.79	2,605
18	0.14	0.27	192
19	0.03	0.06	439
24	0.32	0.63	2,356
25	1.02	2.00	1,717
34	0.54	1.06	3,360
Total:	3.94	7.71	20,870

Table 24 – 5-Year Water Demand

Pressure Plane	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Connections
1	0.66	1.28	3,871
3	0.12	0.23	688
5	0.03	0.06	272
8	1.82	3.56	7,240
9	0.09	0.18	258
10	0.12	0.24	161
13	1.46	2.87	4,542
18	0.17	0.33	235
19	0.05	0.10	464
24	0.70	1.37	3,041
25	1.20	2.35	2,057
34	0.69	1.35	3,627
Total:	7.11	13.92	26,456

Table 25 – 10-Year Water Demand

Pressure Plane	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Connections
1	0.93	1.82	4,281
3	0.15	0.30	738
5	0.04	0.08	294
8	2.52	4.94	8,570
9	0.11	0.21	285
10	0.13	0.25	173
13	1.86	3.64	5,265
18	0.19	0.37	259
19	0.10	0.20	538
24	0.98	1.92	3,525
25	1.29	2.52	2,216
34	0.79	1.55	3,816
Total:	9.09	17.80	29,960

Table 26 – 15-Year Water Demand

Pressure Plane	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Connections
1	1.23	2.41	4,734
3	0.18	0.35	792
5	0.05	0.09	318
8	3.36	6.58	10,144
9	0.12	0.24	315
10	0.14	0.27	186
13	2.32	4.54	6,104
18	0.21	0.41	286
19	0.17	0.32	624
24	1.31	2.55	4,086
25	1.38	2.70	2,387
34	0.90	1.76	4,015
Total:	11.35	22.21	33,991

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 District's system currently serves approximately 20,870 connections. Projecting connections followed a similar methodology to the water demand. Refer to **Table 27** for the projected number of connections within the District's study area.

Table 27 – Projected Connections

Pressure Plane	Existing	5-Year	10-Year	15-Year	25-Year
1	3,160	3,871	4,281	4,734	5,788
3	624	688	738	792	910
5	235	272	294	318	372
8	5,807	7,240	8,570	10,144	14,212
9	236	258	285	315	383
10	139	161	173	186	216
13	2,605	4,542	5,265	6,104	8,203
18	192	235	259	286	349
19	439	464	538	624	838
24	2,356	3,041	3,525	4,086	5,492
25	1,717	2,057	2,216	2,387	2,770
34	3,360	3,627	3,816	4,015	4,445
Total:	**20,870**	**26,456**	**29,960**	**33,991**	**43,978**

6.0 Methodology

6.1 WATER SYSTEM MODELING METHODOLOGY

To evaluate the existing water system, a hydraulic model (InfoWater Pro) was created representing the existing system over a 48-hour period. Information required and sources included the following:

- Pipe data: Pipe length, location, and diameter.
  - Obtained from the District's Geographic Information System (GIS).
- Node data: Ground elevation and water demand.
  - Elevations were determined from local topographic data and water demands from the 2021 customer billing data.
- Pump data: Pump's characteristic performance curve and impeller elevation.
  - Provided by the District and pump manufacturers.
- Storage data: Each facility's elevation, head range, and tank diameter.
  - Provided by the District.

6.2 WATER SYSTEM MODEL CALIBRATION

To confirm the hydraulic model reasonably represented actual system conditions, the model was calibrated using data from fire flow tests performed throughout the system. Calibrating the model using fire flow test data, rather than data recorded during normal average day or maximum day conditions is important because it more closely mimics the extremes or limits at which the water system is required to perform. This is especially important in smaller systems where fire flow demands are greater than, or represent a significant fraction of, average day or maximum day demands

Kimley-Horn and District staff performed 45 fire flow tests between January and April 2021 to test all 12 pressure planes as well as the TBTF, Cross Country, and SWATS Transmission Mains. Kimley-Horn placed pressure loggers at strategic locations in the distribution system, downstream of pump stations, and downstream of pressure reducing valves to record the system's response to the fire flow tests. Static and residual tests were also recorded in the immediate vicinity of each fire flow test. SCADA information, indicating elevated and ground tank levels, pump status, and pressure reducing valve settings was provided by the District at the time of each test.

6.3 SYSTEM ANALYSIS AND FUTURE GROWTH

A scenario was created in the model to represent the existing system and each future planning scenario. For future scenarios, water demands were added to the model corresponding with the location of the growth areas shown in **Appendix B - Boundary and Growth Map** and the various growth rates by pressure plane. Any improvements needed to meet the District or TCEQ design criteria were then implemented into the model. The model was run during average day, maximum day, and fire flow conditions for each planning scenario to verify that the required improvements were functioning appropriately and to check if any additional operational improvements were needed. Below is a list of the criteria typically evaluated in the model:

- High or Low Pressures
- Excessive Velocities
- Fire Flow Capacity
- Ground Tank Levels
- Elevated Tank Levels
- Pump Operations
- Valve Operations

The Capital Improvement Plan, available in **Appendix H - Capital Improvement Plan Map**, documents the required improvements for each planning scenario.

7.0 Design Criteria

7.1 DISTRICT DESIGN CRITERIA

The following criteria were established by Kimley-Horn and the District as minimum standards from which to evaluate current and future water system components.

7.1.1 WATER SUPPLY

It is recommended that the District maintain a combined surface water, wholesale water, and groundwater supply capacity equal to or greater than the existing and projected maximum day water demand through the 15-year planning period.

7.1.2 WATER PRODUCTION

It is recommended that the District maintain a combined water treatment plant and groundwater well production capacity equal to or greater than the existing and projected maximum day water demand minus wholesale contracts through the 15-year planning period.

7.1.3 TRANSMISSION AND DISTRIBUTION CENTER

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** - This is the period during which the elevated tanks are replenished by pump stations in the system. It is the condition under which the highest operational pressures are experienced.
- **Fire flow demand** - During the maximum day demand, the transmission system is tested to ensure that fire protection requirements are met. Pressures are allowed to fall below 35 psi but should not drop below 20 psi at any point in the system. The fire flow demand criteria, provided by the District, for the system is 1,000 gpm.

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 a rural-type water system, operating pressures of 40-45 psi normally result in customer complaints. For most water systems, pressures above 80 psi are typically undesirable, exceed plumbing code thresholds, and should be avoided if possible. The District decided to allow pressures up to 100 psi to limit the amount of pressure planes in the system. The transmission system should also be sized to limit maximum velocity in the pipe to five (5) feet per second during normal operations and maximum velocity of ten (10) feet per second during emergency conditions.

7.1.4 PUMPING FACILITIES

It is recommended that the District maintain pumping facilities with a firm pumping capacity equal to or greater than the existing and projected maximum day water demand through the 25-year planning period.

7.1.5 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 enough capacity to supply any differences.

7.1.6 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.

The design criteria set for the District 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 two (2) hours required for fire protection; **Level 3**: Emergency storage equal to 20% of the combined equalization and fire storage volume.

7.2 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:

- **Water Supply Capacity** – Equal to 0.60 gpm per connection.
- **JCSUD ACR Water Supply Capacity** – Equal to 0.42 gpm per connection
- **Water Production Capacity** – Equal to 0.60 gpm per connection.
- **Transmission System** – Minimum pressure under normal conditions should exceed 35 psi while pressure during extreme events may not drop below 20 psi.
- **Pumping Facilities** – Total capacity of at least 2.0 gpm per connection or 1,000 gpm and the ability to meet peak hourly demands with the largest pump out of service at each pressure plane, whichever is less. Or total capacity of at least 0.60 gpm per connection if 200 gallons of elevated storage per connection is met.
- **Elevated Storage** - Equal to 100 gallons per connection or equal to 200 gallons per connection for pumping requirement discount.
- **Total Storage** - Equal to 200 gallons per connection.

7.3 DESIGN CRITERIA SUMMARY

Table 28 summarizes the system design criteria.

Table 28 – Design Criteria Summary

	District Criteria	TCEQ Criteria
Water Supply	Overall capacity to meet max day demand	Overall capacity to meet 0.42 gpm per connection in accordance with District ACR
Water Production	Overall capacity to meet max day demand	Overall capacity to meet 0.60 gpm per connection
Transmission System Pressure	Normal conditions = minimum 40 psi Extreme conditions = minimum 20 psi	Normal conditions = minimum 35 psi Extreme conditions = minimum 20 psi
Transmission System Velocity	Normal conditions = maximum 5 fps	N/A
Pumping Facilities	Firm capacity (largest pump out of service) to meet max day demand	Total capacity of at least 2.0 gpm per connection or 1,000 gpm and the ability to meet peak hourly demands with the largest pump out of service at each pressure plane, whichever is less. Or Total capacity of at least 0.60 gpm per connection if 200 gallons of elevated storage per connection is met.
Ground Storage	50% of max day demand	N/A
Elevated Storage	Level 1: Equalization Storage during Max Day Demand Level 2: 1,500 gpm for 4 hours for Fire Protection Level 3: 20% of combined total for Level 1 and Level 2	Equal to 100 gallons per connection or equal to 200 gallons per connection for pumping requirement discount.
Total Storage	N/A	Equal to 200 gallons per connection

8.0 Future Infrastructure Analysis and Recommendations

The District currently serves its customers through the use of twelve (12) different pressure planes. Several of these pressure planes are served by a combination of treated surface water and groundwater wells, while the remaining pressure planes are supplied by only groundwater wells. As the District continues to grow and groundwater production declines, serving customers with groundwater will no longer be an adequate water supply. The natural contours of the District's service area provide an efficient way to maximize infrastructure by combining pressure planes into larger service areas.

Appendix F – System Heat Map shows the contours throughout the District with hotter color areas shown as higher elevations and cooler color areas shown as lower elevations. The natural ridge that the District's TBTF, Cross Country, and SWATS Transmission Mains follow, are along the highest parts of the District's service area. The concept of a North, South, East, and West system being served from these primary transmission mains was introduced to help the District meet both short and plan for longer term growth needs. **Appendix G – Proposed System Map** can be found showing the proposed systems as shown below:

- **Appendix I - North System Capital Improvement Plan Map** – Pressure Planes 8 and 34
- **Appendix J - South System Capital Improvement Plan Map** – Pressure Planes 1, 3, 5, 18, and 19
- **Appendix K - East System Capital Improvement Plan Map** – Pressure Planes 24 and 25
- **Appendix L - West System Capital Improvement Plan Map** – Pressure Planes 13, 9, and 10

Through the use of interconnects and pressure reducing valves higher pressure planes can help feed lower pressure planes. With these system combinations, individual pressure planes will still operate at the same pressures they do today but will have the ability to maximize the District's infrastructure over time. Analysis for the District's future demands were based on combining pressure planes into these four primary systems. **Figure 12** below is an updated system schematic showing how the various pressure planes will be interconnected to combine into the four primary systems.

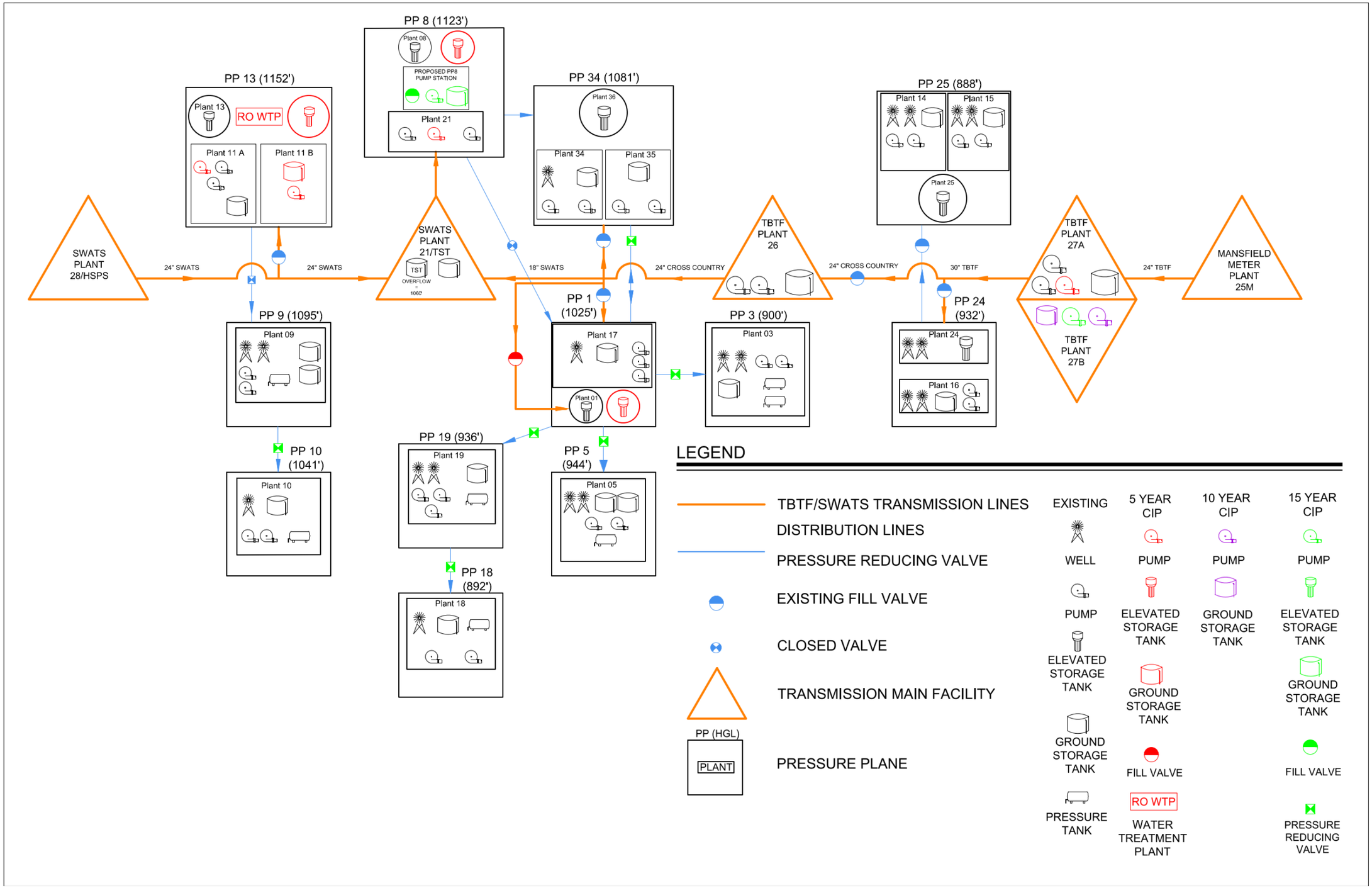


Figure 12 – Proposed System Process Flow Diagram

8.1 WATER SUPPLY

The District currently has Water Purchase agreements with maximum allowed daily demands of 25 MGD with the City of Mansfield and Grand Prairie and 7.19 MGD with the BRPUA. The District has a total of eighteen (18) groundwater wells located at eleven (11) different groundwater well sites. Eleven (11) of the groundwater wells pump water from the Trinity Aquifer, and seven (7) of the wells pump water from the Paluxy Aquifer. According to District and TCEQ criteria, the District is required to have a water supply able to meet the maximum day demand and a water supply of 0.42 gpm per connection, respectively.

Mansfield Water Supply

The District recently increased their purchase water agreement with the City of Mansfield. This allows the District to receive a maximum daily demand of 25 MGD. The current Mansfield water transmission main supplying the 25M Delivery Point is not adequately supplying the previously contracted amount of 9 MGD and cannot accommodate the proposed increased demand. As part of the renewed contract, Mansfield is replacing the existing 12-inch line to Plant 25M with a 30-inch water line. In addition, Mansfield is upsizing the existing 18-inch transmission main from Plant 25M to Plant 27 to a 30-inch transmission line as well. These improvements will significantly increase the District's supply from the East to accommodate growth from Plant 27 to TST and are anticipated to be in place by end of year 2024.

RO Treatment Facility

The District is currently negotiating a revised contract with the BRPUA. As part of these contract negotiations the District contracted with Hazen and Sawyer to perform a Due Diligence Report of the existing SWATS facility. As part of this due diligence, the District is considering construction of a new Reverse Osmosis (RO) Treatment Facility. Currently, the proposed location of this treatment facility is undetermined, but one option being evaluated is to locate the new facility adjacent to the existing Water Plant 11 site. The facility is being evaluated as an initial 10 MGD facility, expandable to 20 MGD, and is planned to occur within the 5-year planning window.

With the combination of the Mansfield contract and the RO Treatment Plant, the District will have adequate water supply based on TCEQ through the 15-year window. It is currently recommended that planning for the RO Treatment Plant expansion begin near the 15-year window as the District will be at 76% of TCEQ required water supply, but this should be reviewed by the District annually based upon growth and water demand trends.

8.2 PRESSURE PLANES

As discussed previously, no additional pressure planes are proposed as part of the Master Plan. It is recommended that the District operate pressure planes as individual systems and plan to transition to the North, South, East West pressure plane concept, shown in **Appendix G – Proposed System Map**, to utilize the natural elevations of the District's service area and maximize infrastructure to meet TCEQ and growth requirements. The transition process would require a series of projects that interconnect pressure planes with fill valves and pressure reducing valves. Individual projects are proposed based on anticipated growth and can be found in the Capital Improvements Plan.

8.3 PUMPING FACILITIES

District criteria requires firm pumping capacity sufficient to meet the maximum day demand.

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. If 200 gallons per connection of elevated storage is provided, then the required pumping capacity drops to 0.60 gpm per connection. Infrastructure was analyzed to assume that the District would meet the 200 gallon per connection requirement, thereby qualifying for the 0.60 gpm per connection pumping discount.

North System (Pressure Planes 8 and 34)

Recommendations:

- Existing Water Plant 21
  - An additional 1,170 gpm of pumping by the year 2026
- Pressure Plane 8 Proposed Pump Station
  - 4,000 gpm pump station to be added by the year 2033

No pumping improvements are recommended to Pressure Plane 34 pumping through the 15-year planning period. Currently Pressure Plane 8 and 34 operate independently. An interconnect project is currently underway to connect the two pressure planes. Pressure Plane 8 will supply pumping capacity to Pressure Plane 34 as part of the North System and was considered as part of the demands. Since Pressure Plane 8 is at a higher elevation than Pressure Plane 34, Pressure Plane 8 was analyzed both individually and as part of the combined system. **Figures 13 and 14** summarize the pumping requirements for the North System.

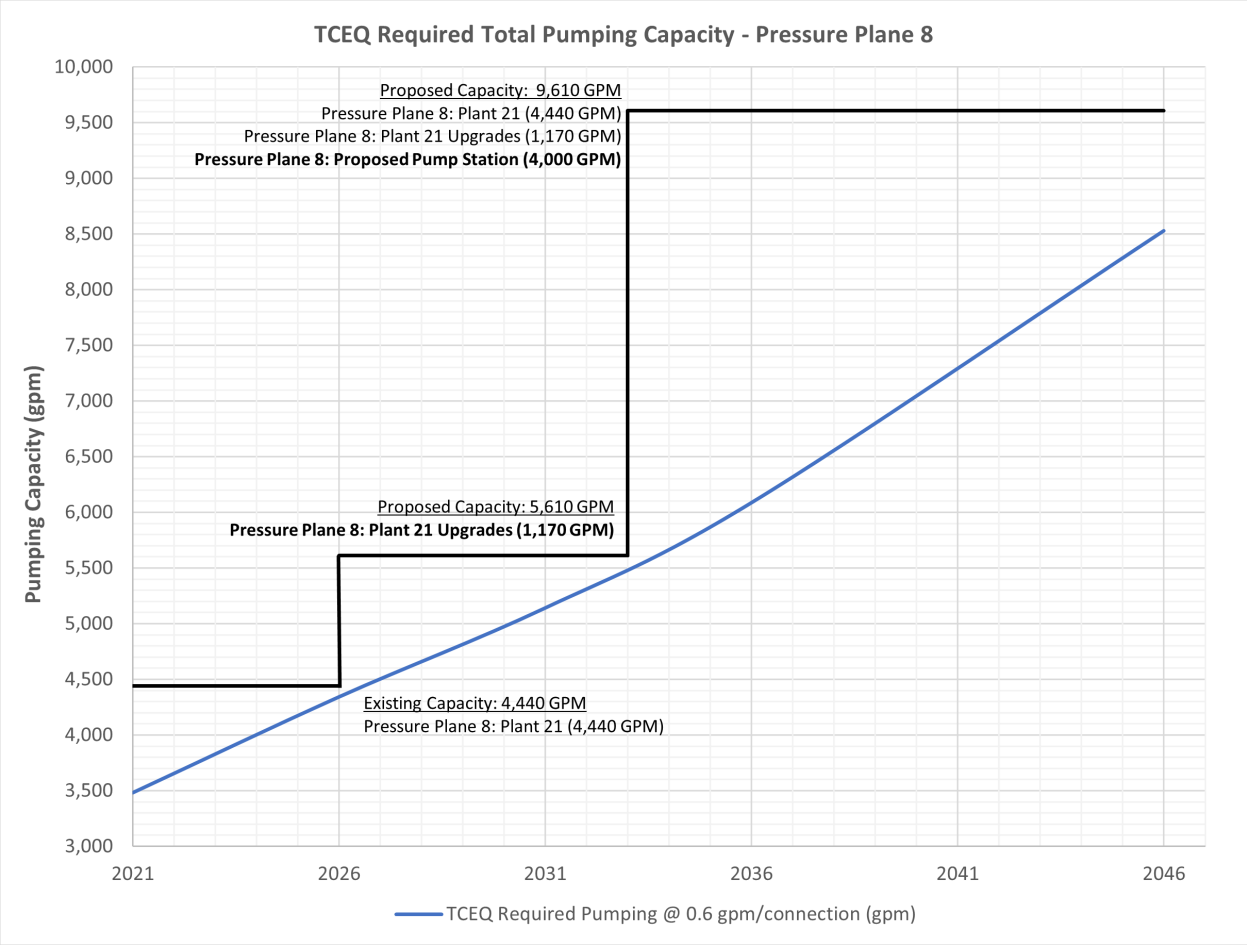


Figure 13 – Pressure Plane 8 Pumping

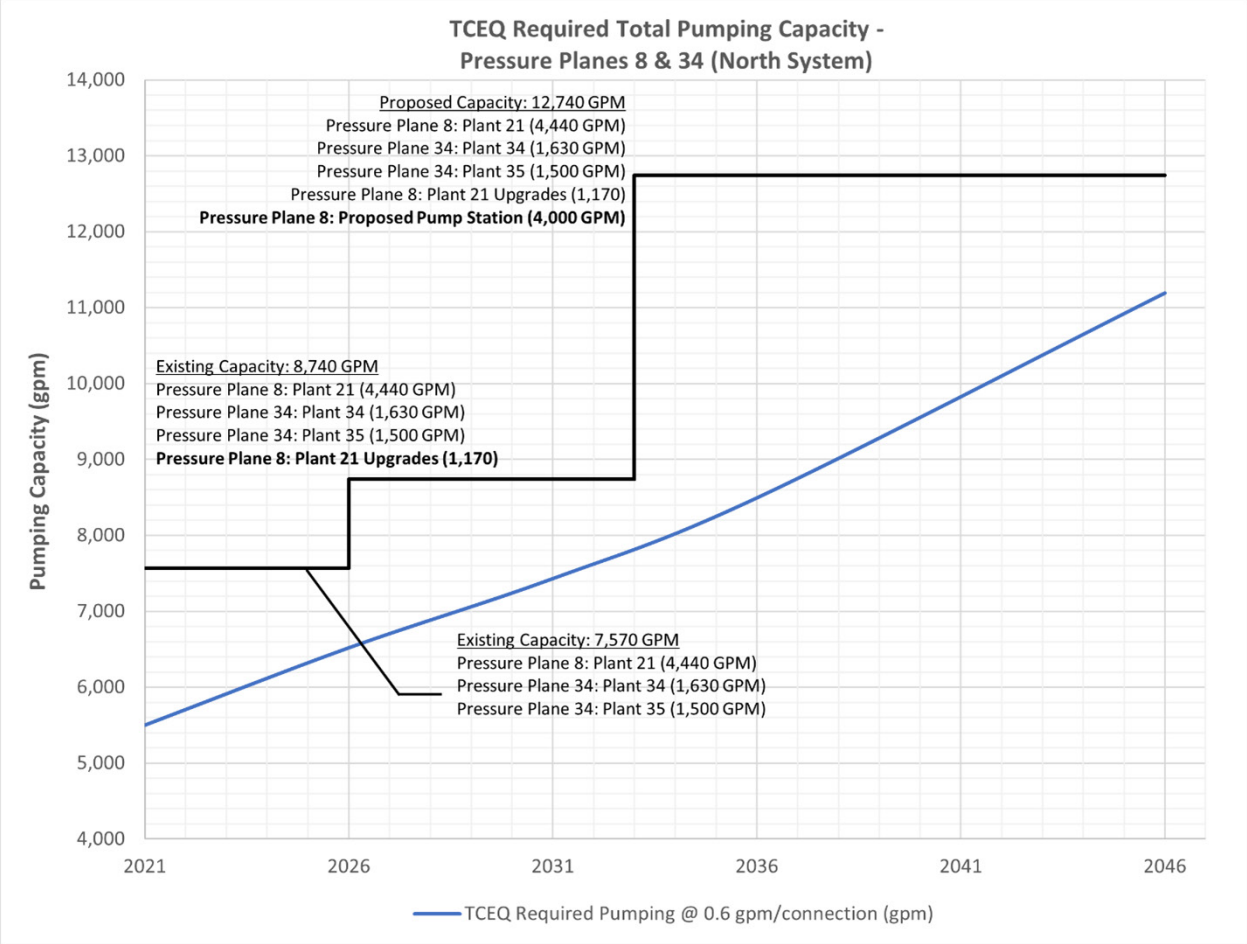


Figure 14 – North System Pumping

South System (Pressure Planes 1, 3, 5, 18, and 19)

No pumping improvements are recommended for the South system through the 15-year planning period based on growth projections. Due to the location of Water Plant 26, pumping from this plant can be counted toward the TCEQ required pumping for the South system. In order for this to occur a valve will need to be installed that bypasses Water Plant 17 in order for Pressure Plane 1 to utilize the HGL from Water Plant 26. Since Pressure Plane 1 is at a higher elevation than Pressure Planes 3, 5, 18, and 19; Pressure Plane 1 was analyzed both individually and as part of the combined system. Timing to add interconnections for Pressure Planes 3, 5, 18, and 19 are dependent upon growth and available infrastructure. As development moves south the District should analyze whether temporary improvements in the lower pressure planes should be provided or if making the connection to Pressure Plane 1 is feasible given the growth and infrastructure available. In both scenarios, additional pumping was not required as part of this analysis. If additional growth were to occur outside of the projected demands, pumping improvements may be required sooner. **Figures 15 and 16 summarize the pumping requirements for the Southern System.**

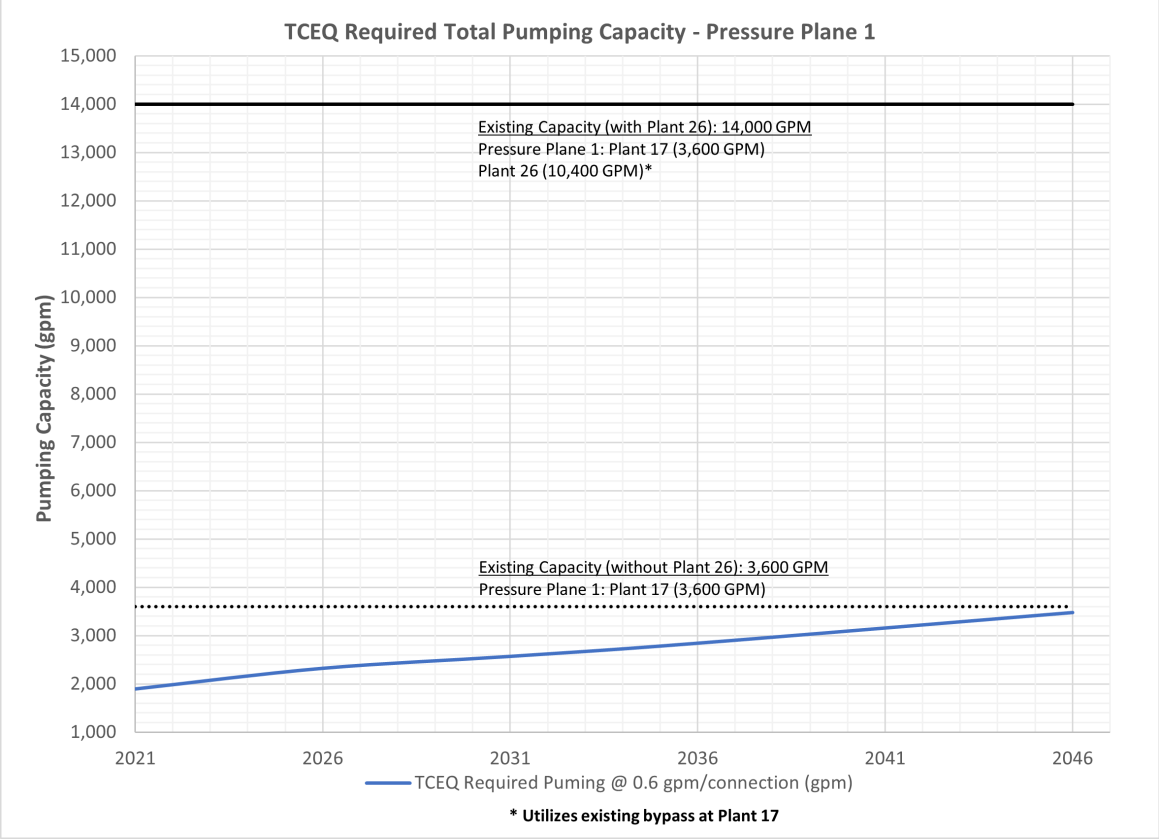


Figure 15 – Pressure Plane 1 Pumping

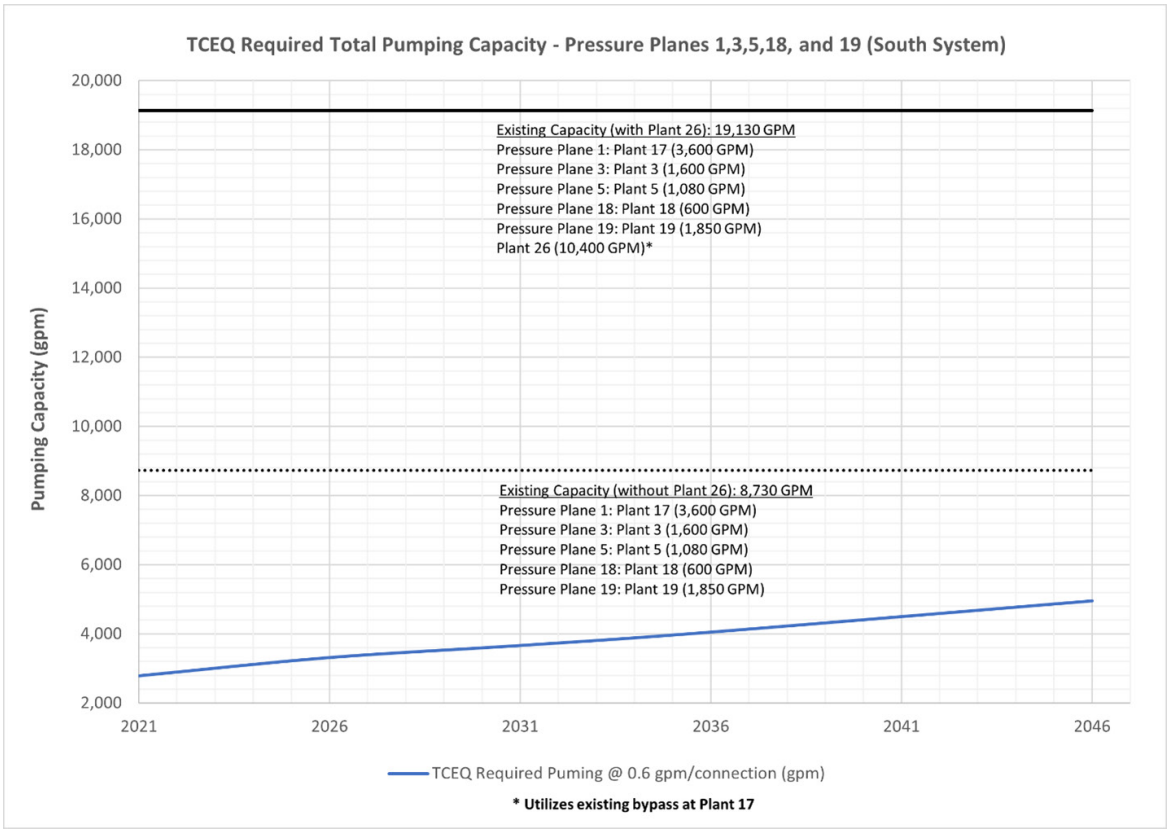


Figure 16 – South System Pumping

East System (Pressure Planes 24, 25, and 27)

Recommendations:

- Plant 27A
  - A 3,800 gpm expansion is currently under construction, as of January 2023
  - Plant 27B
- A 6,000 gpm pump station to be added by 2031
  - A 3,000 gpm expansion to Plant 27B by 2036

No pumping improvements per TCEQ requirements are recommended to Pressure Plane 24 pumping through the 15-year planning period. There is currently a fill valve between Pressure Plane 24 and 25 that can be used in emergency operation. With some improvements to this connection, Pressure Plane 24 and 25 would be interconnected. Due to the location of Water Plant 27, pumping from this plant can be counted toward the TCEQ required pumping for the East system. Improvements to Water Plant 27 will be required during the 15-year planning period in order to meet max day demand requirements, not TCEQ requirements. The recommendations for Plant 27 to meet max day demand requirements are below. **Figures 17 and 18** summarize the pumping requirements for the East System.

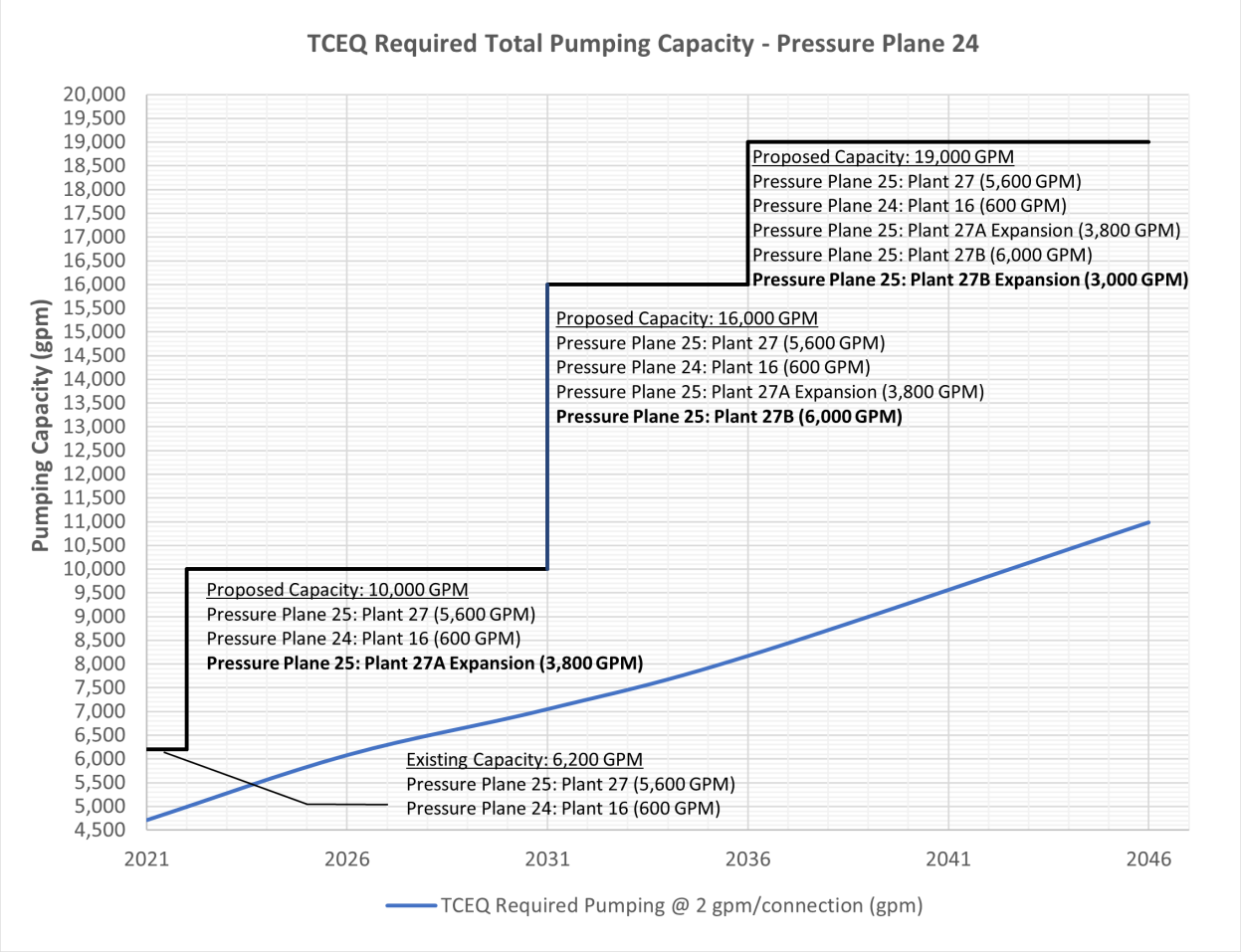


Figure 17 – Pressure Plane 24 Pumping

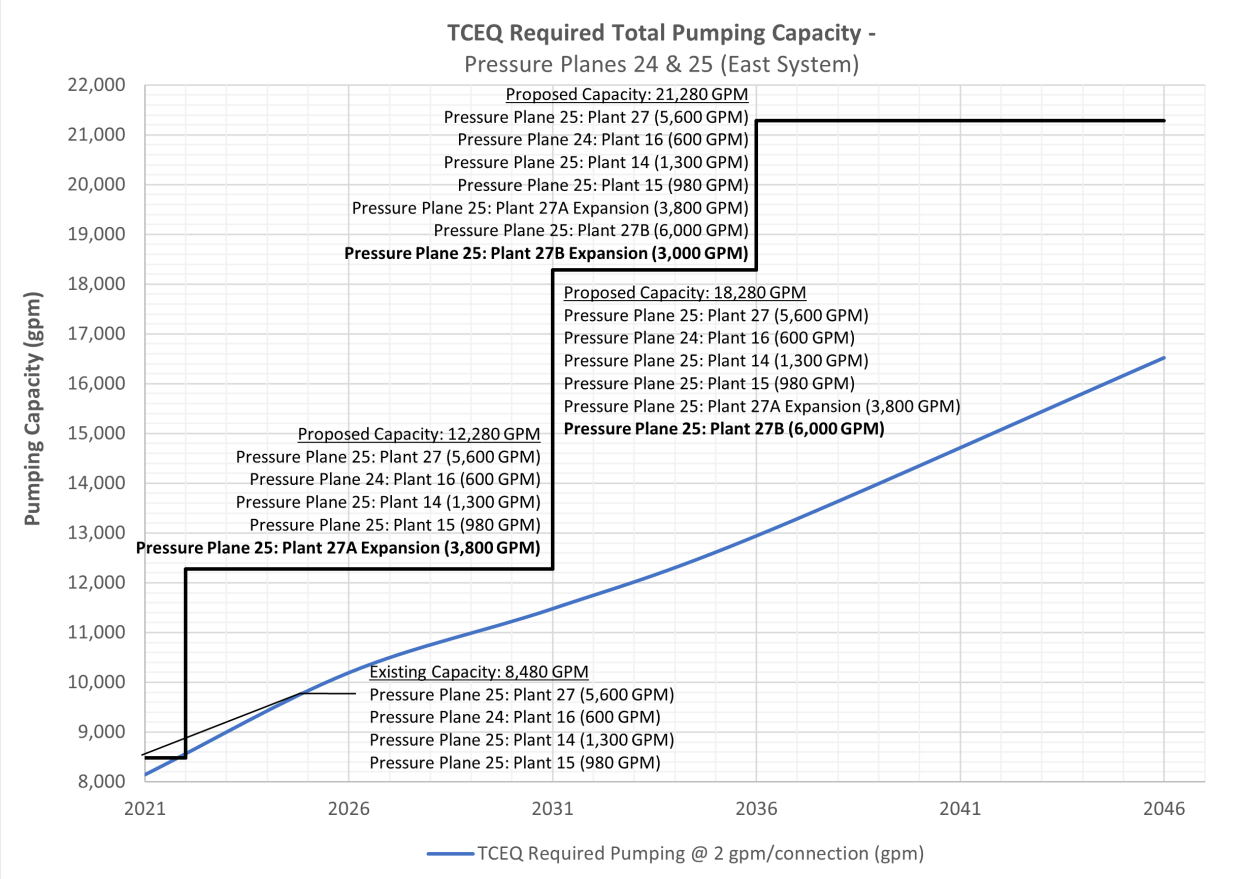


Figure 18 – East System Pumping

West System (Pressure Planes 13, 9, and 10)

Recommendations:

- Plant 11A Expansion
  - An additional 1,200 gpm of pumping by the year 2023
- Plant 11B Proposed Pump Station
  - An 1,800 gpm pump station to be added by the year 2026

No pumping improvements are recommended to Pressure Planes 9 and 10 during the 15-year planning period based on current projections. Pressure Plane 13 will supply pumping capacity to Pressure Planes 9 and 10 as part of the West System and are considered as part of the demands. Since Pressure Plane 13 is a higher elevation than Pressure Planes 9 and 10, 13 had to be analyzed both individually and as part of the combined system. As development moves south the District should analyze whether temporary improvements in the lower pressure planes should be provided or if making the connection to Pressure Plane 13 is feasible given the growth and infrastructure available. **Figures 19 and 20** summarize the pumping requirements for the West System.

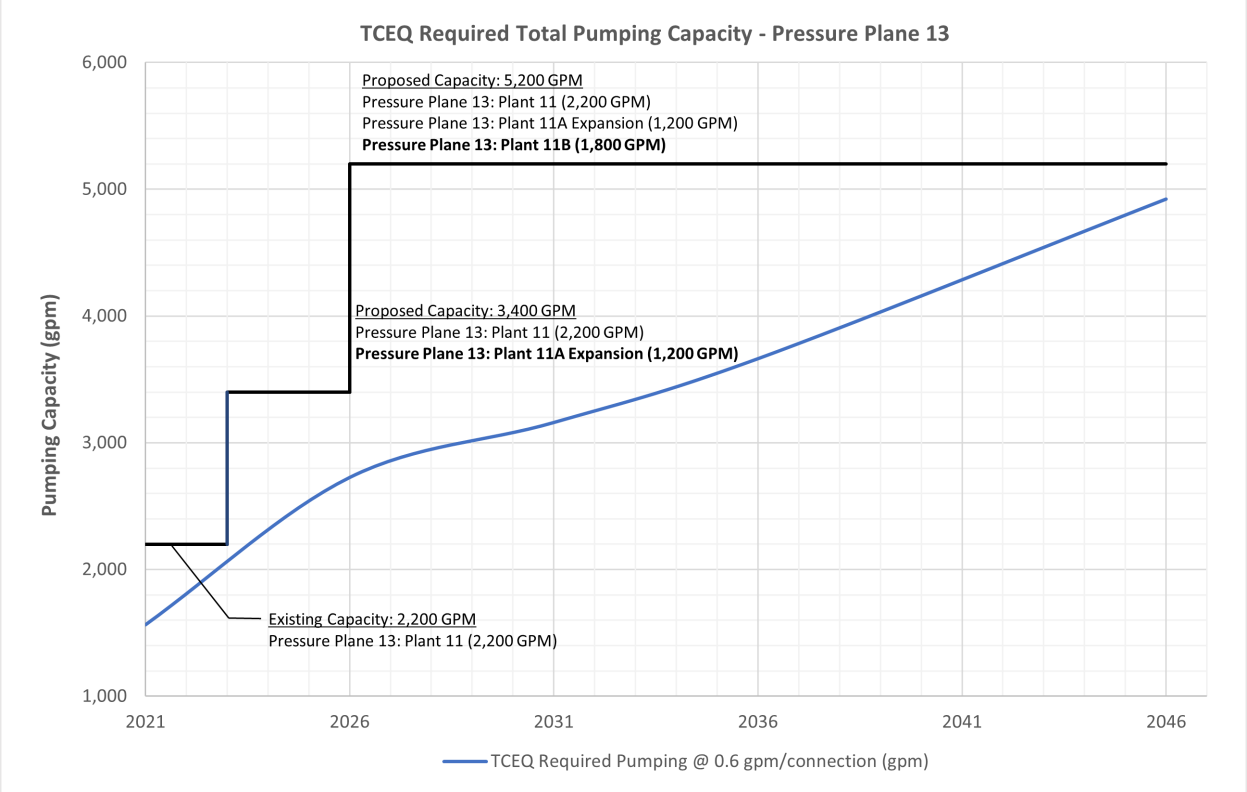


Figure 19 – Pressure Plane 13 Pumping

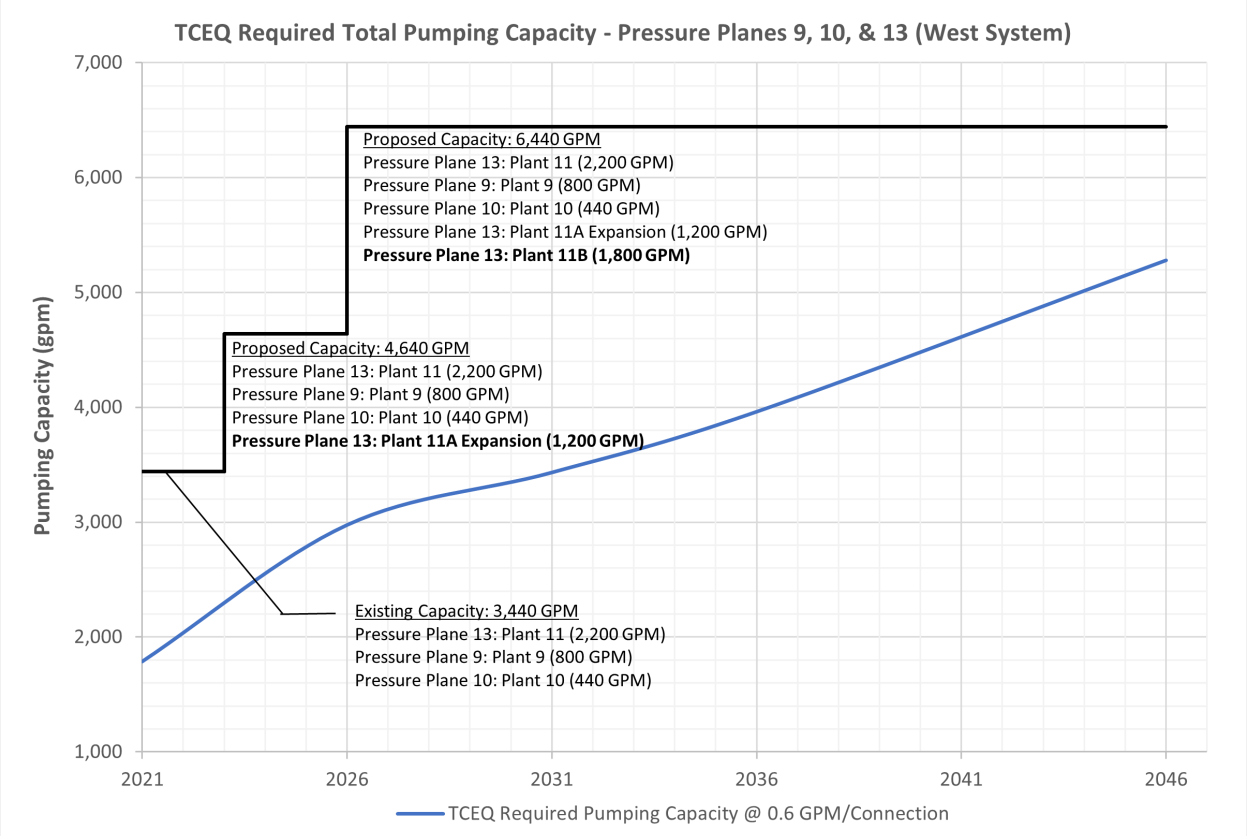


Figure 20 – West System Pumping

8.4 ELEVATED STORAGE

TCEQ requires 100 gallons per connection of elevated storage. If 200 gallons per connection of elevated storage is provided, then the total pumping requirement drops from 2.0 gpm to 0.60 gpm per connection. Kimley-Horn recommends that the District continue to supply 200 gallons per connection of elevated storage to qualify for the pumping discount. Refer to Section **7.1.6** for District elevated storage criteria.

North System (Pressure Planes 8 and 34)

Recommendations:

- Pressure Plane 8
  - An additional 1.0-million-gallon elevated storage tank constructed by the year 2034

No elevated storage tank improvements are recommended to Pressure Plane 34 elevated storage through the 15-year planning period. An interconnection project between Pressure Plane 8 and 34 is currently under design. This will allow Pressure Plane 8 to supply elevated storage to Pressure Plane 34 as part of the North System and was considered as part of the connection requirements. Additionally, a 1.0-million-gallon elevated storage tank is currently under design by EHT in Pressure Plane 8 that will provide for connections in Pressure Plane 34. Since Pressure Plane 8 is a higher elevation than Pressure Plane 34, Pressure Plane 8 was analyzed both individually and as part of the combined system. **Figures 21 and 22** summarize the elevated storage requirements for the North System.

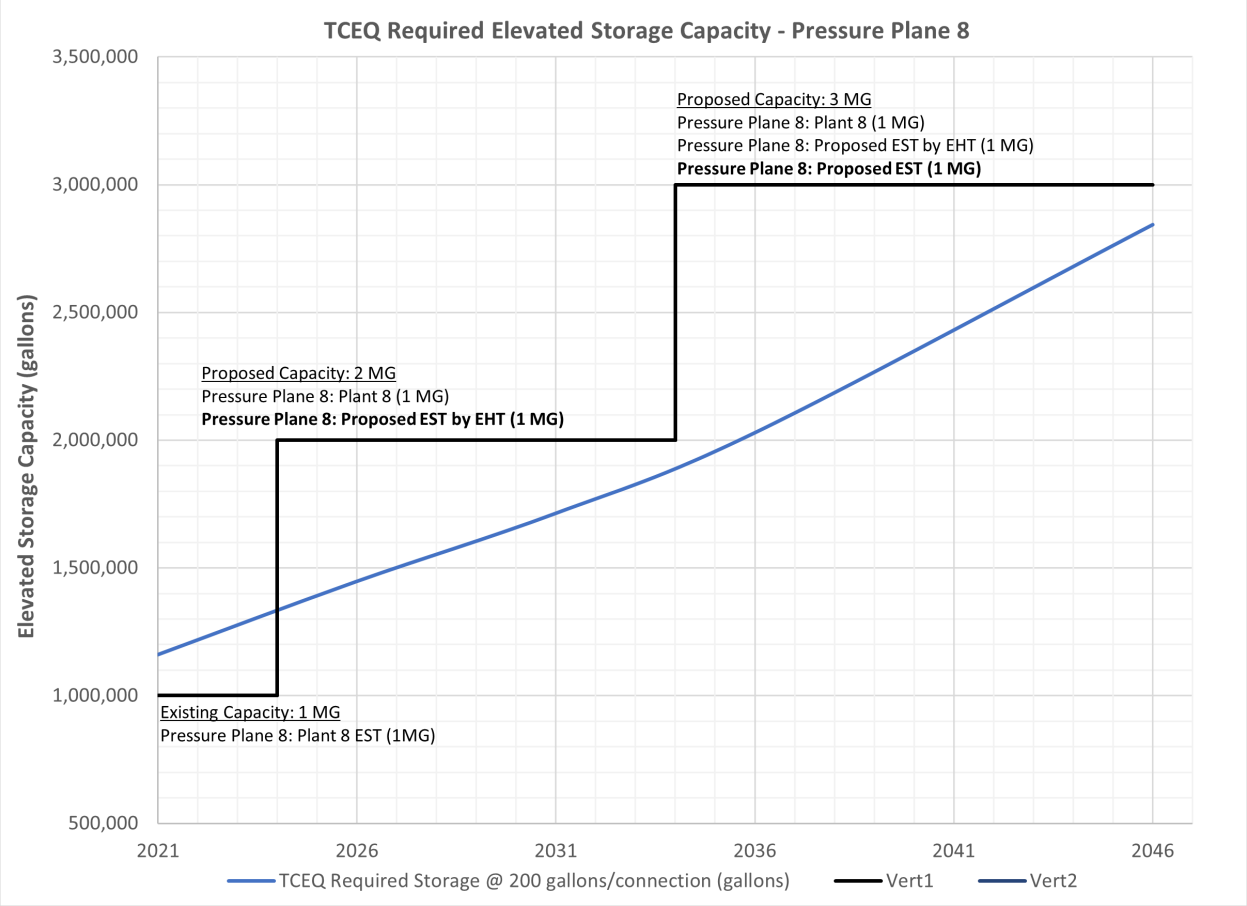


Figure 21 – Pressure Plane 8 Elevated Storage

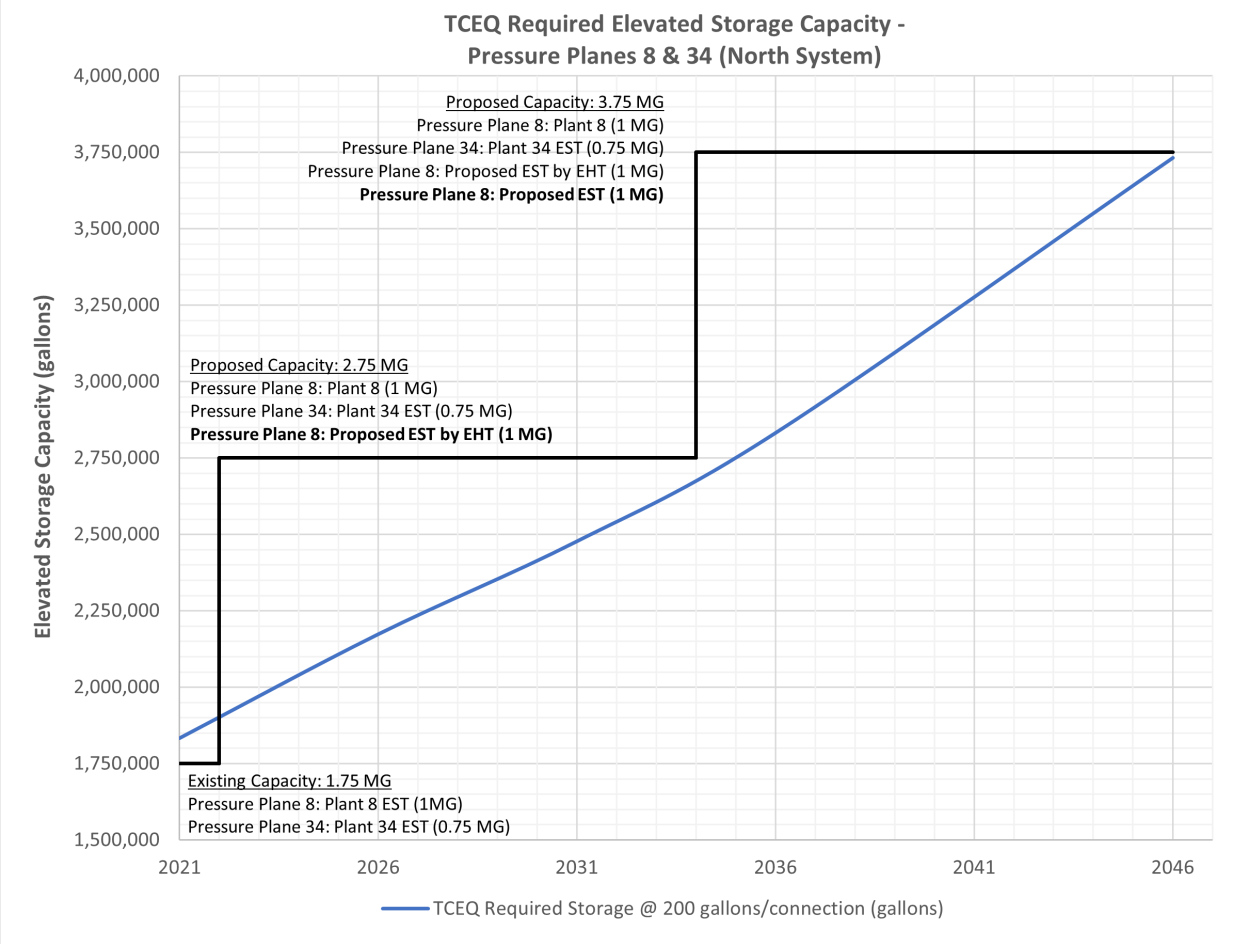


Figure 22 – North System Elevated Storage

South System (Pressure Planes 1,3, 5, 18, and 19)

Recommendations:

- Pressure Plane 1
  - A 0.75 million gallon elevated storage tank constructed by the year 2027

No elevated storage tank improvements are recommended to Pressure Planes 3, 5, 18, and 19 for the 15-year planning period. Pressure Plane 1 will supply elevated storage to pressure planes 3, 5, 18, and 19 as part of the South System and were considered as part of the connection requirements. While TCEQ connection requirements do not require additional elevated storage for Pressure Plane 1 until 2036, system demands require additional storage in both the 5- and 10-year planning periods. Because of these demands it is recommended to build a larger eleveated storage tank in the 5-year window to accommodate the needs in the 10-year. Since Pressure Plane 1 is a higher elevation than pressure planes 3, 5, 18, and 19; Pressure Plane 1 was analyzed both individually and as part of the combined system. If Pressure Planes 3, 5, 18, or 19 are connected to Pressure Plane 1 before 2027, the proposed Pressure Plane 1 elevated storage will need to be constructed with that connection in order to meet TCEQ connection requirements. **Figures 23 and 24** summarize the elevated storage requirements for the South System.

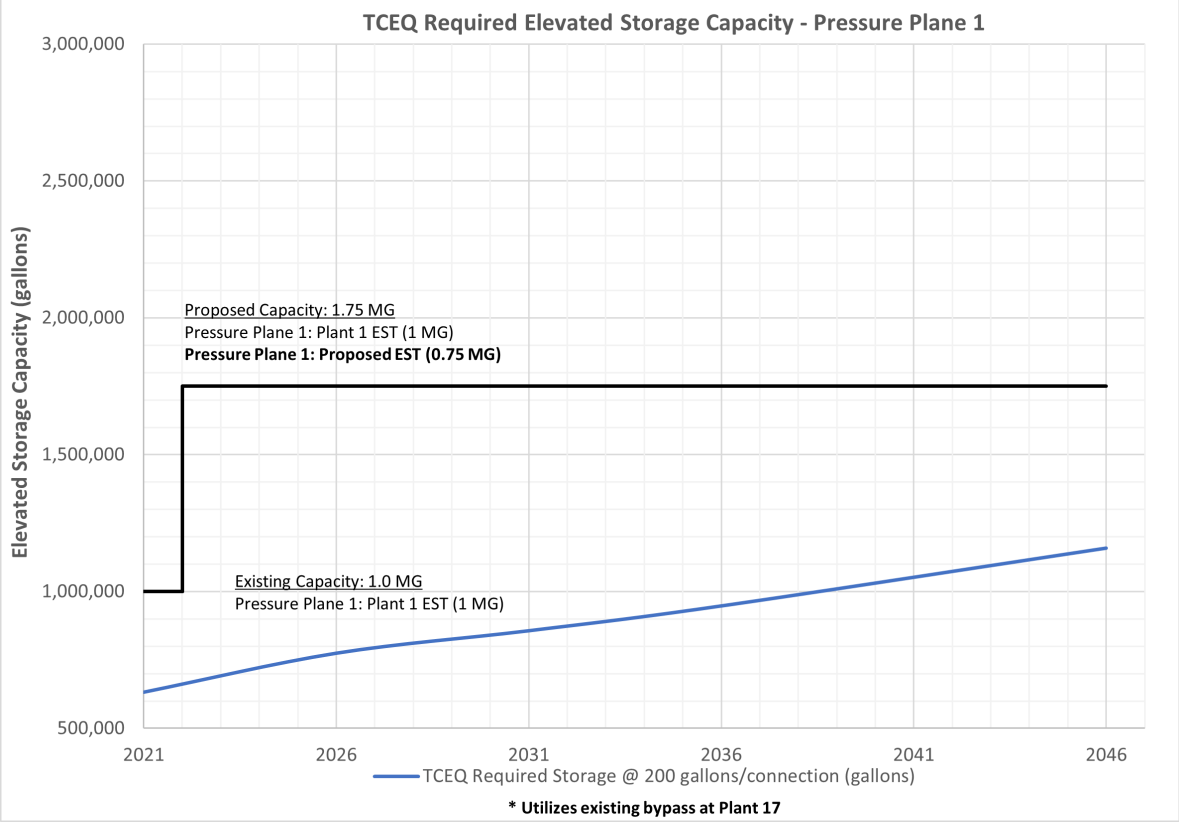


Figure 23 – Pressure Plane 1 Elevated Storage

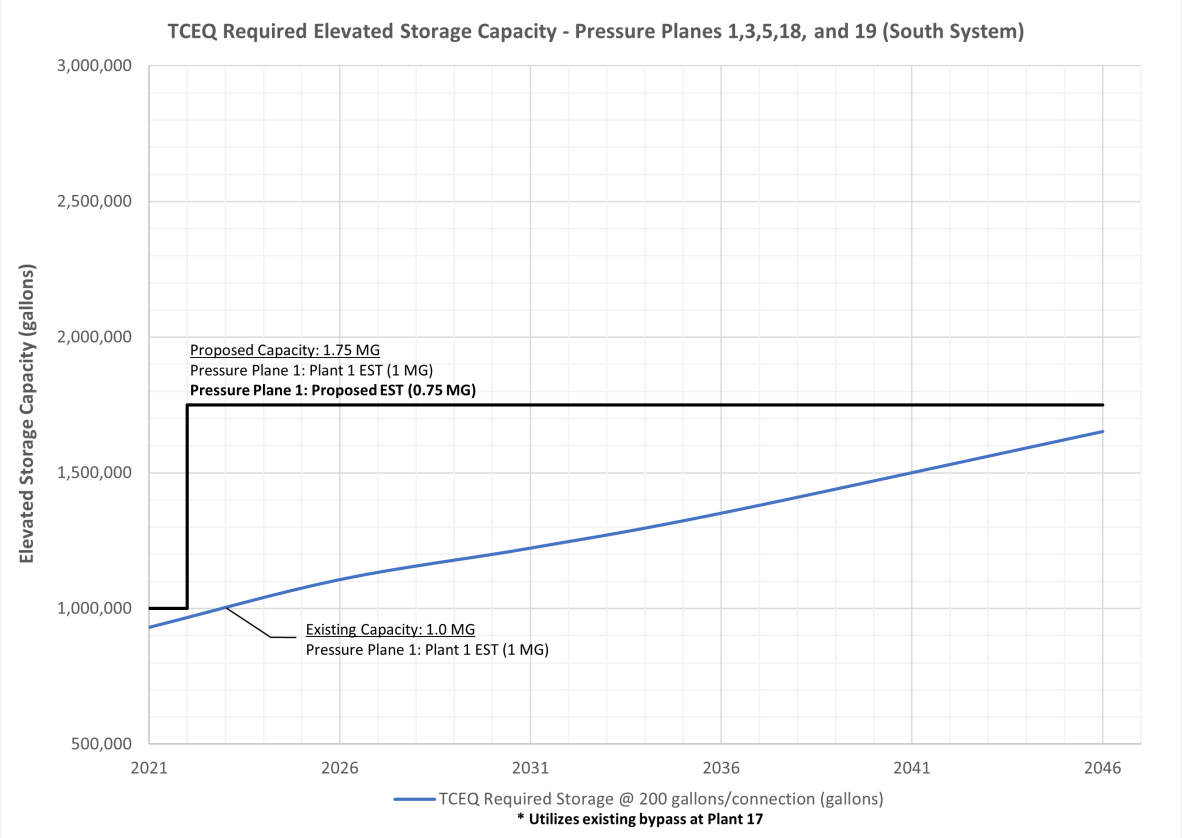


Figure 24 – South System Elevated Storage

East System (Pressure Planes 24 and 25)

Recommendations

- Pressure Plane 24
  - A 0.5 million gallon elevated storage tank to be constructed by the year 2041

No elevated storage tank improvements are recommended to Pressure Plane 25 through the 15-year planning period. Pressure Plane 24 will supply elevated storage to Pressure Plane 25 as part of the East System and was considered as part of the connection requirements for tis analysis. Since Pressure Plane 24 is a higher elevation than Pressure Plane 25; Pressure Plane 24 was analyzed both individually and as part of the combined system. **Figures 25 and 26** summarize the elevated storage requirements for the East System.

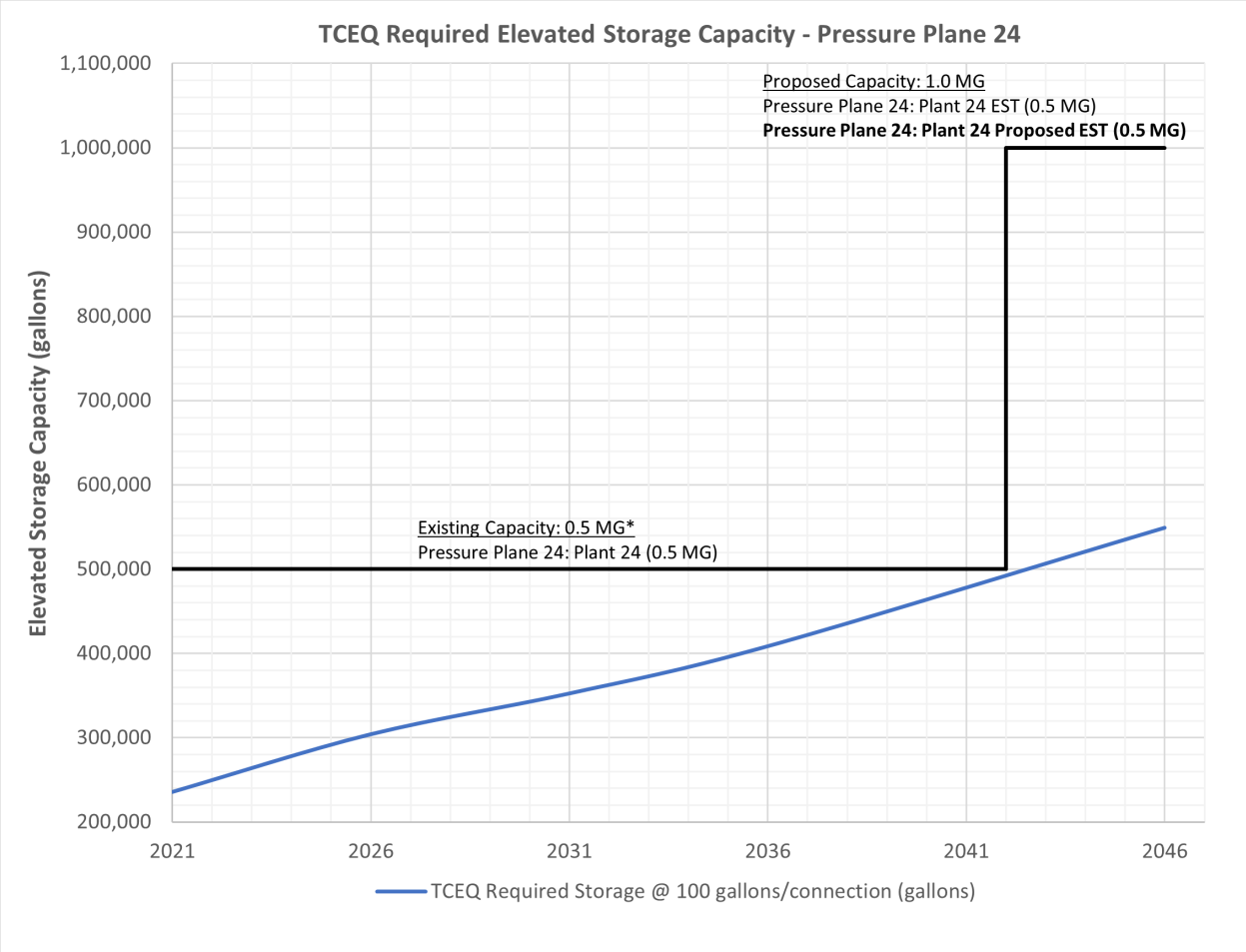


Figure 25 – Pressure Plane 24 Elevated Storage

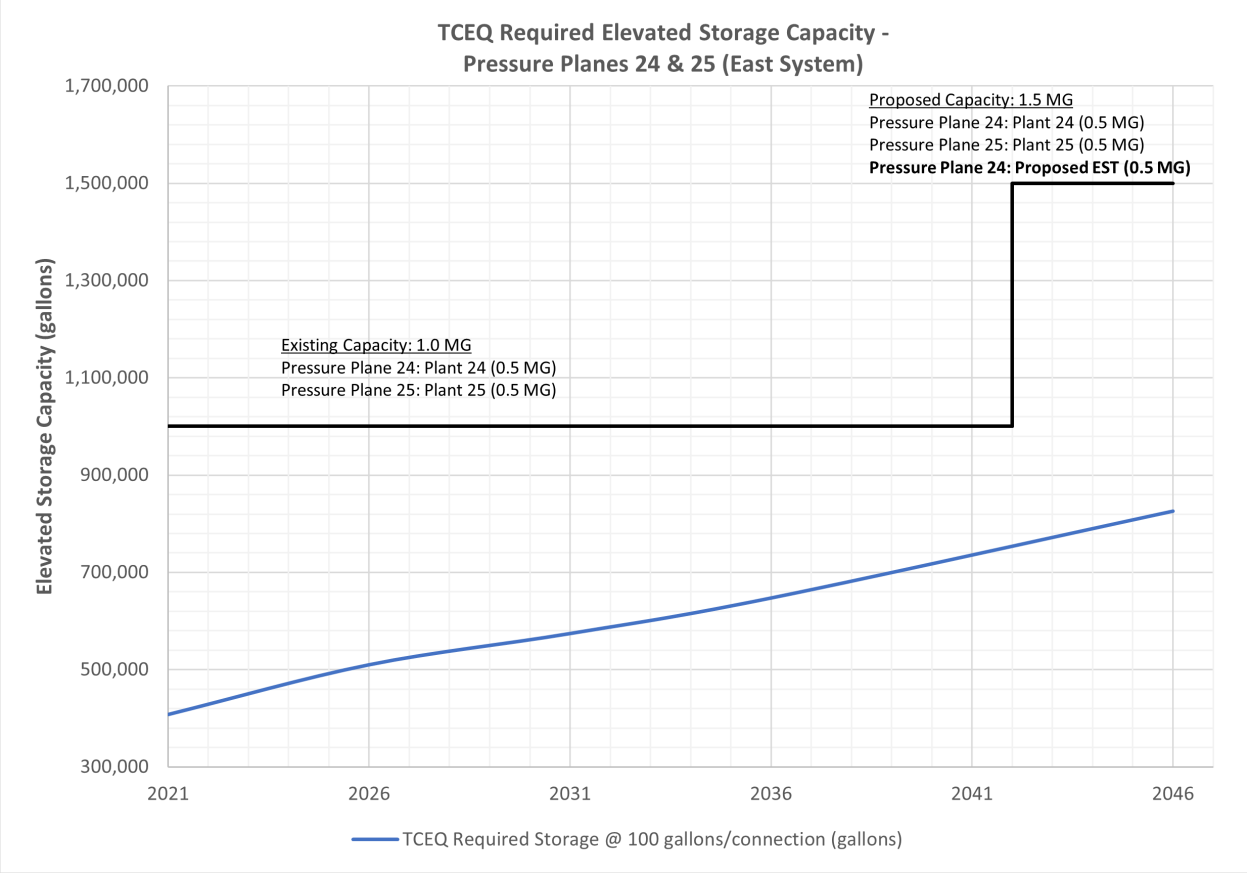


Figure 26 – East System Elevated Storage

West System (Pressure Planes 9, 10, and 13)

No elevated storage tank improvements are recommended to pressure planes 9 and 10 through the 15-year planning period. Pressure Plane 13 will supply elevated storage to Pressure Planes 9 and 10 as part of the West System and are considered as part of the connection requirements. A 1.5-million-gallon elevated storage tank is currently under design by Kimley-Horn and Associates, Inc. to meet TCEQ connection requirements for Pressure Plane 13. Since Pressure Plane 13 is a higher elevation than Pressure Planes 9 and 10, Pressure Plane 13 was analyzed both individually and as part of the combined system. **Figures 27 and 28** summarize the elevated storage requirements for the West System.

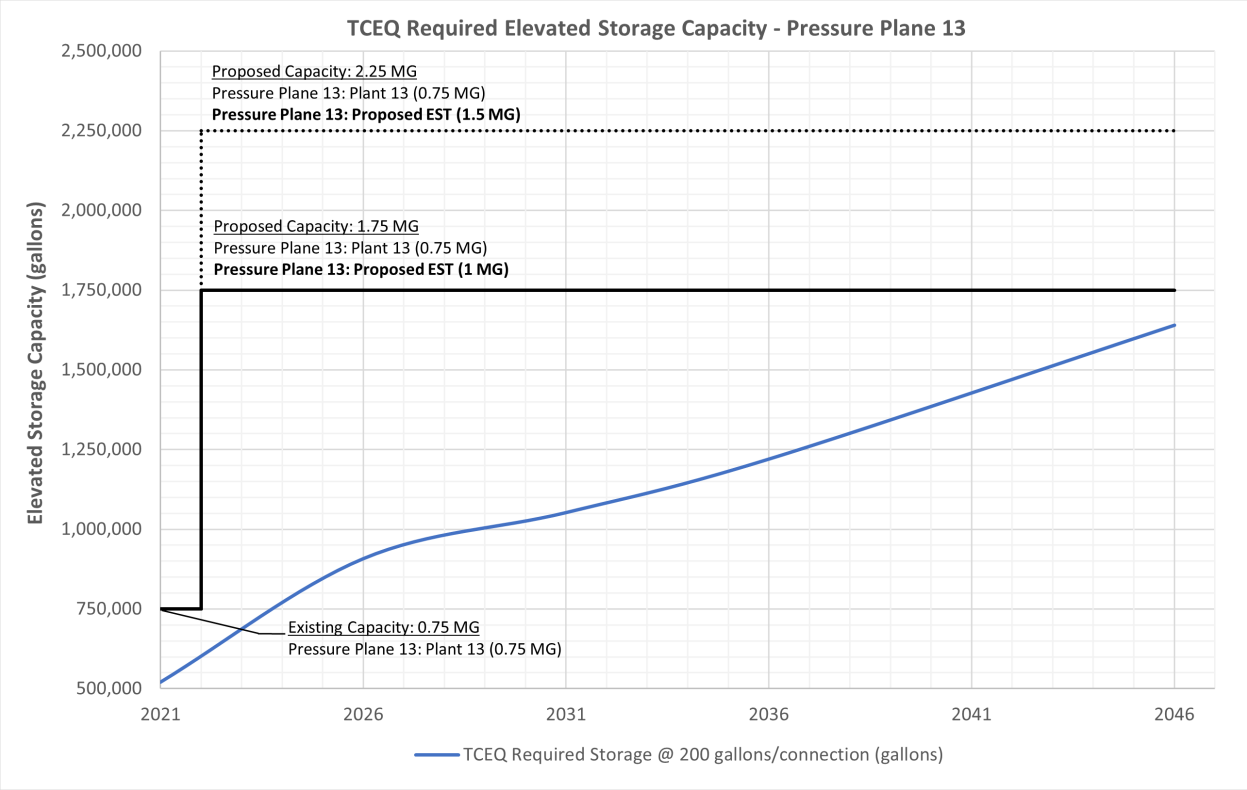


Figure 27 – Pressure Plane 13 Elevated Storage

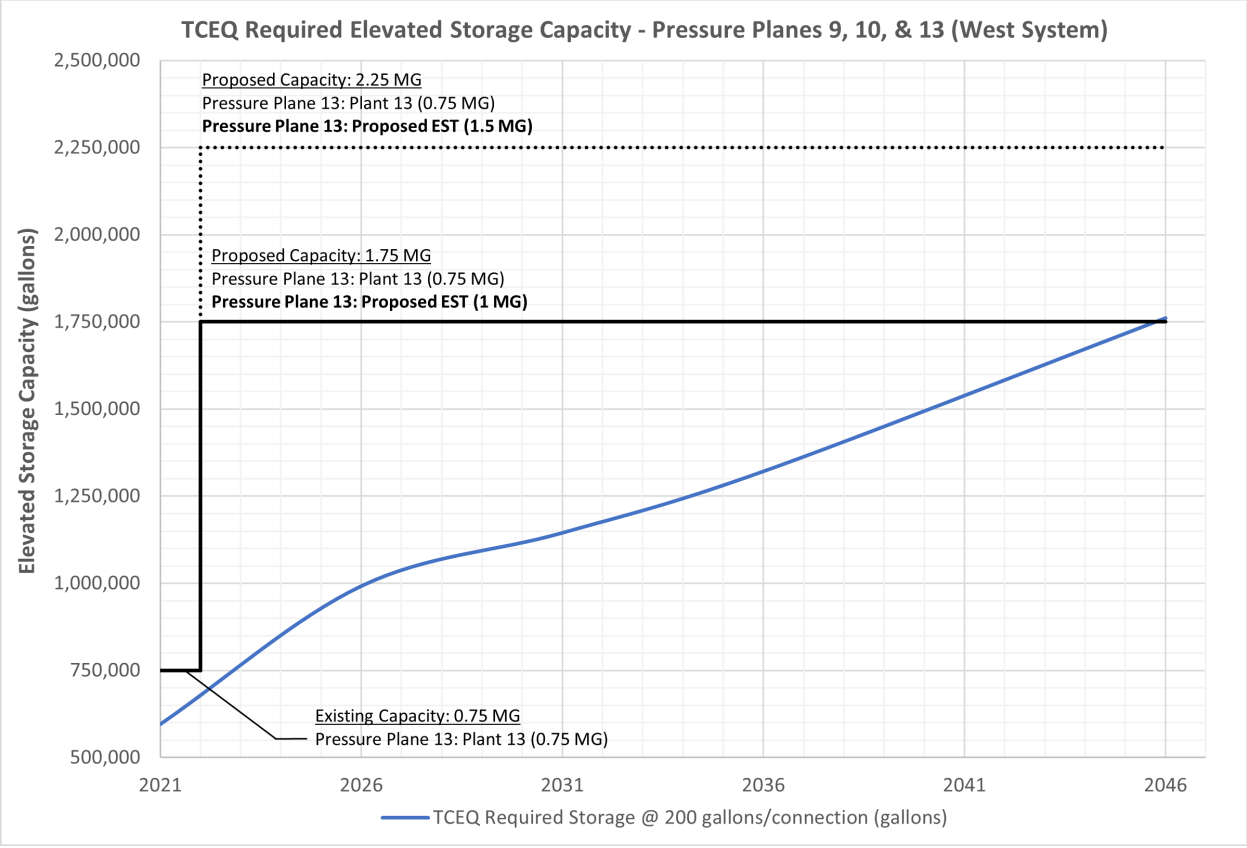


Figure 28 – West System Elevated Storage

8.5 TOTAL AND GROUND STORAGE

TCEQ does not have specific requirements for ground storage, only that 200 gallons per connection of total storage must be supplied. Kimley-Horn recommends the District provide 200 gallons per connection of elevated storage, thereby meeting the TCEQ criteria. Since the District meets storage requirements with elevated storage for TCEQ, ground storage was analyzed operationally to ensure adequate ground storage was available for pumping max day demands. Kimley-Horn is currently designing a 1.0-million-gallon ground storage tank at Water Plant 11.

Recommendations:

- Water Plant 27
  - An additional 2.5-million-gallons of ground storage is recommended in the 10-year window.
- Pressure Plane 8 Pump Station
  - A 1.0-million-gallon ground storage tank

8.6 TRANSMISSION LINES

The transmission lines proposed in the Capital Improvement Plan were divided into three sections: 5-Year, 10-Year, and 15-Year. Transmission mains were considered based on anticipated growth areas shown in the **Appendix B – Boundary and Growth Map**. Projects in the 5-Year window are generally located around existing developments or developments the District is currently reviewing. Projects in the 10- and 15-year windows are based on anticipated growth as reviewed and discussed with District Staff. These segments also include pressure reducing valves to connect pressure planes as the specific system expands due to growth. The primary purpose of these lines is to meet fire flow demands as well as looping and distribution requirements to serve larger developments. **Table 29** summarizes the total linear footage of transmission line in the 5-, 10-, and 15-year planning periods.

Table 29 – Proposed Water Mains

Phase	8-inch Diameter (LF)	12-inch Diameter (LF)	16-inch Diameter (LF)	20-inch Diameter (LF)	24-inch Diameter (LF)	Total
Bond	16,000	57,700	46,400	20,600	4,400	**145,100**
5-Year	-	48,700	103,700	-	-	**152,400**
10-Year	-	58,500	88,500	-	-	**147,000**
15-Year	-	360,100	61,000	-	-	**421,100**
Total	**16,000**	**525,000**	**299,600**	**20,600**	**4,400**	**865,600**

As the existing network continues to age, rehabilitation and replacement of existing lines will be a priority. Pipes smaller than 6-inches are not recommended due to their inability to provide adequate fire flow capacity. Systematically replacing smaller diameter pipes and increasing internal looping of the distribution system will be advantageous to increasing the robustness of the water system.

Kimley-Horn recommends systematically replacing 2-inch and 4-inch lines as additional development or aging of the infrastructure continues. These projects have not been programmed specifically as a part of the CIP.

9.0 Capital Improvement Plan

From the master planning process, a recommended list of capital improvements was developed. The Capital Improvement Plan was divided into four sections: Bond Projects, 5-Year, 10-Year, and 15-Year. Projects included as Bond projects are currently under construction by the District. Projects included in the 5-, 10-, and 15-year categories are based on growth projections as part of this report. Projects may need to be accelerated or deferred depending on the growth rate experienced and appetite for development in certain areas of the District. All improvements are shown in **Appendix H – Capital Improvement Plan Map**. Individual project costs have been included in **Appendix A – Opinion of Probable Construction Costs**. The following opinion of probable costs for each capital project assumes no design completed, based on 2022 dollars, no inflation increases, and does not include any property acquisitions, unless specifically noted.

9.1 BOND PROJECTS

Table 30 – Bond Projects Summary

Project No.	Project Name	
1	Pressure Plane 1 - CR 312 12" Water Line	
2	Pressure Plane 1 - CR 402 8” Water Line	
3	Pressure Plane 1 - FM 2415 12” Water Line	
4	Pressure Plane 1 - FM 4 12” Water Line	
5	Pressure Plane 8 - Caddo Road 12” Water Line	
6	Plant 8 - FM 917 12” Water Line	
7	Pressure Plane 8 - FM 1902 20” Water Line	
8	Plant 8 - FM 1902/CR 1019 20/24” Water Line	
9	Pressure Plane 8 - FM 913/CR 1902 16”/20” Water Line	
10	Pressure Plane 8/13 – CR 913 16” Water Line	
11	Pressure Plane 13 - CR 1127/FM 2331 16” Water Line	
12	Pressure Plane 13 - CR 913 16” Water Line	
13	Pressure Plane 9 - CR 2331/CR 1226 12” Water Line	
14	Pressure Plane 25 - FM 917 12” Water Line	
	Bond Projects Sub-Total:	**$17,418,127**

9.2 5-YEAR CAPITAL IMPROVEMENT PLAN PROJECTS

Table 31 – 5-Year Capital Improvement Plan Summary

Project No.	Project Name	Project Cost
15	Pressure Plane 34 - SH 174 16" Water Line	$1,750,000
16	Plant 16 - JCSUD MPSUD – 16” Fill Water Line	$1,355,293
17	Plant 27A Expansion	$785,300
18	Pressure Plane 13 - 1.5 MG EST	$10,840,000
19	Pressure Plane 8 to 34 Interconnect	$480,000
20	Pressure Plane 8 - 1.0 MG EST	$8,590,000
21	Plant 11A Expansion and 1.0 MG GST	$2,970,000
22	Plant 11B Pump Station	$11,000,000
23	Pressure Plane 13 - CR 1128/CR 913 16” Water Line	$6,670,000
24	Pressure Plane 13 - CR 1128/CR 2331 16” Water Line	$4,560,000
25	RO Treatment Plant	$91,960,000
26	Pressure Plane 13 - SH 171/CR 2331 16” Water Line	$2,430,000
27	Pressure Plane 1 – 0.75 MG EST	$7,140,000
28	Plant 17 16” Bypass	$290,000
29	Pressure Plane 25 - FM917/2738 16” Water Line	$4,470,000
30	Pressure Plane 25 - FM917 16” Water Line	$2,070,000
31	Pressure Plane 24 - CR 508 16” Water Line	$6,640,000
32	Pressure Plane 24 - CR 207 16” Water Line	$3,830,000
33	Pressure Plane 13 - CR 915/1005 16” Water Line	$6,780,000
34	Pressure Plane 8 - CR 1016 12” Water Line	$5,270,000
35	Pressure Plane 13 - CR 1233/1129 12” Water Line	$4,410,000
36	Pressure Plane 13 - SH 171 12” Water Line	$1,300,000
37	Pressure Plane 8 - CR 1010/904 12” Water Line	$6,120,000
38	Plant 21 Upgrades	$840,000
	5-Year Projects Sub-Total:	**$192,550,593**

9.3 10-YEAR CAPITAL IMPROVEMENT PLAN PROJECTS

Table 32 – 10-Year Capital Improvement Plan Summary

Project No.	Project Name	Project Cost
39	Plant 27B Pump Station and 2.5 MG GST	$18,590,000
40	Pressure Plane 13 - CR 1006 16” Water Line	$10,200,000
41	Pressure Plane 13 - SH 171 12” Water Line	$3,500,000
42	Pressure Plane 1 - CR 316 16” Water Line	$15,470,000
43	Pressure Plane 1 - FM 3136/2135 16” Water Line	$10,810,000
44	Pressure Plane 8 - CR 919/920 12” Water Line	$3,320,000
45	Pressure Plane 8 - CR920/1016 12” Water Line	$4,110,000
46	Pressure Plane 13 - CR 1232 12” Water Line	$8,300,000
	10-Year Projects Sub-Total:	**$74,300,000**

9.4 15-YEAR CAPITAL IMPROVEMENT PLAN PROJECTS

Table 33 – 15-Year Capital Improvement Plan Summary

Project No.	Project Name	Project Cost
47	Pressure Plane 8 - Pump Station and 1.0 MG GST	$13,470,000
48	Pressure Plane 8 - 1.0 MG EST	$8,590,000
49	Plant 27 to Plant 24 Transmission Main – 12”	$15,110,000
50	Plant 27B Expansion	$1,450,000
51	Pressure Plane 25 - 12” Water Line	$10,980,000
52	Pressure Plane 24 - 12” Water Line Loop	$25,250,000
53	Pressure Plane 1 - CR 405/311/406 16” Water Line	$11,300,000
54	Pressure Plane 3 - CR 313/107/204 12” Water Line	$7,590,000
55	Pressure Plane 3 - CR 204/105 12” Water Line	$6,900,000
56	Pressure Plane 3 - CR 105/401 12” Water Line	$10,960,000
57	Pressure Plane 1 - CR 305 12” Water Line	$3,220,000
58	Pressure Plane 1 - FM 4 16” Water Line	$6,560,000
59	Pressure Plane 1 - CR 308/423 16” Water Line	$12,080,000
60	Pressure Plane 1 - CR310/312 12” Water Line	$3,470,000
61	Pressure Plane 19 - CR 310 12” Water Line	$7,090,000
62	Pressure Plane 13 - 12” Water Line	$14,130,000
63	Pressure Plane 9 - 12” Water Line	$11,200,000
64	Pressure Plane 8 - W Cleburne 12” Water Line	$4,290,000
	15-Year Projects Sub-Total:	**$173,640,000**

10.0 Appendices

APPENDIX A – OPINION OF PROBABLE CONSTRUCTION COSTS
APPENDIX B – BOUNDARY AND GROWTH MAP
APPENDIX C – EXISTING LAND USE MAP
APPENDIX D – ULTIMATE LAND USE MAP
APPENDIX E – EXISTING WATER INFRASTRUCTURE MAP
APPENDIX F – SYSTEM HEAT MAP
APPENDIX G – PROPOSED SYSTEM MAP
APPENDIX H – CAPITAL IMPROVEMENT PLAN MAP
APPENDIX I – NORTH SYSTEM CAPITAL IMPROVEMENT PLAN MAP
APPENDIX J – SOUTH SYSTEM CAPITAL IMPROVEMENT PLAN MAP
APPENDIX K – EAST SYSTEM CAPITAL IMPROVEMENT PLAN MAP
APPENDIX L – WEST SYSTEM CAPITAL IMPROVEMENT PLAN MAP

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **Summary**

Project No.	Project Description	Total
	5-YEAR PROJECTS	
15	Joshua Main Street 16" Water Line (Cost Provided by District)	$1,750,000
16	Plant 16 JCSUD/MPSUD - 16" Fill Water Line (Cost Provided by District)	$1,355,293
17	Plant 27A Expansion	$785,300
18	Pressure Plane 13 1.5 MG Elevated Storage Tank	$10,840,000
19	Pressure Plane 8 and 34 Interconnect	$480,000
20	Pressure Plane 8 1.0 MG Elevated Storage Tank	$8,590,000
21	Plant 11A Expansion and 1.0 MG Ground Storage Tank	$2,970,000
22	Plant 11B Pump Station	$11,000,000
23	Pressure Plane 13 CR 1128/CR 913 16” Water Line	$6,670,000
24	Pressure Plane 13 CR 1128/CR 2331 16” Water Line	$4,560,000
25	RO Treatment Plant	$91,960,000
26	Pressure Plane 13 SH 171/CR 2331 16" Water Line	$2,430,000
27	Pressure Plane 1 0.75 MG Elevated Storage Tank	$7,140,000
28	Plant 17 16” Bypass	$290,000
29	Pressure Plane 25 FM 917/2738 16” Water Line	$4,470,000
30	Pressure Plane 25 FM 917 16” Water Line	$2,070,000
31	Presure Plane 24 CR 508 16" Water Line	$6,640,000
32	Pressure Plane 24 CR 207 16” Water Line	$3,830,000
33	Pressure Plane 13 CR 915/1005 16” Water Line	$6,780,000
34	Pressure Plane 8 CR 1016 12” Water Line	$5,270,000
35	Pressure Plane 13 CR 1233/1129 12” Water Line	$4,410,000
36	Pressure Plane 13 SH 171 12” Water Line	$1,300,000
37	Pressure Plane 8 CR 1010/904 12” Water Line	$6,120,000
38	Plant 21 Upgrades	$840,000
	5-YEAR TOTAL	**$192,550,593**
	10-YEAR PROJECTS	
39	Plant 27B Pump Station and 2.5 MG GST	$18,590,000
40	Pressure Plane 13 CR 1006 16” Water Line	$10,200,000
41	Pressure Plane 13 SH 171 12” Water Line	$3,500,000
42	Pressure Plane 1 CR 316 16” Water Line	$15,470,000
43	Pressure Plane 1 FM 3136/2135 16” Water Line	$10,810,000
44	Pressure Plane 8 CR 919/920 12” Water Line	$3,320,000
45	Pressure Plane 8 CR 920/1016 12” Water Line	$4,110,000
46	Pressure Plane 13 CR 1232 12” Water Line	$8,300,000
	10-YEAR TOTAL	**$74,300,000**
	15-YEAR PROJECTS	
47	Proposed Pressure Plane 8 Pump Station and 1.0 MG Ground Storage Tank	$13,470,000
48	Pressure Plane 8 1.0 MG Elevated Storage Tank	$8,590,000
49	Plant 27 to Plant 24 Water Transmission Mains - 12"	$15,110,000
50	Plant 27B Expansion	$1,450,000
51	Pressure Plane 25 12” Water Line	$10,980,000
52	Pressure Plane 24 12” Water Line Loop	$25,250,000
53	Pressure Plane 1 CR 405/311/406 16” Water Line	$11,300,000
54	Pressure Plane 3 CR 313/107/204 12” Water Line	$7,590,000
55	Pressure Plane 3 CR 204/105 12” Water Line	$6,900,000
56	Pressure Plane 3 CR105/401 12” Water Line	$10,960,000
57	Pressure Plane 1 CR 305 12” Water Line	$3,220,000
58	Pressure Plane 1 FM 4 16” Water Line	$6,560,000
59	Pressure Plane 1 CR 308/423 16” Water Line	$12,080,000
60	Pressure Plane 1 CR 310/312 12” Water Line	$3,470,000
61	Pressure Plane 19 CR 310 12” Water Line	$7,090,000
62	Pressure Plane 13 12” Water Line	$14,130,000
63	Pressure Plane 9 12” Water Line	$11,200,000
64	Pressure Plane 8 W Cleburne 12” Water Line	$4,290,000
	15-YEAR TOTAL	**$173,640,000**
	Total	**$440,490,593**

Basis for Cost Projection:

Prices reflect 2022 dollars.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title:	**17 - Plant 27A Expansion**	**New pump to be added to the existing pump station**	

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$18,000.00	$18,000
2	3,800 GPM Pump and Motor	EA	1	$275,000.00	$275,000
3	Installation of 3,800 GPM Pump and Motor	LS	1	$50,000.00	$50,000
4	Interior Mechanical Piping, Valves, and Plumbing	LS	1	$161,100.00	$161,100
5	Miscellaneous Electrical Work	LS	1	$134,800.00	$134,800
6	Variable Frequency Drive	EA	1	$146,400.00	$146,400

☐ Conceptual Design	Subtotal:		$785,300
☐ Preliminary Design	Conting. (%,+/-)	0	$0
☑ Final Design	Profession Services (%,+/-)	0	$0
	Total		**$785,300**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.	**061002032**	**Checked By:**	**KLW**

Title: **18 - Pressure Plane 13 1.5 MG Elevated Storage Tank** **New 1.5 MG EST**

Line No.	Description	Unit	Quanity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$250,000.00	$250,000
2	1.5 MG Composite Elevated Water Storage Tank	LS	1	$6,500,000.00	$6,500,000
3	24" Gate Valve w/ Vault	EA	1	$50,000.00	$50,000
4	6" Gate Valve w/ Box	EA	1	$1,200.00	$1,200
5	24" Water Pipe	LF	200	$400.00	$80,000
6	6" Water Pipe	LF	50	$100.00	$5,000
7	Ductile Iron Water Fittings w/ Restraint	TON	2	$6,000.00	$12,000
8	Connection to Proposed 24" Water Main	EA	1	$15,000.00	$15,000
9	Fire Hydrant	EA	1	$5,000.00	$5,000
10	Site Grading	LS	1	$75,000.00	$75,000
11	8" Concrete Driveway	SY	300	$150.00	$45,000
12	3' Concrete Sidewalk	SY	60	$80.00	$4,800
13	6' Chain Link Fence	LF	770	$50.00	$38,500
14	12" Concrete Mow Strip	LF	770	$5.00	$3,850
15	24' Cantilever Sliding Gate	EA	1	$10,000.00	$10,000
16	Erosion Control	LS	1	$25,000.00	$25,000
17	Electrical and SCADA	LS	1	$350,000.00	$350,000

Subtotal:			$7,470,350
Conting. (%,+/-)		30	$2,249,098
Profession Services (%,+/-)		15	$1,120,553
Total			**$10,840,000**

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Pressure Plane 8 and 34 Interconnect**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **19 - Pressure Plane 8 and 34 Interconnect** **12" Water line from Pressure Plane 8 to Pressure Plane 34**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$25,000.00	$25,000
2	12" Water Line	LF	100	$150.00	$15,000
3	16" Ductile Iron Water Line	LF	30	$200.00	$6,000
4	12" Gate Valve	EA	3	$5,000.00	$15,000
5	16" Gate Valve	EA	2	$7,500.00	$15,000
6	16" Electromagnetic Meter	EA	1	$30,000.00	$30,000
7	16" Hydraulic Control Valve	EA	1	$50,000.00	$50,000
8	16" Pressure Reducing Valve	EA	1	$30,000.00	$30,000
9	Piping Insulation	LS	1	$10,000.00	$10,000
10	6" Chain Link Fence	LF	150	$50.00	$7,500
11	Concrete Pad and Pipe Supports	LS	1	$10,000.00	$10,000
12	Site Work	LS	1	$25,000.00	$25,000
13	Electrical	LS	1	$40,000.00	$40,000
14	SCADA, Monopole, and Instrumentation	LS	1	$50,000.00	$50,000
			Subtotal:		$328,500
			Conting. (%,+/-)	30	$102,225
			Profession Services (%,+/-)	15	$49,275
			Total		**$480,000**

☑ No Design
☐ Preliminary Design
☐ Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **20 - Pressure Plane 8 1.0 MG Elevated Storage Tank** **New 1.0 MG EST**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$250,000.00	$250,000
2	1.0 MG Composite Elevated Water Storage Tank	LS	1	$5,000,000.00	$5,000,000
3	16" Gate Valve	EA	1	$12,000.00	$12,000
4	6" Gate Valve w/ Box	EA	1	$1,200.00	$1,200
5	16" Water Pipe	LF	200	$350.00	$70,000
6	6" Water Pipe	LF	50	$100.00	$5,000
7	Ductile Iron Water Fittings w/ Restraint	TON	2	$6,000.00	$12,000
8	Connection to Proposed 24" Water Main	EA	1	$15,000.00	$15,000
9	Fire Hydrant	EA	1	$5,000.00	$5,000
10	Site Grading	LS	1	$75,000.00	$75,000
11	8" Concrete Driveway	SY	300	$150.00	$45,000
12	3' Concrete Sidewalk	SY	60	$80.00	$4,800
13	6' Chain Link Fence	LF	770	$50.00	$38,500
14	12" Concrete Mow Strip	LF	770	$5.00	$3,850
15	24' Cantilever Sliding Gate	EA	1	$10,000.00	$10,000
16	Erosion Control	LS	1	$25,000.00	$25,000
17	Electrical and SCADA	LS	1	$350,000.00	$350,000

	Subtotal:		$5,922,350
	Conting. (%,+/-)	30	$1,779,298
	Profession Services (%,+/-)	15	$888,353
	Total		**$8,590,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This tota This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.	**061002032**	**Checked By:**	**KLW**

Title: **21 - Plant 11A Expansion and 1.0 MG Ground Storage Tank** **New pump to be added to the existing pump station and 1 MG GST**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$100,000.00	$100,000
2	1 MG Prestressed Concrete Ground Storage Tank	EA	1	$1,500,000.00	$1,500,000
3	1,900 GPM Pump and Motor	EA	1	$77,000.00	$77,000
4	200 VFD and MCC Modifications	EA	1	$50,000.00	$50,000
5	24" Gate Valve, w/ Vault	EA	2	$50,000.00	$100,000
6	24" Yard Piping	LF	250	$400.00	$100,000
7	Ductile Iron Fittings	TON	2	$6,000.00	$12,000
8	16" Gate Valve	EA	2	$12,000.00	$24,000
9	16" Yard Piping	LF	75	$350.00	$26,250
10	SCADA Improvements	LS	1	$35,000.00	$35,000
11	Miscellaneous Electrical Improvements	LS	1	$20,000.00	$20,000
		Subtotal:			$2,044,250
		Conting. (%,+/-)		30	$619,113
		Profession Services (%,+/-)		15	$306,638
		Total			**$2,970,000**

☑ No Design
☐ Preliminary Design
☐ Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.	**061002032**	**Checked By:**	**KLW**

Title: **22 - Plant 11B Pump Station** **New pump station building and 2 pumps**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$500,000.00	$500,000
2	900 GPM Pump and Motor	EA	2	$60,000.00	$120,000
3	24" Isolation BFV	EA	2	$40,000.00	$80,000
4	16" Tilted Disc Check Valve w/ Bottom Mounted Dashpot	EA	3	$35,000.00	$105,000
5	Gate Valves with Box	EA	3	$15,000.00	$45,000
6	16" FLG Gate Valve w/ Handle	EA	3	$10,000.00	$30,000
7	8" Pressure Relief Valve	EA	1	$15,000.00	$15,000
8	1" Air Release Valve	EA	6	$2,000.00	$12,000
9	Pump Station Piping	LS	1	$75,000.00	$75,000
10	Supply Yard Piping	LF	300	$700.00	$210,000
11	Discharge Yard Piping	LF	300	$700.00	$210,000
12	2" ARV and Manhole	EA	1	$20,000.00	$20,000
13	8" Pressure Relief Valve Piping	LF	75	$200.00	$15,000
14	16/24" Connection to existing main	EA	2	$20,000.00	$40,000
15	Pump Control Valve and Electric Actuator	EA	3	$50,000.00	$150,000
16	24" Electromagnetic Flow Meter and Vault	EA	1	$150,000.00	$150,000
17	Variable Frequency Drives	EA	3	$100,000.00	$300,000
18	Electrical (Main Switch, Bus, Conducter…)	LS	1	$750,000.00	$750,000
19	Instrumentation	LS	1	$250,000.00	$250,000
20	750 kW Generator with Load Bank (2 pumps)	LS	1	$400,000.00	$400,000
21	Generator Pad	LS	1	$20,000.00	$20,000
22	Trench Safety	LF	400	$5.00	$2,000
23	Grading	LS	1	$75,000.00	$75,000
24	Concrete Paving	SY	2,500	$150.00	$375,000
25	18" CMP Culvert	LF	40	$50.00	$2,000
26	Transformer Pad	LS	1	$10,000.00	$10,000
27	Pump Station Building	LS	1	$3,500,000.00	$3,500,000
28	Plumbing and HVAC	LS	1	$100,000.00	$100,000
29	Erosion Control	LS	1	$25,000.00	$25,000

☑ No Design
☐ Preliminary Design
☐ Final Design

Subtotal:		$7,586,000
Conting. (%,+/-)	30	$2,276,100
Profession Services (%,+/-)	15	$1,137,900
Total		**$11,000,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **23 - Pressure Plane 13 CR 1128/CR 913 16" Water Line** **16" Water line along CR 1128 & CR 913**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$173,000.00	$173,000
2	Traffic Control	LS	1	$65,000.00	$65,000
3	Erosion Control	LS	1	$44,000.00	$44,000
4	16" Water Pipe	LF	15,752	$200.00	$3,150,400
5	24" Bore with Steel Casing	LF	150	$1,000.00	$150,000
6	Water Line Trench Safety	LF	15,752	$3.00	$47,256
7	16" AWWA Gate Valve	EA	9	$8,500.00	$76,500
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	32	$5,000.00	$160,000
10	Ductile Iron Fittings	TON	16	$6,500.00	$102,440
11	Hydromulch	SY	52,600	$3.00	$157,800
12	Asphalt Pavement Repair	SY	3,600	$125.00	$450,000

	Subtotal:		$4,596,396
	Conting. (%,+/-)	30	$1,384,145
	Profession Services (%,+/-)	15	$689,459
	Total		**$6,670,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **24 - Pressure Plane 13 CR 1128/CR 2331 16" Water Line** **16" Water line along CR 1128 & CR 2331**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$118,000.00	$118,000
2	Traffic Control	LS	1	$45,000.00	$45,000
3	Erosion Control	LS	1	$30,000.00	$30,000
4	16" Water Pipe	LF	10,515	$200.00	$2,103,000
5	24" Bore with Steel Casing	LF	150	$1,000.00	$150,000
6	Water Line Trench Safety	LF	10,515	$3.00	$31,545
7	16" AWWA Gate Valve	EA	7	$8,500.00	$59,500
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	22	$5,000.00	$110,000
10	Ductile Iron Fittings	TON	11	$6,500.00	$68,380
11	Hydromulch	SY	35,100	$3.00	$105,300
12	Asphalt Pavement Repair	SY	2,400	$125.00	$300,000

	Subtotal:		$3,140,725
☑ No Design	Conting. (%,+/-)	30	$948,166
☐ Preliminary Design	Profession Services (%,+/-)	15	$471,109
☐ Final Design	**Total**		**$4,560,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**Hazen from SWATS Due Diligence Report**
KHA No.:	**061002032**	**Checked By:**	**Hazen from SWATS Due Diligence Report**

Title: **25 - RO Treatment Plant** **New Water Treatment Plant**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Raw Water Improvements	LS	1	$3,400,000.00	$3,400,000
2	Chlorine Dioxide System	LS	1	$1,700,000.00	$1,700,000
3	Pre-Sedimentation Basin	LS	1	$910,000.00	$910,000
4	Chemical Feed System (Coag, Cl, NH3, NaOH)	LS	1	$1,730,000.00	$1,730,000
5	Membrane Building (with UF and RO System)	LS	1	$46,600,000.00	$46,600,000
6	Backwash Equalization Lagoon	LS	1	$780,000.00	$780,000
7	1.0 MG Clearwell	LS	1	$2,240,000.00	$2,240,000
8	Site Work and Yard Piping	LS	1	$3,370,000.00	$3,370,000
9	Site Electrical	LS	1	$1,610,000.00	$1,610,000
10	I&C (without UF and RO System)	LS	1	$1,080,000.00	$1,080,000
			Subtotal:		$63,420,000
			Conting. (%,+/-)	30	$19,027,000
			Profession Services (%,+/-)	15	$9,513,000
			Total		**$91,960,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **26 - Pressure Plane 13 SH 171/CR 2331 16" Water Line** **16" Water line along SH 171 & CR 2331**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$63,000.00	$63,000
2	Traffic Control	LS	1	$24,000.00	$24,000
3	Erosion Control	LS	1	$16,000.00	$16,000
4	16" Water Pipe	LF	5,697	$200.00	$1,139,400
5	Water Line Trench Safety	LF	5,697	$3.00	$17,091
6	16" AWWA Gate Valve	EA	7	$8,500.00	$59,500
7	Connect to Existing Water Line	EA	4	$10,000.00	$40,000
8	Fire Hydrant Assembly	EA	12	$5,000.00	$60,000
9	Ductile Iron Fittings	TON	6	$6,500.00	$37,050
10	Hydromulch	SY	19,000	$3.00	$57,000
11	Asphalt Pavement Repair	SY	1,300	$125.00	$162,500
		Subtotal:			$1,675,541
		Conting. (%,+/-)		30	$503,128
		Profession Services (%,+/-)		15	$251,331
		Total			**$2,430,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **27 - Pressure Plane 1 .75 MG Elevated Storage Tank** **New .75 MG EST**

Line No.	Description	Unit	Quanity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$250,000.00	$250,000
2	0.75 MG Composite Elevated Water Storage Tank	LS	1	$4,000,000.00	$4,000,000
3	16" Gate Valve	EA	1	$12,000.00	$12,000
4	6" Gate Valve w/ Box	EA	1	$1,200.00	$1,200
5	16" Water Pipe	LF	200	$350.00	$70,000
6	6" Water Pipe	LF	50	$100.00	$5,000
7	Ductile Iron Water Fittings w/ Restraint	TON	2	$6,000.00	$12,000
8	Connection to Proposed 24" Water Main	EA	1	$15,000.00	$15,000
9	Fire Hydrant	EA	1	$5,000.00	$5,000
10	Site Grading	LS	1	$75,000.00	$75,000
11	8" Concrete Driveway	SY	300	$150.00	$45,000
12	3' Concrete Sidewalk	SY	60	$80.00	$4,800
13	6' Chain Link Fence	LF	770	$50.00	$38,500
14	12" Concrete Mow Strip	LF	770	$5.00	$3,850
15	24' Cantilever Sliding Gate	EA	1	$10,000.00	$10,000
16	Erosion Control	LS	1	$25,000.00	$25,000
17	Electrical and SCADA	LS	1	$350,000.00	$350,000

	Subtotal:		$4,922,350
	Conting. (%,+/-)	30	$1,479,298
	Profession Services (%,+/-)	15	$738,353
	Site Improvements Total:		**$7,140,000**

Basis for Cost Projection:

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **28 - Plant 17 16" Bypass** **16" Water line around Plant 17**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$8,000.00	$8,000
2	Traffic Control	LS	1	$3,000.00	$3,000
3	Erosion Control	LS	1	$2,000.00	$2,000
4	16" Water Pipe	LF	500	$200.00	$100,000
5	Water Line Trench Safety	LF	500	$3.00	$1,500
6	16" AWWA Gate Valve	EA	3	$8,500.00	$25,500
7	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
8	Ductile Iron Fittings	TON	1	$6,500.00	$3,250
9	Hydromulch	SY	1,700	$3.00	$5,100
10	Asphalt Pavement Repair	SY	200	$125.00	$25,000

Subtotal:			$193,350
Conting. (%,+/-)		30	$67,648
Profession Services (%,+/-)		15	$29,003
Total			**$290,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **29 - Pressure Plane 25 FM 917/2738 16" Water Line** **16" Water line along FM 917/2738**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$116,000.00	$116,000
2	Traffic Control	LS	1	$44,000.00	$44,000
3	Erosion Control	LS	1	$29,000.00	$29,000
4	16" Water Pipe	LF	9,593	$200.00	$1,918,600
5	24" Bore with Steel Casing	LF	300	$1,000.00	$300,000
6	Water Line Trench Safety	LF	9,593	$3.00	$28,779
7	16" AWWA Gate Valve	EA	8	$8,500.00	$68,000
8	Connect to Existing Water Line	EA	4	$10,000.00	$40,000
9	Fire Hydrant Assembly	EA	20	$5,000.00	$100,000
10	Ductile Iron Fittings	TON	10	$6,500.00	$62,400
11	Hydromulch	SY	32,000	$3.00	$96,000
12	Asphalt Pavement Repair	SY	2,200	$125.00	$275,000

Subtotal:			$3,077,779
Conting. (%,+/-)		30	$930,554
Profession Services (%,+/-)		15	$461,667
Total			**$4,470,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **30 - Pressure Plane 25 FM 917 16" Water Line** **16" Water line along FM 917**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$54,000.00	$54,000
2	Traffic Control	LS	1	$21,000.00	$21,000
3	Erosion Control	LS	1	$14,000.00	$14,000
4	16" Water Pipe	LF	4,390	$200.00	$878,000
5	24" Bore with Steel Casing	LF	150	$1,000.00	$150,000
6	Water Line Trench Safety	LF	4,390	$3.00	$13,170
7	16" AWWA Gate Valve	EA	4	$8,500.00	$34,000
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	9	$5,000.00	$45,000
10	Ductile Iron Fittings	TON	4	$6,500.00	$28,535
11	Hydromulch	SY	14,700	$3.00	$44,100
12	Asphalt Pavement Repair	SY	1,000	$125.00	$125,000

Subtotal:			$1,426,805
Conting. (%,+/-)		30	$429,174
Profession Services (%,+/-)		15	$214,021
Total			**$2,070,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **31 - Pressure Plane 24 CR 508 16" Water Line** **16" Water line along CR 508**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$377,000.00	$377,000
2	Traffic Control	LS	1	$142,000.00	$142,000
3	Erosion Control	LS	1	$95,000.00	$95,000
4	16" Water Pipe	LF	12,795	$200.00	$2,559,000
5	24" Bore with Steel Casing	LF	500	$1,000.00	$500,000
6	Water Line Trench Safety	LF	12,795	$3.00	$38,385
7	16" AWWA Gate Valve	EA	12	$8,500.00	$102,000
8	Connect to Existing Water Line	EA	6	$10,000.00	$60,000
9	Fire Hydrant Assembly	EA	26	$5,000.00	$130,000
10	Ductile Iron Fittings	TON	13	$6,500.00	$83,200
11	Hydromulch	SY	42,700	$3.00	$128,100
12	Asphalt Pavement Repair	SY	2,900	$125.00	$362,500

Subtotal:			$4,577,185
Conting. (%,+/-)		30	$1,376,237
Profession Services (%,+/-)		15	$686,578
Total			**$6,640,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **32 - Pressure Plane 24 CR 207 16" Water Line** **16" Water line along CR 207 & Hwy 66 Crossing**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$377,000.00	$377,000
2	Traffic Control	LS	1	$142,000.00	$142,000
3	Erosion Control	LS	1	$95,000.00	$95,000
4	16" Water Pipe	LF	5,380	$200.00	$1,076,000
5	24" Bore with Steel Casing	LF	500	$1,000.00	$500,000
6	Water Line Trench Safety	LF	5,380	$3.00	$16,140
7	16" AWWA Gate Valve	EA	9	$8,500.00	$76,500
8	Connect to Existing Water Line	EA	6	$10,000.00	$60,000
9	Fire Hydrant Assembly	EA	11	$5,000.00	$55,000
10	Ductile Iron Fittings	TON	5	$6,500.00	$34,970
11	Hydromulch	SY	18,000	$3.00	$54,000
12	Asphalt Pavement Repair	SY	1,200	$125.00	$150,000

Subtotal:			$2,636,610
Conting. (%,+/-)		30	$797,899
Profession Services (%,+/-)		15	$395,492
Total			**$3,830,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **33 - Pressure Plane 13 CR 915/1005 16" Water Line** **16" Water line along CR 915 & CR 1005**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$176,000.00	$176,000
2	Traffic Control	LS	1	$66,000.00	$66,000
3	Erosion Control	LS	1	$44,000.00	$44,000
4	16" Water Pipe	LF	15,900	$200.00	$3,180,000
5	24" Bore with Steel Casing	LF	150	$1,000.00	$150,000
6	Water Line Trench Safety	LF	15,900	$3.00	$47,700
7	16" AWWA Gate Valve	EA	11	$8,500.00	$93,500
8	Connect to Existing Water Line	EA	4	$10,000.00	$40,000
9	Fire Hydrant Assembly	EA	32	$5,000.00	$160,000
10	Ductile Iron Fittings	TON	16	$6,500.00	$103,350
11	Hydromulch	SY	53,000	$3.00	$159,000
12	Asphalt Pavement Repair	SY	3,600	$125.00	$450,000

Subtotal:			$4,669,550
Conting. (%,+/-)		30	$1,410,018
Profession Services (%,+/-)		15	$700,433
Total			**$6,780,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **34 - Pressure Plane 8 CR 1016 12" Water Line** **12" Water line along CR 1016**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$137,000.00	$137,000
2	Traffic Control	LS	1	$52,000.00	$52,000
3	Erosion Control	LS	1	$35,000.00	$35,000
4	12" Water Pipe	LF	15,250	$150.00	$2,287,500
5	24" Bore with Steel Casing	LF	150	$1,000.00	$150,000
6	Water Line Trench Safety	LF	15,250	$3.00	$45,750
7	12" AWWA Gate Valve	EA	10	$6,500.00	$65,000
8	Connect to Existing Water Line	EA	3	$10,000.00	$30,000
9	Fire Hydrant Assembly	EA	31	$5,000.00	$155,000
10	Ductile Iron Fittings	TON	15	$6,500.00	$99,125
11	Hydromulch	SY	50,900	$3.00	$152,700
12	Asphalt Pavement Repair	SY	3,400	$125.00	$425,000

Subtotal:			$3,634,075
Conting. (%,+/-)		30	$1,090,814
Profession Services (%,+/-)		15	$545,111
Total			**$5,270,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **35 - Pressure Plane 13 CR 1233/1129 12" Water Line** **12" Water line along CR 1233 & CR 1129**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$115,000.00	$115,000
2	Traffic Control	LS	1	$43,000.00	$43,000
3	Erosion Control	LS	1	$29,000.00	$29,000
4	12" Water Pipe	LF	12,600	$150.00	$1,890,000
5	24" Bore with Steel Casing	LF	150	$1,000.00	$150,000
6	Water Line Trench Safety	LF	12,600	$3.00	$37,800
7	12" AWWA Gate Valve	EA	9	$6,500.00	$58,500
8	Connect to Existing Water Line	EA	3	$10,000.00	$30,000
9	Fire Hydrant Assembly	EA	26	$5,000.00	$130,000
10	Ductile Iron Fittings	TON	13	$6,500.00	$81,900
11	Hydromulch	SY	42,000	$3.00	$126,000
12	Asphalt Pavement Repair	SY	2,800	$125.00	$350,000

Subtotal:			$3,041,200
Conting. (%,+/-)		30	$912,620
Profession Services (%,+/-)		15	$456,180
Total			**$4,410,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **36 - Pressure Plane 13 SH 171 12" Water Line** **12" Water line along SH 171**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$34,000.00	$34,000
2	Traffic Control	LS	1	$13,000.00	$13,000
3	Erosion Control	LS	1	$9,000.00	$9,000
4	12" Water Pipe	LF	2,800	$150.00	$420,000
5	24" Bore with Steel Casing	LF	200	$1,000.00	$200,000
6	Water Line Trench Safety	LF	2,800	$3.00	$8,400
7	12" AWWA Gate Valve	EA	4	$6,500.00	$26,000
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	6	$5,000.00	$30,000
10	Ductile Iron Fittings	TON	3	$6,500.00	$18,200
11	Hydromulch	SY	9,400	$3.00	$28,200
12	Asphalt Pavement Repair	SY	700	$125.00	$87,500

	Subtotal:		$894,300
☑ No Design	Conting. (%,+/-)	30	$271,555
☐ Preliminary Design	Profession Services (%,+/-)	15	$134,145
☐ Final Design	**Total**		**$1,300,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **37 - Pressure Plane 8 CR1010/904 12" Water Line** **12" Water line along CR 1010 & CR 904**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$159,000.00	$159,000
2	Traffic Control	LS	1	$60,000.00	$60,000
3	Erosion Control	LS	1	$40,000.00	$40,000
4	12" Water Pipe	LF	17,500	$150.00	$2,625,000
5	24" Bore with Steel Casing	LF	250	$1,000.00	$250,000
6	Water Line Trench Safety	LF	17,500	$3.00	$52,500
7	12" AWWA Gate Valve	EA	9	$6,500.00	$58,500
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	35	$5,000.00	$175,000
10	Ductile Iron Fittings	TON	18	$6,500.00	$113,750
11	Hydromulch	SY	58,400	$3.00	$175,200
12	Asphalt Pavement Repair	SY	3,900	$125.00	$487,500

	Subtotal:		$4,216,450
☑ No Design	Conting. (%,+/-)	30	$1,271,083
☐ Preliminary Design	Profession Services (%,+/-)	15	$632,468
☐ Final Design	**Total**		**$6,120,000**

This total does not reflect engineering or technical services.

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.

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

Client: Johnson County Special Utility District
Project: Preliminary CIP Improvements
KHA No. 061002032

Date: 2/7/2023
Prepared By: RAS/CJM/DDW
Checked By: KLW

Title: 38 - Plant 21 Upgrades

New pump to be added to the existing pump station

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$25,000.00	$25,000
2	1,870 GPM Pump and Motor	EA	1	$150,000.00	$150,000
3	Installation of 1,870 GPM Pump and Motor	LS	1	$50,000.00	$50,000
4	Interior Mechanical Piping, Valves, and Plumbing	LS	1	$100,000.00	$100,000
5	Miscellaneous Electrical Work	LS	1	$150,000.00	$150,000
6	Variable Frequency Drive	EA	1	$100,000.00	$100,000

Subtotal:			$575,000
Conting. (%,+/-)		30	$178,750
Profession Services (%,+/-)		15	$86,250
Total			**$840,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **39 - Plant 27B Pump Station and 2.5 MG Ground Storage Tank** **New pump station building, 2 pumps, and 2.5 MG GST**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$750,000.00	$750,000
2	2.5 MG Prestressed Concrete Ground Storage Tank	EA	1	$2,250,000.00	$2,250,000
3	3,000 GPM Pumps and Motors	EA	2	$210,000.00	$420,000
4	48" Gate Valve, w/ Vault	EA	2	$100,000.00	$200,000
5	24" Tilted Disc Check Valve w/ Bottom Mounted Dashpot	EA	3	$60,000.00	$180,000
6	24" Gate Valve	EA	3	$45,000.00	$135,000
7	24" FLG Gate Valve w/ Handle	EA	3	$35,000.00	$105,000
8	12" Pressure Relief Valve	EA	1	$25,000.00	$25,000
9	2" Air Release Valve	EA	6	$5,000.00	$30,000
10	Pump Station Piping	LS	1	$250,000.00	$250,000
11	Supply Yard Piping	LF	300	$1,000.00	$300,000
12	Discharge Yard Piping	LF	300	$1,000.00	$300,000
13	12" PRV Piping	LF	75	$375.00	$28,125
14	Pump Control Valve and Electric Actuator	EA	3	$75,000.00	$225,000
15	36" Electromagnetic Flow Meter and Vault	EA	1	$250,000.00	$250,000
16	Variable Frequency Drives	EA	3	$100,000.00	$300,000
17	Electrical (Main Switch, Bus, Conducter…)	LS	1	$1,000,000.00	$1,000,000
18	Instrumentation	LS	1	$250,000.00	$250,000
19	1,000 kW Generator with Load Bank (3 pumps)	LS	1	$1,000,000.00	$1,000,000
20	Generator Pad	LS	1	$20,000.00	$20,000
21	VFD	EA	3	$150,000.00	$450,000
22	Harmonic Filter	EA	3	$50,000.00	$150,000
23	480 Volt MCC Feeder Units	EA	3	$11,000.00	$33,000
24	SWPPP	LS	1	$5,000.00	$5,000
25	Grading	LS	1	$100,000.00	$100,000
26	Concrete Paving	SY	2,500	$150.00	$375,000
27	18" CMP Culvert	LF	40	$50.00	$2,000
28	Transformer Pad	LS	1	$10,000.00	$10,000
29	Pump Station Building	LS	1	$3,500,000.00	$3,500,000
30	Pump Station HVAC and Plumbing	LS	1	$150,000.00	$150,000
31	Erosion Control	LS	1	$25,000.00	$25,000

	Subtotal:		$12,818,125
	Conting. (%,+/-)	30	$3,849,156
	Profession Services (%,+/-)	15	$1,922,719
	Total		**$18,590,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **40 - Pressure Plane 13 CR 1006 16" Water Line** **16" Water line along CR 1006**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$265,000.00	$265,000
2	Traffic Control	LS	1	$100,000.00	$100,000
3	Erosion Control	LS	1	$67,000.00	$67,000
4	16" Water Pipe	LF	24,400	$200.00	$4,880,000
5	24" Bore with Steel Casing	LF	150	$1,000.00	$150,000
6	Water Line Trench Safety	LF	24,400	$3.00	$73,200
7	16" AWWA Gate Valve	EA	14	$8,500.00	$119,000
8	Connect to Existing Water Line	EA	4	$10,000.00	$40,000
9	Fire Hydrant Assembly	EA	49	$5,000.00	$245,000
10	Ductile Iron Fittings	TON	25	$6,500.00	$162,500
11	Hydromulch	SY	81,400	$3.00	$244,200
12	Asphalt Pavement Repair	SY	5,500	$125.00	$687,500

Subtotal:			$7,033,400
Conting. (%,+/-)		30	$2,111,590
Profession Services (%,+/-)		15	$1,055,010
Total			**$10,200,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **41 - Pressure Plane 13 SH 171 12" Water Line** **12" Water line along SH 171**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$91,000.00	$91,000
2	Traffic Control	LS	1	$34,000.00	$34,000
3	Erosion Control	LS	1	$23,000.00	$23,000
4	12" Water Pipe	LF	9,900	$150.00	$1,485,000
5	24" Bore with Steel Casing	LF	150	$1,000.00	$150,000
6	Water Line Trench Safety	LF	9,900	$3.00	$29,700
7	12" AWWA Gate Valve	EA	6	$6,500.00	$39,000
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	20	$5,000.00	$100,000
10	Ductile Iron Fittings	TON	10	$6,500.00	$65,000
11	Hydromulch	SY	33,000	$3.00	$99,000
12	Asphalt Pavement Repair	SY	2,200	$125.00	$275,000

	Subtotal:		$2,410,700
	Conting. (%,+/-)	30	$727,695
	Profession Services (%,+/-)	15	$361,605
	Total		**$3,500,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **42 - Pressure Plane 1 CR 316 16" Water Line** **16" Water line along CR 316**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$401,000.00	$401,000
2	Traffic Control	LS	1	$151,000.00	$151,000
3	Erosion Control	LS	1	$101,000.00	$101,000
4	16" Water Pipe	LF	37,500	$200.00	$7,500,000
5	24" Bore with Steel Casing	LF	250	$1,000.00	$250,000
6	Water Line Trench Safety	LF	37,500	$3.00	$112,500
7	16" AWWA Gate Valve	EA	10	$8,500.00	$85,000
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	75	$5,000.00	$375,000
10	Ductile Iron Fittings	TON	38	$6,500.00	$247,000
11	Hydromulch	SY	125,000	$3.00	$375,000
12	Asphalt Pavement Repair	SY	8,400	$125.00	$1,050,000

	Subtotal:		$10,667,500
☑ No Design	Conting. (%,+/-)	30	$3,202,375
☐ Preliminary Design	Profession Services (%,+/-)	15	$1,600,125
☐ Final Design	**Total**		**$15,470,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **43 - Pressure Plane 1 FM 3136/2135 16" Water Line** **16" Water line along FM 3136 & FM 2135**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$280,000.00	$280,000
2	Traffic Control	LS	1	$105,000.00	$105,000
3	Erosion Control	LS	1	$70,000.00	$70,000
4	16" Water Pipe	LF	26,000	$200.00	$5,200,000
5	24" Bore with Steel Casing	LF	200	$1,000.00	$200,000
6	Water Line Trench Safety	LF	26,000	$3.00	$78,000
7	16" AWWA Gate Valve	EA	10	$8,500.00	$85,000
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	52	$5,000.00	$260,000
10	Ductile Iron Fittings	TON	26	$6,500.00	$169,000
11	Hydromulch	SY	86,700	$3.00	$260,100
12	Asphalt Pavement Repair	SY	5,800	$125.00	$725,000

	Subtotal:		$7,452,100
☑ No Design	Conting. (%,+/-)	30	$2,240,085
☐ Preliminary Design	Profession Services (%,+/-)	15	$1,117,815
☐ Final Design	**Total**		**$10,810,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **44 - Pressure Plane 8 CR 919/920 12" Water Line** **12" Water line along CR 919 & CR 920**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$86,000.00	$86,000
2	Traffic Control	LS	1	$33,000.00	$33,000
3	Erosion Control	LS	1	$22,000.00	$22,000
4	12" Water Pipe	LF	9,500	$150.00	$1,425,000
5	24" Bore with Steel Casing	LF	100	$1,000.00	$100,000
6	Water Line Trench Safety	LF	9,500	$3.00	$28,500
7	12" AWWA Gate Valve	EA	6	$6,500.00	$39,000
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	19	$5,000.00	$95,000
10	Ductile Iron Fittings	TON	10	$6,500.00	$65,000
11	Hydromulch	SY	31,700	$3.00	$95,100
12	Asphalt Pavement Repair	SY	2,200	$125.00	$275,000

	Subtotal:		$2,283,600
☑ No Design	Conting. (%,+/-)	30	$693,860
☐ Preliminary Design	Profession Services (%,+/-)	15	$342,540
☐ Final Design	**Total**		**$3,320,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **45 - Pressure Plane 8 CR 920/1016 12" Water Line** **12" Water line along CR 919 & CR 920**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$107,000.00	$107,000
2	Traffic Control	LS	1	$40,000.00	$40,000
3	Erosion Control	LS	1	$27,000.00	$27,000
4	12" Water Pipe	LF	11,500	$150.00	$1,725,000
5	24" Bore with Steel Casing	LF	200	$1,000.00	$200,000
6	Water Line Trench Safety	LF	11,500	$3.00	$34,500
7	12" AWWA Gate Valve	EA	7	$6,500.00	$45,500
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	23	$5,000.00	$115,000
10	Ductile Iron Fittings	TON	12	$6,500.00	$78,000
11	Hydromulch	SY	38,400	$3.00	$115,200
12	Asphalt Pavement Repair	SY	2,600	$125.00	$325,000

	Subtotal:		$2,832,200
	Conting. (%,+/-)	30	$852,970
	Profession Services (%,+/-)	15	$424,830
	Total		**$4,110,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **46 - Pressure Plane 13 CR 1232 12" Water Line** **12" Water line along CR 1232**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$215,000.00	$215,000
2	Traffic Control	LS	1	$81,000.00	$81,000
3	Erosion Control	LS	1	$54,000.00	$54,000
4	12" Water Pipe	LF	24,400	$150.00	$3,660,000
5	24" Bore with Steel Casing	LF	200	$1,000.00	$200,000
6	Water Line Trench Safety	LF	24,400	$3.00	$73,200
7	12" AWWA Gate Valve	EA	12	$6,500.00	$78,000
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	49	$5,000.00	$245,000
10	Ductile Iron Fittings	TON	25	$6,500.00	$162,500
11	Hydromulch	SY	81,400	$3.00	$244,200
12	Asphalt Pavement Repair	SY	5,500	$125.00	$687,500

	Subtotal:		$5,720,400
☑ No Design	Conting. (%,+/-)	30	$1,721,540
☐ Preliminary Design	Profession Services (%,+/-)	15	$858,060
☐ Final Design	**Total**		**$8,300,000**

This total does not reflect engineering or technical services.

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.

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

Client: Johnson County Special Utility District **Date:** 2/7/2023
Project: Preliminary CIP Improvements **Prepared By:** RAS/CJM/DDW
KHA No.: 061002032 **Checked By:** KLW

Title: 47 - Proposed Pressure Plane 8 Pump Station and 1.0 MG Ground Storage Tank **New pump station building, 2 pumps, and 1 MG GST**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$500,000.00	$500,000
2	1.0 MG Prestressed Concrete Ground Storage Tank	EA	1	$1,500,000.00	$1,500,000
3	2,000 GPM Pump and Motor	EA	2	$160,000.00	$320,000
4	24" Isolation BFV	EA	2	$40,000.00	$80,000
5	16" Tilted Disc Check Valve w/ Bottom Mounted Dashpot	EA	3	$35,000.00	$105,000
6	Gate Valves with Box	EA	3	$15,000.00	$45,000
7	16" FLG Gate Valve w/ Handle	EA	3	$10,000.00	$30,000
8	8" Pressure Relief Valve	EA	1	$15,000.00	$15,000
9	1" Air Release Valve	EA	6	$2,000.00	$12,000
10	Pump Station Piping	LS	1	$75,000.00	$75,000
11	Supply Yard Piping	LF	300	$700.00	$210,000
12	Discharge Yard Piping	LF	300	$700.00	$210,000
13	2" ARV and Manhole	EA	1	$20,000.00	$20,000
14	8" Pressure Relief Valve Piping	LF	75	$200.00	$15,000
15	16/24" Connection to existing main	EA	2	$20,000.00	$40,000
16	Pump Control Valve and Electric Actuator	EA	3	$50,000.00	$150,000
17	24" Electromagnetic Flow Meter and Vault	EA	1	$150,000.00	$150,000
18	Variable Frequency Drives	EA	3	$100,000.00	$300,000
19	Electrical (Main Switch, Bus, Conducter…)	LS	1	$750,000.00	$750,000
20	Instrumentation	LS	1	$250,000.00	$250,000
21	750 kW Generator with Load Bank (2 pumps)	LS	1	$400,000.00	$400,000
22	Generator Pad	LS	1	$20,000.00	$20,000
23	Trench Safety	LF	400	$5.00	$2,000
24	Grading	LS	1	$75,000.00	$75,000
25	Concrete Paving	SY	2,500	$150.00	$375,000
26	18" CMP Culvert	LF	40	$50.00	$2,000
27	Transformer Pad	LS	1	$10,000.00	$10,000
28	Pump Station Building	LS	1	$3,500,000.00	$3,500,000
29	Plumbing and HVAC	LS	1	$100,000.00	$100,000
30	Erosion Control	LS	1	$25,000.00	$25,000

Subtotal:			$9,286,000
Conting. (%,+/-)		30	$2,791,100
Profession Services (%,+/-)		15	$1,392,900
Total			**$13,470,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **48 - Pressure Plane 8 1.0 MG Elevated Storage Tank** **New 1.0 MG EST**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$250,000.00	$250,000
2	1.0 MG Composite Elevated Water Storage Tank	LS	1	$5,000,000.00	$5,000,000
3	16" Gate Valve w/ Vault	EA	1	$12,000.00	$12,000
4	6" Gate Valve w/ Box	EA	1	$1,200.00	$1,200
5	16" Water Pipe	LF	200	$350.00	$70,000
6	6" Water Pipe	LF	50	$100.00	$5,000
7	Ductile Iron Water Fittings w/ Restraint	TON	2	$6,000.00	$12,000
8	Connection to Proposed 24" Water Main	EA	1	$15,000.00	$15,000
9	Fire Hydrant	EA	1	$5,000.00	$5,000
10	Site Grading	LS	1	$75,000.00	$75,000
11	8" Concrete Driveway	SY	300	$150.00	$45,000
12	3' Concrete Sidewalk	SY	60	$80.00	$4,800
13	6' Chain Link Fence	LF	770	$50.00	$38,500
14	12" Concrete Mow Strip	LF	770	$5.00	$3,850
15	24' Cantilever Sliding Gate	EA	1	$10,000.00	$10,000
16	Erosion Control	LS	1	$25,000.00	$25,000
17	Electrical and SCADA	LS	1	$350,000.00	$350,000

	Subtotal:		$5,922,350
	Conting. (%,+/-)	30	$1,779,298
	Profession Services (%,+/-)	15	$888,353
	Total		**$8,590,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This tota This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.	**061002032**	**Checked By:**	**KLW**

Title: **49 - Plant 27 to Plant 24 Water Transmission Mains - 12"** **12" Water line from Plant 27 to Plant 24**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	12" Water Pipe	LF	62,415	$150.00	$9,362,250
2	12" Gate Valve	EA	13	$5,000.00	$65,000
3	2" Air Release Valve	EA	13	$5,000.00	$65,000
4	Fire Hydrant	EA	1	$5,000.00	$5,000
5	24" Bore with Steel Casing	LF	500	$1,000.00	$500,000
6	Trench Safety	LF	62,415	$5.00	$312,075
7	Construction Staking	LS	1	$50,000.00	$50,000
8	As-Built Survey	LS	1	$40,000.00	$40,000
9	Utility Markers	LS	1	$20,000.00	$20,000

Subtotal:			$10,419,325
Conting. (%,+/-)		30	$3,127,776
Profession Services (%,+/-)		15	$1,562,899
Total			**$15,110,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client: Johnson County Special Utility District
Project: Preliminary CIP Improvements
KHA No. 061002032

Date: 2/7/2023
Prepared By: RAS/CJM/DDW
Checked By: KLW

Title: 50 - Plant 27B Expansion

New pump to be added to the proposed pump station

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization, Bonds, and Insurance	LS	1	$50,000.00	$50,000
2	3,000 GPM Pump and Motor	EA	1	$210,000.00	$210,000
3	Installation of 3,000 GPM Pump and Motor	LS	1	$60,000.00	$60,000
4	Interior Mechanical Piping, Valves, and Plumbing	LS	1	$250,000.00	$250,000
5	Miscellaneous Electrical Work	LS	1	$175,000.00	$175,000
6	Variable Frequency Drive	EA	1	$250,000.00	$250,000

Subtotal:			$995,000
Conting. (%,+/-)		30	$305,750
Profession Services (%,+/-)		15	$149,250
Total			**$1,450,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **51 - Pressure Plane 25 12" Water Line** **12" Water line in Pressure Plane 25**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$285,000.00	$285,000
2	Traffic Control	LS	1	$107,000.00	$107,000
3	Erosion Control	LS	1	$72,000.00	$72,000
4	12" Water Pipe	LF	32,200	$150.00	$4,830,000
5	24" Bore with Steel Casing	LF	300	$1,000.00	$300,000
6	Water Line Trench Safety	LF	32,200	$3.00	$96,600
7	12" AWWA Gate Valve	EA	15	$6,500.00	$97,500
8	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
9	Fire Hydrant Assembly	EA	65	$5,000.00	$325,000
10	Ductile Iron Fittings	TON	33	$6,500.00	$214,500
11	Hydromulch	SY	107,400	$3.00	$322,200
12	Asphalt Pavement Repair	SY	7,200	$125.00	$900,000

	Subtotal:		$7,569,800
☑ No Design	Conting. (%,+/-)	30	$2,274,730
☐ Preliminary Design	Profession Services (%,+/-)	15	$1,135,470
☐ Final Design	**Total**		**$10,980,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **52 - Pressure Plane 24 12" Water Line Loop** **12" Water line loop in Pressure Plane 24**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$654,000.00	$654,000
2	Traffic Control	LS	1	$246,000.00	$246,000
3	Erosion Control	LS	1	$164,000.00	$164,000
4	12" Water Pipe	LF	72,500	$150.00	$10,875,000
5	24" Bore with Steel Casing	LF	1,000	$1,000.00	$1,000,000
6	Water Line Trench Safety	LF	72,500	$3.00	$217,500
7	12" AWWA Gate Valve	EA	36	$6,500.00	$234,000
8	Connect to Existing Water Line	EA	7	$10,000.00	$70,000
9	Fire Hydrant Assembly	EA	145	$5,000.00	$725,000
10	Ductile Iron Fittings	TON	73	$6,500.00	$474,500
11	Hydromulch	SY	241,700	$3.00	$725,100
12	Asphalt Pavement Repair	SY	16,200	$125.00	$2,025,000

	Subtotal:		$17,410,100
☑ No Design	Conting. (%,+/-)	30	$5,228,385
☐ Preliminary Design	Profession Services (%,+/-)	15	$2,611,515
☐ Final Design	**Total**		**$25,250,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **53 - Pressure Plane 1 CR 405/311/406 16" Water Line** **16" Water line along CR 405 & CR 311 & CR 406**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$293,000.00	$293,000
2	Traffic Control	LS	1	$110,000.00	$110,000
3	Erosion Control	LS	1	$74,000.00	$74,000
4	16" Water Pipe	LF	26,600	$200.00	$5,320,000
5	24" Bore with Steel Casing	LF	300	$1,000.00	$300,000
6	Water Line Trench Safety	LF	26,600	$3.00	$79,800
7	16" AWWA Gate Valve	EA	14	$8,500.00	$119,000
8	Connect to Existing Water Line	EA	3	$10,000.00	$30,000
9	Fire Hydrant Assembly	EA	54	$5,000.00	$270,000
10	Ductile Iron Fittings	TON	27	$6,500.00	$175,500
11	Hydromulch	SY	88,700	$3.00	$266,100
12	Asphalt Pavement Repair	SY	6,000	$125.00	$750,000

	Subtotal:		$7,787,400
☑ No Design	Conting. (%,+/-)	30	$2,344,490
☐ Preliminary Design	Profession Services (%,+/-)	15	$1,168,110
☐ Final Design	**Total**		**$11,300,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **54 - Pressure Plane 3 CR 313/107/204 12" Water Line** **12" Water line along CR 313 & CR 107 & CR 204**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$197,000.00	$197,000
2	Traffic Control	LS	1	$74,000.00	$74,000
3	Erosion Control	LS	1	$50,000.00	$50,000
4	12" Water Pipe	LF	20,700	$150.00	$3,105,000
5	24" Bore with Steel Casing	LF	500	$1,000.00	$500,000
6	Water Line Trench Safety	LF	20,700	$3.00	$62,100
7	12" AWWA Gate Valve	EA	11	$6,500.00	$71,500
8	12" Pressure Reducing Valve	EA	1	$20,000.00	$20,000
9	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
10	Fire Hydrant Assembly	EA	42	$5,000.00	$210,000
11	Ductile Iron Fittings	TON	21	$6,500.00	$136,500
12	Hydromulch	SY	69,000	$3.00	$207,000
13	Asphalt Pavement Repair	SY	4,600	$125.00	$575,000

	Subtotal:		$5,228,100
☐ No Design	Conting. (%,+/-)	30	$1,577,685
☐ Preliminary Design	Profession Services (%,+/-)	15	$784,215
☐ Final Design	**Total**		**$7,590,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **55 - Pressure Plane 3 CR 204/105 12" Water Line** **12" Water line along CR 204 & CR 105**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$179,000.00	$179,000
2	Traffic Control	LS	1	$67,000.00	$67,000
3	Erosion Control	LS	1	$45,000.00	$45,000
4	12" Water Pipe	LF	19,000	$150.00	$2,850,000
5	24" Bore with Steel Casing	LF	400	$1,000.00	$400,000
6	Water Line Trench Safety	LF	19,000	$3.00	$57,000
7	12" AWWA Gate Valve	EA	12	$6,500.00	$78,000
8	Connect to Existing Water Line	EA	4	$10,000.00	$40,000
9	Fire Hydrant Assembly	EA	38	$5,000.00	$190,000
10	Ductile Iron Fittings	TON	19	$6,500.00	$123,500
11	Hydromulch	SY	63,400	$3.00	$190,200
12	Asphalt Pavement Repair	SY	4,300	$125.00	$537,500

	Subtotal:		$4,757,200
☑ No Design	Conting. (%,+/-)	30	$1,429,220
☐ Preliminary Design	Profession Services (%,+/-)	15	$713,580
☐ Final Design	**Total**		**$6,900,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **56 - Pressure Plane 3 CR 105/401 12" Water Line** **12" Water line along CR 105 & CR 401**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$284,000.00	$284,000
2	Traffic Control	LS	1	$107,000.00	$107,000
3	Erosion Control	LS	1	$71,000.00	$71,000
4	12" Water Pipe	LF	27,700	$150.00	$4,155,000
5	24" Bore with Steel Casing	LF	1,200	$1,000.00	$1,200,000
6	Water Line Trench Safety	LF	27,700	$3.00	$83,100
7	12" AWWA Gate Valve	EA	16	$6,500.00	$104,000
8	Connect to Existing Water Line	EA	4	$10,000.00	$40,000
9	Fire Hydrant Assembly	EA	56	$5,000.00	$280,000
10	Ductile Iron Fittings	TON	28	$6,500.00	$182,000
11	Hydromulch	SY	92,400	$3.00	$277,200
12	Asphalt Pavement Repair	SY	6,200	$125.00	$775,000

	Subtotal:		$7,558,300
☑ No Design	Conting. (%,+/-)	30	$2,267,955
☐ Preliminary Design	Profession Services (%,+/-)	15	$1,133,745
☐ Final Design	**Total**		**$10,960,000**

This total does not reflect engineering or technical services.

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.

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

Client: Johnson County Special Utility District
Project: Preliminary CIP Improvements
KHA No.: 061002032

Date: 2/7/2023
Prepared By: RAS/CJM/DDW
Checked By: KLW

Title: 57 - Pressure Plane 1 CR 305 12" Water Line

12" Water line along CR 305

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$84,000.00	$84,000
2	Traffic Control	LS	1	$32,000.00	$32,000
3	Erosion Control	LS	1	$21,000.00	$21,000
4	12" Water Pipe	LF	8,900	$150.00	$1,335,000
5	24" Bore with Steel Casing	LF	150	$1,000.00	$150,000
6	Water Line Trench Safety	LF	8,900	$3.00	$26,700
7	12" AWWA Gate Valve	EA	6	$6,500.00	$39,000
8	12" Pressure Reducing Valve	EA	1	$20,000.00	$20,000
9	Connect to Existing Water Line	EA	2	$10,000.00	$20,000
10	Fire Hydrant Assembly	EA	18	$5,000.00	$90,000
11	Ductile Iron Fittings	TON	9	$6,500.00	$58,500
12	Hydromulch	SY	29,700	$3.00	$89,100
13	Asphalt Pavement Repair	SY	2,000	$125.00	$250,000

	Subtotal:		$2,215,300
☑ No Design	Conting. (%,+/-)	30	$672,405
☐ Preliminary Design	Profession Services (%,+/-)	15	$332,295
☐ Final Design	**Total**		**$3,220,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **58 - Pressure Plane 1 FM 4 16" Water Line** **16" Water line along FM 4**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$170,000.00	$170,000
2	Traffic Control	LS	1	$64,000.00	$64,000
3	Erosion Control	LS	1	$43,000.00	$43,000
4	16" Water Pipe	LF	15,400	$200.00	$3,080,000
5	24" Bore with Steel Casing	LF	150	$1,000.00	$150,000
6	Water Line Trench Safety	LF	15,400	$3.00	$46,200
7	16" AWWA Gate Valve	EA	10	$8,500.00	$85,000
8	Connect to Existing Water Line	EA	3	$10,000.00	$30,000
9	Fire Hydrant Assembly	EA	31	$5,000.00	$155,000
10	Ductile Iron Fittings	TON	16	$6,500.00	$104,000
11	Hydromulch	SY	51,400	$3.00	$154,200
12	Asphalt Pavement Repair	SY	3,500	$125.00	$437,500

Subtotal:			$4,518,900
Conting. (%,+/-)		30	$1,363,265
Profession Services (%,+/-)		15	$677,835
Total			**$6,560,000**

- [x] No Design
- [ ] Preliminary Design
- [ ] Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **59 - Pressure Plane 1 CR 308/423 16" Water Line** **16" Water line along CR 308 & CR 423**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$313,000.00	$313,000
2	Traffic Control	LS	1	$118,000.00	$118,000
3	Erosion Control	LS	1	$79,000.00	$79,000
4	16" Water Pipe	LF	27,200	$200.00	$5,440,000
5	24" Bore with Steel Casing	LF	600	$1,000.00	$600,000
6	Water Line Trench Safety	LF	27,200	$3.00	$81,600
7	16" AWWA Gate Valve	EA	17	$8,500.00	$144,500
8	Connect to Existing Water Line	EA	6	$10,000.00	$60,000
9	Fire Hydrant Assembly	EA	55	$5,000.00	$275,000
10	Ductile Iron Fittings	TON	28	$6,500.00	$182,000
11	Hydromulch	SY	90,700	$3.00	$272,100
12	Asphalt Pavement Repair	SY	6,100	$125.00	$762,500

	Subtotal:		$8,327,700
☑ No Design	Conting. (%,+/-)	30	$2,503,145
☐ Preliminary Design	Profession Services (%,+/-)	15	$1,249,155
☐ Final Design	**Total**		**$12,080,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **60 - Pressure Plane 1 CR 310/312 12" Water Line** **12" Water line along CR 310 & CR 312**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$90,000.00	$90,000
2	Traffic Control	LS	1	$34,000.00	$34,000
3	Erosion Control	LS	1	$23,000.00	$23,000
4	12" Water Pipe	LF	8,783	$150.00	$1,317,450
5	24" Bore with Steel Casing	LF	300	$1,000.00	$300,000
6	Water Line Trench Safety	LF	8,783	$3.00	$26,349
7	12" AWWA Gate Valve	EA	8	$6,500.00	$52,000
8	12" Pressure Reducing Valve	EA	1	$20,000.00	$20,000
9	Connect to Existing Water Line	EA	4	$10,000.00	$40,000
10	Fire Hydrant Assembly	EA	18	$5,000.00	$90,000
11	Ductile Iron Fittings	TON	9	$6,500.00	$58,500
12	Hydromulch	SY	29,300	$3.00	$87,900
13	Asphalt Pavement Repair	SY	2,000	$125.00	$250,000

Subtotal:			$2,389,199
Conting. (%,+/-)		30	$722,421
Profession Services (%,+/-)		15	$358,380
Total			**$3,470,000**

☑ No Design
☐ Preliminary Design
☐ Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **61 - Pressure Plane 19 CR 310 12" Water Line** **12" Water line along CR 310**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$184,000.00	$184,000
2	Traffic Control	LS	1	$69,000.00	$69,000
3	Erosion Control	LS	1	$46,000.00	$46,000
4	12" Water Pipe	LF	18,500	$150.00	$2,775,000
5	24" Bore with Steel Casing	LF	600	$1,000.00	$600,000
6	Water Line Trench Safety	LF	18,500	$3.00	$55,500
7	12" AWWA Gate Valve	EA	12	$6,500.00	$78,000
8	12" Pressure Reducing Valve	EA	1	$20,000.00	$20,000
9	Connect to Existing Water Line	EA	4	$10,000.00	$40,000
10	Fire Hydrant Assembly	EA	37	$5,000.00	$185,000
11	Ductile Iron Fittings	TON	19	$6,500.00	$123,500
12	Hydromulch	SY	61,700	$3.00	$185,100
13	Asphalt Pavement Repair	SY	4,200	$125.00	$525,000

	Subtotal:		$4,886,100
☑ No Design	Conting. (%,+/-)	30	$1,470,985
☐ Preliminary Design	Profession Services (%,+/-)	15	$732,915
☐ Final Design	**Total**		**$7,090,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **62 - Pressure Plane 13 12" Water Line** **12" Water line in Pressure Plane 13**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$366,000.00	$366,000
2	Traffic Control	LS	1	$138,000.00	$138,000
3	Erosion Control	LS	1	$92,000.00	$92,000
4	12" Water Pipe	LF	41,185	$150.00	$6,177,750
5	24" Bore with Steel Casing	LF	400	$1,000.00	$400,000
6	Water Line Trench Safety	LF	41,185	$3.00	$123,555
7	12" AWWA Gate Valve	EA	22	$6,500.00	$143,000
8	Connect to Existing Water Line	EA	5	$10,000.00	$50,000
9	Fire Hydrant Assembly	EA	83	$5,000.00	$415,000
10	Ductile Iron Fittings	TON	42	$6,500.00	$273,000
11	Hydromulch	SY	137,300	$3.00	$411,900
12	Asphalt Pavement Repair	SY	9,200	$125.00	$1,150,000

Subtotal:			$9,740,205
Conting. (%,+/-)		30	$2,928,764
Profession Services (%,+/-)		15	$1,461,031
Total			**$14,130,000**

☑ No Design
☐ Preliminary Design
☐ Final Design

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

Title: **63 - Pressure Plane 9 12" Water Line** **12" Water line in Pressure Plane 9**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$291,000.00	$291,000
2	Traffic Control	LS	1	$109,000.00	$109,000
3	Erosion Control	LS	1	$73,000.00	$73,000
4	12" Water Pipe	LF	31,997	$150.00	$4,799,550
5	24" Bore with Steel Casing	LF	400	$1,000.00	$400,000
6	Water Line Trench Safety	LF	31,997	$3.00	$95,991
7	12" AWWA Gate Valve	EA	18	$6,500.00	$117,000
8	12" Pressure Reducing Valve	EA	2	$20,000.00	$40,000
9	Connect to Existing Water Line	EA	5	$10,000.00	$50,000
10	Fire Hydrant Assembly	EA	64	$5,000.00	$320,000
11	Ductile Iron Fittings	TON	32	$6,500.00	$208,000
12	Hydromulch	SY	106,700	$3.00	$320,100
13	Asphalt Pavement Repair	SY	7,200	$125.00	$900,000

	Subtotal:		$7,723,641
☑ No Design	Conting. (%,+/-)	30	$2,317,813
☐ Preliminary Design	Profession Services (%,+/-)	15	$1,158,546
☐ Final Design	**Total**		**$11,200,000**

This total does not reflect engineering or technical services.

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.

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

Client:	**Johnson County Special Utility District**	**Date:**	**2/7/2023**
Project:	**Preliminary CIP Improvements**	**Prepared By:**	**RAS/CJM/DDW**
KHA No.:	**061002032**	**Checked By:**	**KLW**

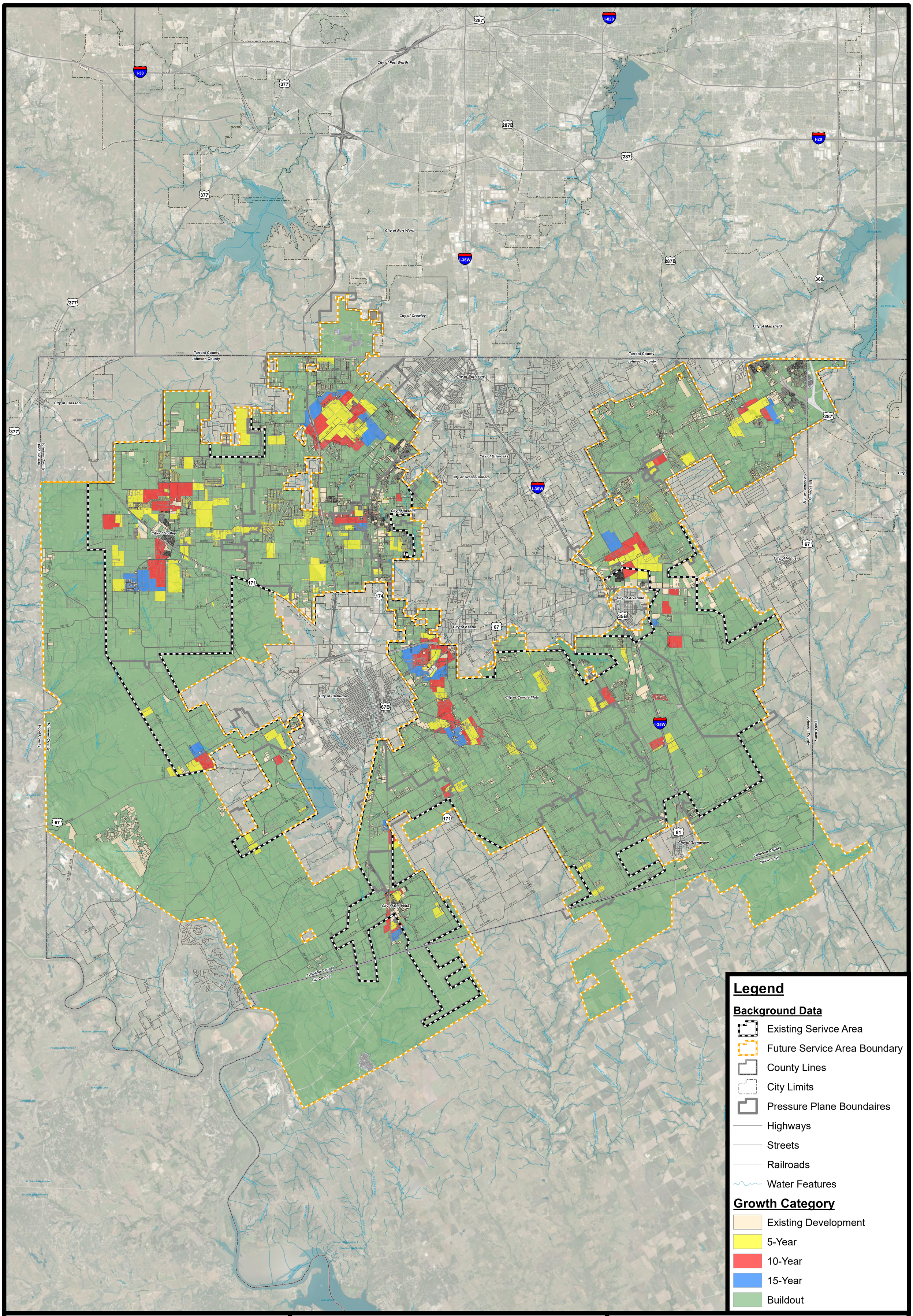
Title: **64 - Pressure Plane 8 W Cleburne 12" Water Line** **12" Water line along W Cleburne**

Line No.	Description	Unit	Quantity	Unit Price	Cost
1	Mobilization	LS	1	$111,000.00	$111,000
2	Traffic Control	LS	1	$42,000.00	$42,000
3	Erosion Control	LS	1	$28,000.00	$28,000
4	12" Water Pipe	LF	10,800	$150.00	$1,620,000
5	24" Bore with Steel Casing	LF	400	$1,000.00	$400,000
6	Water Line Trench Safety	LF	10,800	$3.00	$32,400
7	12" AWWA Gate Valve	EA	11	$6,500.00	$71,500
8	Connect to Existing Water Line	EA	6	$10,000.00	$60,000
9	Fire Hydrant Assembly	EA	22	$5,000.00	$110,000
10	Ductile Iron Fittings	TON	11	$6,500.00	$71,500
11	Hydromulch	SY	36,000	$3.00	$108,000
12	Asphalt Pavement Repair	SY	2,400	$125.00	$300,000

	Subtotal:		$2,954,400
☑ No Design	Conting. (%,+/-)	30	$892,440
☐ Preliminary Design	Profession Services (%,+/-)	15	$443,160
☐ Final Design	**Total**		**$4,290,000**

This total does not reflect engineering or technical services.

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.



JCSUD

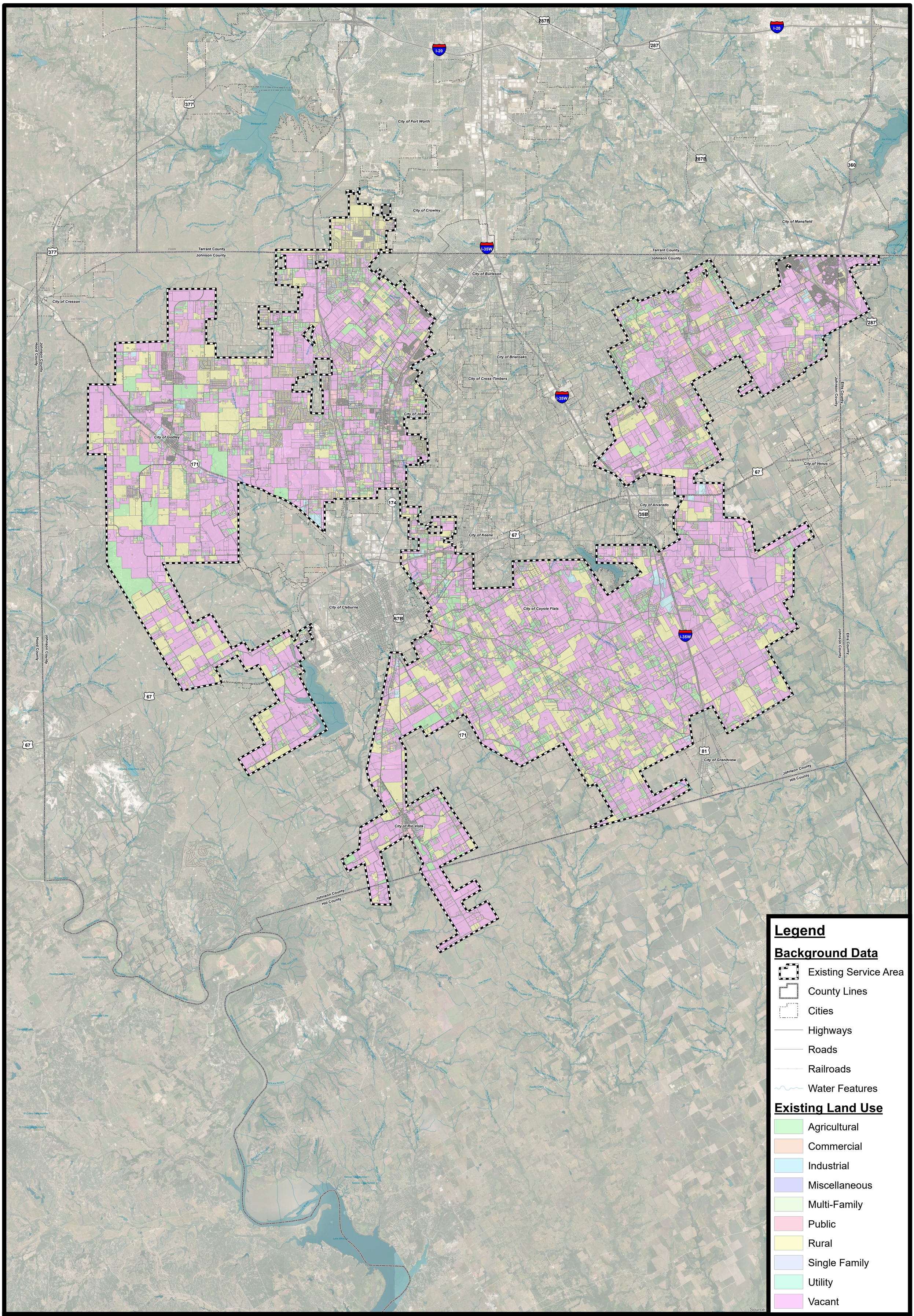
Johnson County Special Utility District
Water Master Plan
Appendix B
Growth Area Map

2 1 0 2 Miles

JANUARY 2023

Kimley»Horn

This map product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.



Legend

Background Data

- Existing Service Area
- County Lines
- Cities
- Highways
- Roads
- Railroads
- Water Features

Existing Land Use

- Agricultural
- Commercial
- Industrial
- Miscellaneous
- Multi-Family
- Public
- Rural
- Single Family
- Utility
- Vacant

Source:

JCSUD

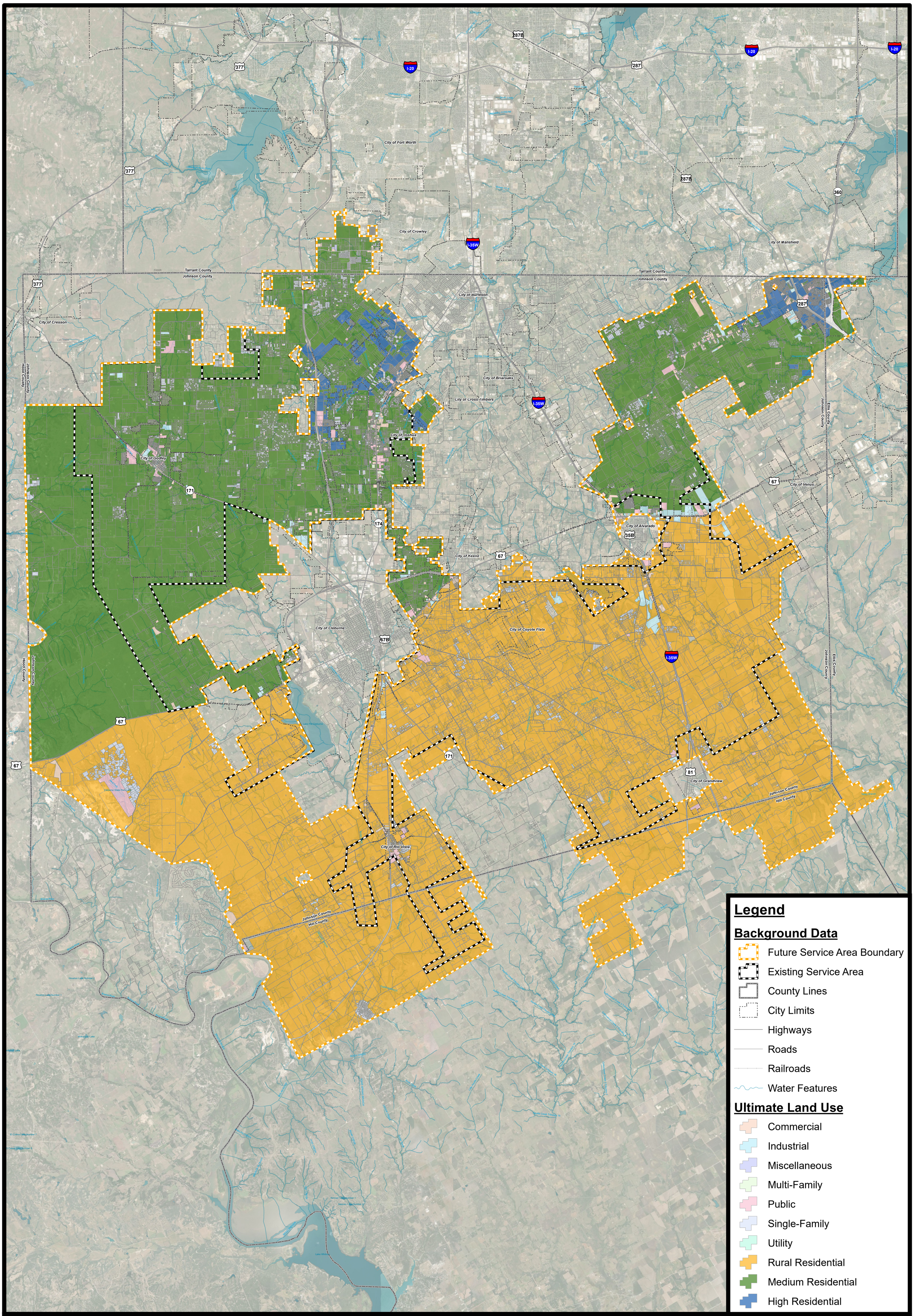
Johnson County Special Utility District
Water Master Plan
Appendix C
Existing Land Use Map

2 1 0 2 Miles

January 2023

Kimley»Horn

This map product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.



Legend

Background Data

- Future Service Area Boundary
- Existing Service Area
- County Lines
- City Limits
- Highways
- Roads
- Railroads
- Water Features

Ultimate Land Use

- Commercial
- Industrial
- Miscellaneous
- Multi-Family
- Public
- Single-Family
- Utility
- Rural Residential
- Medium Residential
- High Residential

JCSUD

Johnson County Special Utility District
Water Master Plan
Appendix D
Ultimate Land Use Map

0 1 2 4 Miles

January 2023

Kimley»Horn

This map product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

PLANT 11
0.27 MG
SWATs Fill Valve
750 gpm
750 gpm
700 gpm

PLANT 13
Overflow = 1152'
750,000 gal Elevated Tank

PLANT 8
Overflow = 1123'
1,000,000 gal Elevated Tank

PLANT 34
TBTF Fill Valve
0.2 MG
815 gpm
815 gpm
Overflow = 1083'
To PP34
750,000 gal Elevated Tank

PLANT 14
Well 14T
Well 14P
0.1 MG
490 gpm
490 gpm
To PP25

PLANT 15
Well 15T
Well 15P
0.1 MG
490 gpm
490 gpm
To PP25

PLANT 27
City of Mansfield Wholesale Supply Meter
1.0 MG
2800 gpm
2800 gpm
To Plant 26

PLANT 25
Overflow = 888'
Fill Valve
From PP 24
To PP25
500,000 gal Elevated Tank

PLANT 24
Well 24T
Well 24P
TBTF Fill Valve
Overflow = 932'
500,000 gal Elevated Tank

PLANT 16
Well 16T
Well 16P
0.2 MG
300 gpm
300 gpm
To PP24

PLANT 26
5200 gpm
1.0 MG
5200 gpm
Existing Fill Valve

PLANT 21/TST
TST Overflow = 1060'
3 MG
0.5 MG
To/From SWATs and TBTF
1870 gpm
1870 gpm
700 gpm
To PP8

PLANT 35
TBTF Fill Valve
0.15 MG
750 gpm
750 gpm
To PP34

PLANT 17
Well 17T
TBTF Fill Valve
0.5 MG
1200 gpm
1200 gpm
To PP1

PLANT 03
Well 3T
Well 3P
0.5 MG
800 gpm
800 gpm
HGL MAX = 900'
HGL MIN = 866'
12,000 gal Hydro Tank
HGL MAX = 900'
HGL MIN = 866'
10,000 gal Hydro Tank
To PP3

PLANT 09
Well 9T
Well 9P
0.5 MG
0.5 MG
400 gpm
400 gpm
HGL MAX = 1055'
HGL MIN = 1001'
8,000 gal Hydro Tank
To PP9

PLANT 1
Overflow = 1025'
1,000,000 gal Elevated Tank

PLANT 10
Well 10T
0.1 MG
220 gpm
220 gpm
HGL MAX = 1041'
HGL MIN = 999'
12,000 gal Hydro Tank
To PP10

PLANT 19
Well 19T
Well 19P
0.5 MG
800 gpm
735 gpm
315 gpm
HGL = 936'
18,000 gal Hydro Tank
To PP19

PLANT 18
Well 18T
0.1 MG
300 gpm
300 gpm
HGL MAX = 892'
HGL MIN = 864'
5,000 gal Hydro Tank
To PP18

PLANT 05
Well 5T
Well 5P
0.1 MG
0.1 MG
420 gpm
420 gpm
HGL = 944'
5,000 gal Hydro Tank
To PP5

TO SWATS PUMP STATION

CROSS COUNTRY MAIN

TBTF Main

SWATS Main

SWATS HIGH SERVICE PUMP STATION
LAKE GRANDBURY
WTP
2500 gpm
2500 gpm
2440 gpm
2440 gpm
PLANT 11

FROM SWATS PUMP STATION
WTP
City of Granbury
Granbury Lake
Hood County
Johnson County

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Legend

- Existing Service
- County Lines

Existing Water Infrastructure

- Existing Water Distribution Pump Station
- Existing Water Transmission Pump Station
- City of Mansfield Wholesale Supply Meter
- Existing Elevated Storage Tank
- Wholesale Meter Connection
- Existing Pressure Reducing Valve
- Existing Closed Distribution Valve
- Water Treatment Plant
- Water Transmission Main
- Existing Water Line >=10"
- Existing Water Line <=8"

Background Data

- Roads
- Highways
- Railroads
- Water Features

Pressure Planes

01, 03, 05, 08, 09, 10, 13, 18, 19, 24, 25, 34

JCSUD

Johnson County Special Utility District
Water Master Plan
Appendix E
Existing Water Infrastructure Map

0 0.75 1.5 3 Miles

JANUARY 2023

Kimley»Horn

This map product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

Johnson County Special Utility District
Water Master Plan
Appendix F
System Heat Map

North System
East System
West System
South System

Legend

Background Data

- Existing Service Area Boundary
- Future Service Area Boundary
- Future System Boundaries
- County Lines
- Highways
- Roads
- Railroads
- Water Features

Existing Water Infrastructure

- Existing Water Distribution Pump Station
- Existing TBTF/SWATS Water Transmission Main Pump Station
- Existing Elevated Storage Tanks
- Existing Pressure Reducing Valve
- Existing Closed Valve
- TBTF/SWATS Water Transmission Main
- Existing Water Line >= 10"
- Existing Water Line <= 8"

Elevation

- 1050 - 1075
- 1025 - 1050
- 1000 - 1025
- 975 - 1000
- 950 - 975
- 925 - 950
- 900 - 925
- 875 - 900
- 850 - 875
- 825 - 850
- 800 - 825
- 775 - 800
- 750 - 775
- 725 - 750
- 700 - 725
- 675 - 700
- 650 - 675
- 625 - 650
- 600 - 625
- 575 - 600
- 550 - 575
- 525 - 550

JCSUD

0 1 2 4 Miles

January 2023

Kimley»Horn

This map product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

Legend

Background Data

- Future Service Area Boundary
- Existing Service Area Boundary
- County Lines
- Pressure Plane Boundaries
- Roads
- Railroads
- Highways
- Water Features

Systems

- East System
- North System
- South System
- West System

North System

Pressure Plane 08

Pressure Plane 34

Pressure Plane 25

East System

Pressure Plane 24

Pressure Plane 13

West System

Pressure Plane 09

Pressure Plane 01

South System

Pressure Plane 03

Pressure Plane 19

Pressure Plane 05

Pressure Plane 18

Pressure Plane 10

City of Fort Worth
City of Crowley
City of Mansfield
City of Burleson
City of Cresson
City of Briaroaks
City of Cross Timbers
City of Joshua
City of Godley
City of Alvarado
City of Keene
City of Venus
City of Cleburne
City of Coyote Flats
City of Grandview
City of Rio Vista

Tarrant County
Johnson County
Hood County
Ellis County
Hill County

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

JCSUD

Johnson County Special Utility District
Water Master Plan
Appendix G
Proposed System Map

0 1 2 4 Miles

JANUARY 2023

Kimley»Horn

This map product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

PLANT 8
Overflow = 1123'
1,000,000 gal Elevated Tank

PROPOSED EST
Overflow = 1123'
20
1,000,000 gal Elevated Tank

PLANT 34
TBTF Fill Valve
0.2 MG
815 gpm
815 gpm
Overflow = 1081'
To PP34
750,000 gal Elevated Tank

PLANT 14
Well 14T
Well 14P
0.1 MG
400 gpm
400 gpm
To PP25

PLANT 25
Overflow = 888'
Fill Valve
From PP 24
To PP25
500,000 gal Elevated Tank

PLANT 15
Well 15T
Well 15P
0.1 MG
490 gpm
490 gpm
To PP25

PLANT 27
City of Mansfield Wholesale Supply Meter
1.0 MG
17
3,500 gpm
1,500 gpm
3,800 gpm
To Plant 26
39
2.5 MG
(2) 3,000 gpm
50
(1) 3,000 gpm

48 PROPOSED PRESSURE PLANE 8 PUMP STATION
SWATS Fill Valve
1.0 MG
(2) 2,000 gpm
To PP8

PROPOSED EST
Overflow = 1123'
49
1,000,000 gal Elevated Tank

PLANT 13
Overflow = 1152'
750,000 gal Elevated Tank

PLANT 11
SWATs Fill Valve
3.27 MG
750 gpm
1,900 gpm
1.0 MG
(2) 900 gpm
SWATs Fill Valve
21
22
To PP8
To PP9

PROPOSED EST
Overflow = 1152'
18
1,500,000 gal Elevated Tank

PLANT 35
TBTF Fill Valve
0.15 MG
750 gpm
750 gpm
To PP34

PLANT 26
5,200 gpm
5,200 gpm
1.0 MG
Existing Fill Valve

PLANT 24
Well 24T
Well 24P
TBTF Fill Valve
Overflow = 932'
500,000 gal Elevated Tank

PLANT 17
Well 17T
TBTF Fill Valve
0.5 MG
1,200 gpm
1,200 gpm
1,200 gpm
28
Proposed Fill Valve
To PP1

PROPOSED EST
Overflow = 1025'
27
750,000 gal Elevated Tank

PLANT 16
Well 16T
Well 16P
0.2 MG
300 gpm
300 gpm
To PP24

PLANT 1
Overflow = 1025'
Proposed Altitude Valve
500,000 gal Elevated Tank

PLANT 03
Well 3T
Well 3P
0.5 MG
800 gpm
800 gpm
HGL = 900'
12,000 gal Hydro Tank
To PP3
HGL = 900'
10,000 gal Hydro Tank
To PP3

PLANT 21/TST
TST Overflow = 1060'
3.0 MG
0.5 MG
1,870 gpm
1,870 gpm
1,870 gpm
To/From SWATS and TBTF
38
To PP8

PLANT 09
Well 9T
Well 9P
0.5 MG
0.5 MG
400 gpm
400 gpm
HGL MAX = 1098'
HGL MIN = 1061'
8,000 gal Hydro Tank
To PP9

PLANT 10
Well 10T
0.1 MG
220 gpm
220 gpm
HGL MAX = 1041'
HGL MIN = 999'
12,000 gal Hydro Tank
To PP10

PLANT 19
Well 19T
Well 19P
0.5 MG
800 gpm
735 gpm
315 gpm
HGL = 936'
18,000 gal Hydro Tank
To PP19

PLANT 05
Well 5T
Well 5P
0.1 MG
0.1 MG
420 gpm
420 gpm
HGL = 944'
5,000 gal Hydro Tank
To PP5

PLANT 18
Well 18T
0.1 MG
300 gpm
300 gpm
HGL MAX = 892'
HGL MIN = 864'
5,000 gal Hydro Tank
To PP18

SWATS HIGH SERVICE PUMP STATION
LAKE GRANBURY
WTP
2,500 gpm
2,500 gpm
2,440 gpm
2,440 gpm
PLANT 11

City of Cresson
City of Godley
City of Crowley
City of Burleson
City of Mansfield
City of Briaroaks
City of Joshua
City of Keene
City of Alvarado
City of Venus
City of Cleburne
City of Coyote Flats
City of Grandview
City of Rio Vista
City of Granbury
Bethany SUD
Sundance
Bell Manor
Sanderview
Ridgecrest
Homestead
Mountain Peak
Tarrant County
Johnson County
Ellis County
Hill County
Hood County
Granbury Lake
Pat Cleburne Lake
Pressure Plane 08
Pressure Plane 34
Pressure Plane 13
Pressure Plane 25
Pressure Plane 09
Pressure Plane 10
Pressure Plane 01
Pressure Plane 03
Pressure Plane 19
Pressure Plane 24
Pressure Plane 05
City of Rio Vista Pressure Plane 18
FROM SWATS
SWATs Main
CROSS COUNTRY MAIN
TBTF Main
PROPOSED EST
Overflow = 1025'
27
750,000 gal Elevated Tank
I-35W
377
171
67
287
360
81

Legend

5 Year CIP
- 5 yr Pump Station
- 5 yr Ground Storage Tank
- 5 yr Elevated Storage Tank
- 5 yr Water Distribution Main
- 5 yr Fill Valve
- WTP 5 yr Water Treatment Plant

10 Year CIP
- 10 yr Pump Station
- 10 yr Ground Storage Tank
- 10 yr Water Distribution Main

15 Year CIP
- 15 yr Pump Station
- 15 yr Ground Storage Tank
- 15 yr Elevated Storage Tank
- 15 yr Water Distribution Main
- 15 yr Pressure Reducing Valve

Existing Infrastructure
- Existing TBTF/SWATS Water Transmission Pump
- Existing Water Distribution Pump
- Existing Ground Storage Tank
- Existing Elevated Storage Tank
- TBTF/SWATS Water Transmission Main
- Water Lines in Construction
- Existing Water Line >=10"
- Existing Water Line <=8"
- WTP Existing Water Treatment Plant
- Existing Pressure Reducing Valve
- Existing Fill Valve
- Existing TBTF/SWATS Fill Valve
- Future Service Area
- Existing Service Area
- County Boundaries

Pressure Planes
01 08 13 24
03 09 18 25
05 10 19 34

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

JCSUD

Johnson County Special Utility District
Water Master Plan
Proposed 15- Year
Capital Improvement Plan

0 1 2 4 Miles

JANUARY 2023

Kimley»Horn

This map product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

PROPOSED EST
Overflow = 1123'
21
1,000,000 gal
Elevated Tank

PLANT 8
Overflow = 1123'
1,000,000 gal
Elevated Tank

PROPOSED EST
Overflow = 1123'
49
1,000,000 gal
Elevated Tank

Pressure Plane 08

Pressure Plane 13

PROPOSED PRESSURE PLANE 8 PUMP STATION
48
SWATS Fill Valve
1.0 MG
(2) 2,000 gpm
To PP8

PLANT 21/TST
TST Overflow = 1060'
3.0 MG
0.5 MG
1,870 gpm
1,870 gpm
1,870 gpm
To/From SWATS and TBTF
39
To PP8

PLANT 34
Overflow = 1081'
TBTF Fill Valve
0.2 MG
815 gpm
815 gpm
To PP34
750,000 gal Elevated Tank

PLANT 35
TBTF Fill Valve
0.15 MG
750 gpm
750 gpm
To PP34

Pressure Plane 34

SWATS MAIN

Bell Manor

Sundance

Ridgecrest

Legend

5 Year CIP
- 5 yr Elevated Storage Tank
- 5 yr Water Distribution Main

10 Year CIP
- 10 yr Water Distribution Main

15 Year CIP
- 15 yr Water Distribution Main
- 15 yr Pump Station
- 15 yr Elevated Storage Tank

Systems
- East System
- North System
- South System
- West System

Existing Water Infrastructure
- Existing Water Distribution Pump
- Existing TBTF/SWATS Water Transmission Pump Station
- Existing Elevated Storage Tanks
- Wholesale Meter Connection
- TBTF/SWATS Water Transmission Main
- Water Lines in Construction
- Existing Water Line >= 10"
- Existing Water Line <= 8"

Background Data
- Highways
- Roads
- Railroads
- Water Features
- Pressure Plane Boundaries
- County Lines
- Future Service Area Boundary
- Existing Service Area Boundary

JCSUD

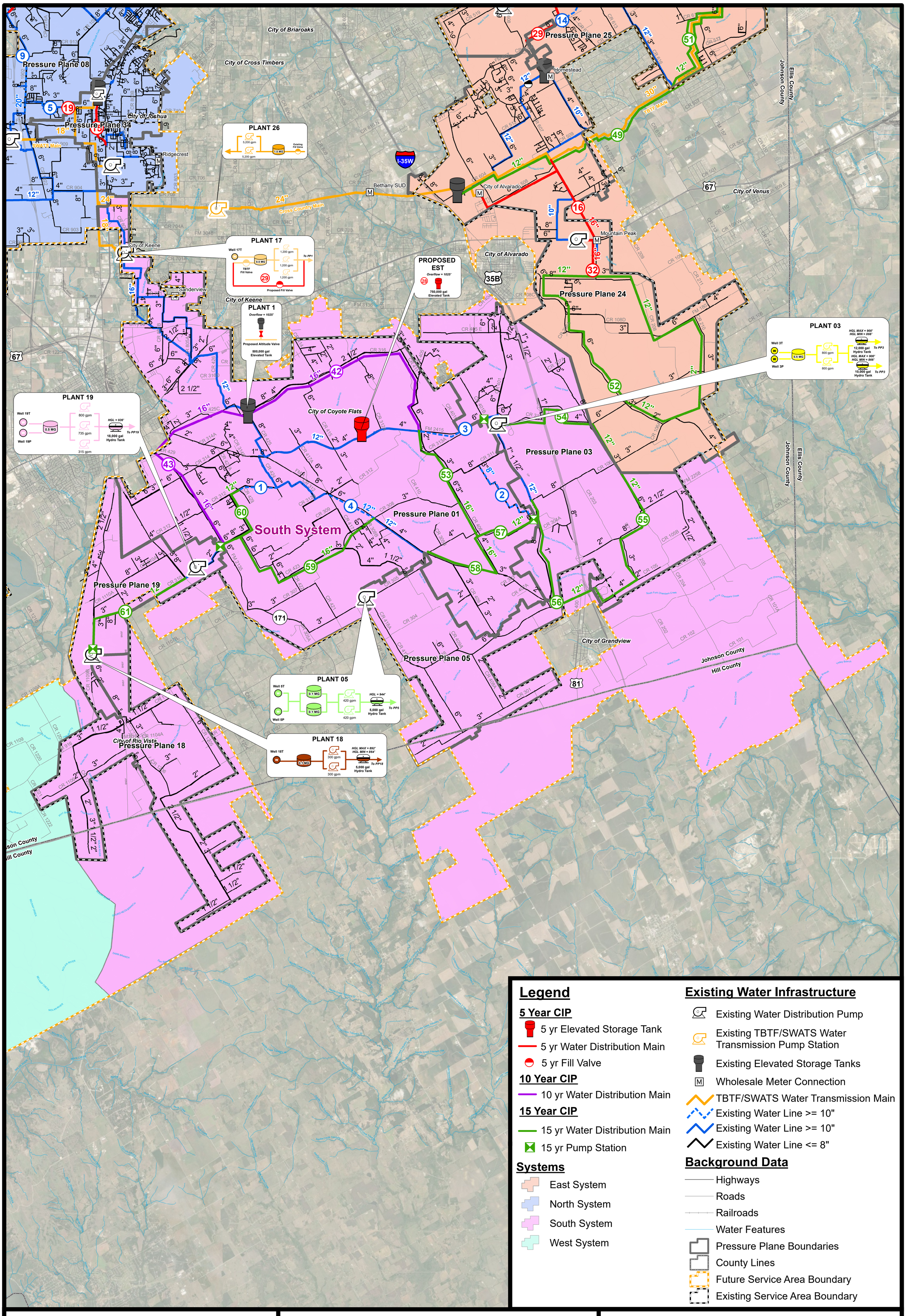
Johnson County Special Utility District
Water Master Plan
Appendix I
Capital Improvement Plan
North System

0 0.25 0.5 1 Miles

JANUARY 2023

Kimley»Horn

This map product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.



Legend

5 Year CIP
- 5 yr Elevated Storage Tank
- 5 yr Water Distribution Main
- 5 yr Fill Valve

10 Year CIP
- 10 yr Water Distribution Main

15 Year CIP
- 15 yr Water Distribution Main
- 15 yr Pump Station

Systems
- East System
- North System
- South System
- West System

Existing Water Infrastructure
- Existing Water Distribution Pump
- Existing TBTF/SWATS Water Transmission Pump Station
- Existing Elevated Storage Tanks
- Wholesale Meter Connection
- TBTF/SWATS Water Transmission Main
- Existing Water Line >= 10"
- Existing Water Line >= 10"
- Existing Water Line <= 8"

Background Data
- Highways
- Roads
- Railroads
- Water Features
- Pressure Plane Boundaries
- County Lines
- Future Service Area Boundary
- Existing Service Area Boundary

JCSUD

Johnson County Special Utility District
Water Master Plan
Appendix J
Capital Improvement Plan
South System

0 0.5 1 2 Miles

JANUARY 2023

Kimley»Horn

This map product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

Tarrant County

Johnson County

Ellis County

Pressure Plane 25

East System

Pressure Plane 24

PLANT 14

Well 14T

Well 14P

0.1 MG

490 gpm

490 gpm

To PP25

PLANT 15

Well 15T

Well 15P

0.1 MG

490 gpm

490 gpm

To PP25

PLANT 24

Well 24T

Well 24P

TBTF Fill Valve

Overflow = 932'

500,000 gal Elevated Tank

PLANT 27

City of Mansfield Wholesale Supply Meter

1.0 MG

2.5 MG

3,500 gpm

3,500 gpm

3,800 gpm

(2) 3,000 gpm

(1) 3,000 gpm

To Plant 26

PLANT 25

Overflow = 888'

Fill Valve

From PP 24

To PP25

500,000 gal Elevated Tank

PLANT 16

Well 16T

Well 16P

0.2 MG

300 gpm

300 gpm

To PP24

Homestead

Bethany SUD

City of Alvarado

City of Alvarado

Mountain Peak

City of Venus

Johnson County

Ellis County

Legend

5 Year CIP
- 5 yr Pump Station
- 5 yr Water Distribution Main

10 Year CIP
- 10 yr Pump Station
- 10 yr Pump Station
- 10 yr Water Distribution Main

15 Year CIP
- 15 yr Water Distribution Main
- 15 yr Water Distribution Main

Systems
- East System
- North System
- South System
- West System

Existing Water Infrastructure
- Existing Water Distribution Pump
- Existing TBTF/SWATS Water Transmission Pump Station
- Existing Ground Storage Tank
- Existing Elevated Storage Tanks
- Wholesale Meter Connection
- City of Mansfield Wholesale Supply Meter
- TBTF/SWATS Water Transmission Main
- Water Lines in Construction
- Existing Water Line >= 10"
- Existing Water Line <= 8"

Background Data
- Highways
- Roads
- Railroads
- Water Features
- Pressure Plane Boundaries
- County Lines
- Future Service Area Boundary
- Existing Service Area Boundary

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

JCSUD

Johnson County Special Utility District
Water Master Plan
Appendix K
Capital Improvement Plan
East System

0 0.75 1.5 Miles

January 2023

Kimley»Horn

This map product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

PLANT 13
Overflow = 1152'
750,000 gal
Elevated Tank

PLANT 11
SWATs
Fill Valve
0.27 MG
1.0 MG
750 gpm
750 gpm
1,900 gpm
(2) 900 gpm
To PP8
To PP8

PROPOSED
EST
Overflow = 1152'
1,500,000 gal
Elevated Tank

PLANT 26
5,200 gpm
5,200 gpm
1.0 MG
Existing
Fill Valve

PLANT 10
Well 10T
0.1 MG
220 gpm
220 gpm
HGL MAX = 1041'
HGL MIN = 999'
To PP10
12,000 gal
Hydro Tank

SWATS HIGH SERVICE PUMP STATION
LAKE GRANDBURY
WTP
2500 gpm
2500 gpm
2440 gpm
2440 gpm
PLANT 11

PLANT 18
Well 18T
0.1 MG
300 gpm
300 gpm
HGL MAX = 892'
HGL MIN = 864'
To PP18
5,000 gal
Hydro Tank

Pressure Plane 08
Pressure Plane 34
Pressure Plane 13
Pressure Plane 01
Pressure Plane 09
Pressure Plane 19
Pressure Plane 10
Pressure Plane 18
West System

City of Cresson
City of Godley
City of Joshua
Ridgecrest
Sundance
Sanderview
City of Cleburne
City of Rio Vista
Hood County
Johnson County
Hill County

Legend

5 Year CIP
- 5 yr Pump Station
- 5 yr Ground Storage Tank
- 5 yr Elevated Storage Tank
- 5 yr Water Distribution Main
- WTP 5 yr Water Treatment Plant

10 Year CIP
- 10 yr Water Distribution Main

15 Year CIP
- 15 yr Water Distribution Main
- 15 yr Pump Station

Systems
- East System
- North System
- South System
- West System

Existing Water Infrastructure
- Existing Water Distribution Pump
- Existing TBTF/SWATS Water Transmission Pump Station
- Existing Ground Storage Tank
- Existing Elevated Storage Tanks
- M Wholesale Meter Connection
- TBTF/SWATS Water Transmission Main
- Water Lines in Construction
- Existing Water Line >= 10"
- Existing Water Line <= 8"

Background Data
- Highways
- Roads
- Railroads
- Water Features
- Pressure Plane Boundaries
- County Lines
- Future Service Area Boundary
- Existing Service Area Boundary

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

JCSUD

Johnson County Special Utility District
Water Master Plan
Appendix L
Capital Improvement Plan
West System

0 0.5 1 2 Miles

JANUARY 2023

Kimley»Horn

This map product is for informational purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.