CITY OF LOCKHART

WATER AND WASTEWATER
IMPACT FEE ANALYSIS
CAPITAL IMPROVEMENTS PLAN

FEBRUARY, 2017

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1.0 INTRODUCTION

Chapter 395 of the Texas Local Government Code requires the following elements be included in the Capital Improvements Plan (CIP) used as the basis for impact fees:

Table of service usage for each category of capital improvements and a conversion table of service units per acre (or other measure) of at least residential, commercial and industrial land uses

- Projections of total service units for new development, within the service area
- Description of existing capital improvements, including:
  - Existing capital improvements within the service area.
  - Analysis of total capacity of existing improvements.
  - Analysis of current usage of existing improvements.
  - Cost to upgrade, update improvements, expand or replace facilities for existing needs.
- Description of capital improvements needed to serve new development within the next ten (10) years or less (based upon adopted service area, land use and unit usage assumptions), including:
  - All or portions of the existing CIP.
  - All or portions of the future CIP.
  - Costs associated with both existing and future CIP facilities needed for new development.

2.0 ANALYSIS OF WATER & WASTEWATER SYSTEMS

2.1 Present Water Demands

The yearly and monthly water consumption for the City of Lockhart over the past five (5) years is shown in **Table 1 – Historical Water Usage Data**. The average and peak demand is established to be 1.714 MGD and 2.833 MGD respectively.

At present, the Lockhart water system serves approximately 4,710 customers and a small portion of the Polonia water system. The consumption by customers of Polonia water system has not been separated from consumption by the City's customers because their consumption is very small compared to the City's. The per capita average and peak water demands are 127 gal/cap./day and 211 gal/cap./day (based upon a population of 13,459), respectively.

Table 1 - Historical Water Usage Date

Month	Year	Average Daily Flow (MGD)	Maximum Daily Flow (MGD)
September	2011	1.93	2.16
October	2011	1.79	1.97
November	2011	1.69	2.00
December	2011	1.50	1.90
January	2012	1.64	1.87
February	2012	1.61	1.83
March	2012	1.61	1.88
April	2012	1.74	1.88
May	2012	1.91	2.28
June	2012	2.01	2.24
July	2012	2.19	2.42
August	2012	2.15	2.39
Average	**2012**	**1.81**	
Maximum	**2012**		**2.42**
Date	**2012**		**July 18, 2012**

Month	Year	Average Daily Flow (MGD)	Maximum Daily Flow (MGD)
September	2012	1.75	2.14
October	2012	1.52	2.01
November	2012	1.47	1.65
December	2012	1.37	1.56
January	2013	1.32	1.43
February	2013	1.34	1.48
March	2013	1.39	1.60
April	2013	1.33	1.56
May	2013	1.41	1.68
June	2013	1.61	1.92
July	2013	1.66	2.00
August	2013	1.79	2.01
Average	**2013**	**1.49**	
Maximum	**2013**		**2.14**
Date	**2013**		**September 1, 2013**

Month	Year	Average Daily Flow (MGD)	Maximum Daily Flow (MGD)
September	2013	1.78	2.05
October	2013	1.66	1.91
November	2013	1.71	2.09
December	2013	1.75	2.07
January	2014	1.79	2.83
February	2014	1.76	2.11
March	2014	1.75	2.30
April	2014	1.85	2.03
May	2014	1.73	2.15
June	2014	1.84	2.15
July	2014	1.55	2.04
August	2014	1.59	1.86
Average	**2014**	**1.73**	
Maximum	**2014**		**2.83**
Date	**2014**		**January 25, 2014**

Month	Year	Average Daily Flow (MGD)	Maximum Daily Flow (MGD)
September	2014	1.52	1.86
October	2014	1.67	1.98
November	2014	1.75	1.94
December	2014	1.75	1.95
January	2015	1.72	1.95
February	2015	1.70	2.22
March	2015	1.67	1.97
April	2015	1.62	1.96
May	2015	1.67	2.00
June	2015	1.84	2.46
July	2015	1.95	2.28
August	2015	2.11	2.43
Average	**2015**	**1.75**	
Maximum	**2015**		**2.46**
Date	**2015**		**June 30, 2015**

Month	Year	Average Daily Flow (MGD)	Maximum Daily Flow (MGD)
September	2015	1.94	2.23
October	2015	1.81	2.06
November	2015	1.60	1.85
December	2015	1.62	1.88
January	2016	1.66	1.93
February	2016	1.75	1.98
March	2016	1.78	1.94
April	2016	1.72	1.93
May	2016	1.75	1.95
June	2016	1.80	2.67
July	2016	2.05	2.28
August	2016	1.98	2.49
Average	**2016**	**1.79**	
Maximum	**2016**		**2.67**
Date	**2016**		**June 27, 2016**

AVERAGE FOR Sept. 2011 THROUGH 2016
1.714 MGD

MAXIMUM FOR Sept. 2011 THROUGH 2016
2.833 MGD 1/25/2014

Average Per LUE Usage (gal/day) = 286

Peak Per LUE Usage (gal/day) = 473

2.2 Water Supply

The City of Lockhart currently has seven producing wells in the southeast well field. Their capacities, along with other data, are shown in **Table 2 – Water Well Production**. These wells pump water from the Wilcox Aquifer through 7.5 mile long parallel 12-inch, 14-inch and 18-inch transmission mains to the raw water pump station. The raw water pump station collects the water from the wells and pumps it to the water plant on the southeast side of the City. The raw water pump station consists of a 300,000 gallon storage reservoir and three (3) pumps rated at 1,800 GPM each. The raw water pipelines are capable of transporting 5 MGD.

The Guadalupe-Blanco River Authority, City of Lockhart and the City of Luling in 2005 put into service the Luling/Lockhart Water Transmission Main. This facility consists of a pump station at the Luling surface Water Treatment Plant and a 16 mile 14-inch transmission main to the City of Lockhart Water Treatment Plant. The contract between the three (3) entities allows for the delivery of one (1) million gallons of treated surface water per day to the Lockhart Water Treatment Plant.

Table 2 - Water Well Production

Well No.	Capacity	Unit	
3B	300	gpm	
4A	260	gpm	
5A	255	gpm	
9A	800	gpm	
10A	450	gpm	

Well No.	Capacity	Unit	
11	750	gpm	
12	570	gpm	
Total	**3,395**	**gpm**	**= 4.88 MGD**

2.3 Water Treatment Plant

The Lockhart Water Treatment Plant (WTP) receives and treats the well water from the well field, located southeast of the City. Each of the wells pump into the 300,000 gallon raw water storage tank, which has booster pumps to pump the water to the WTP. The WTP was upgraded in 2000 to provide a capacity of 5.7 MGD, increased from the previous 2.9 MGD.

The plant consists of raw water metering, forced draft aeration, clarification, filtration, chemical feed, clearwell, ground storage reservoir, high service pumps, treated water metering and backwash/sludge reclamation basin. The 2000 upgrade included the addition of a second forced draft aerator; two (2) new filter units; rehabilitation of two (2) existing filters; new chemical feed equipment; the backwash/sludge reclamation basin; flow meters; water system Supervisory Control and Data Acquisition (SCADA) system to provide complete automated monitoring and control of the entire water system including the plant, wells, distribution operations, and miscellaneous plant improvements.

Although the facility has always treated ground water exclusively, it provides treatment well above ground water requirements by the TCEQ. This is primarily due to the high content of iron found in the raw water.

2.4 Storage, High-Service Pumps, and Distribution Mains

A 300,000 gallon and 2,000,000 gallon ground storage reservoir are located at the Water Treatment Plant. Three (3) high service pumps with a capacity of 3.0 MGD pump water out of the 2,000,000 MG reservoir through two (2) 12-inch and 18-inch mains into the City distribution system. The distribution system consists of approximately 55 miles of 2-inch, 4-inch, 6-inch, 8-inch, 10-inch, 12-inch and 18-inch mains.

2.5 Future Water Use

The future water use projections shown in **Table 3 – Projected Water Usage** were derived from the future populations projections and the per capita water demands shown in **Table 1 – Historical Water Usage Data**. These projections are used for making recommendations for future improvements to the water system.

Table 3 - Projected Water Usage

Year	Population	Water Average [1] (MGD)	Usage Peak [2] (MGD)
2017	13,459	1.718	2.833
2027	16,813	2.146	3.539

[1]Based upon average per capita water usage of 127 gal/day
[2]Based upon peak per capita water usage of 211 gal/day

2.6 Water Supply Improvements

Presently, the source of water for Lockhart is ground water from the Wilcox Aquifer and surface water from the Luling WTP. The Wilcox Aquifer has been a reliable source of water for Lockhart for the past sixty (60) years. The Ground Water Resources of Caldwell County report prepared by the U.S. Geological Survey indicates that the quantity of water on a perennial basis that can be withdrawn from the Carrizo sand and Wilcox group in Caldwell County without depleting the aquifer is about 20 MGD. At the present time, these formations in Caldwell County are practically untapped with only a small percentage being used for public supply, irrigation, domestic, and stock purposes.

At present, there are seven (7) wells in the southeast well field that pump into 14-inch and 18-inch transmission mains. These mains transport the water to the water treatment plant on the southeast side of the City.

The reliable capacity of the well field is 4.88 MGD which will be deficient by the year 2027 and another well will be needed.

2.7 Future Water Treatment Needs

2.7.1 Treatment Capacity

The current treatment capacity of 5.7 MGD will provide adequate water supply for the projected average and maximum daily water usage through the year 2027.

2.8 Ground Storage Improvements

The present ground storage capacity at the water treatment plant is 2,300,000 gallons consisting of one (1) underground concrete reservoir with the capacity of 300,000 gallons and one (1) above ground steel reservoir with the capacity of 2,000,000 gallons. Present ground storage capacity is adequate through the Year 2027.

2.9 High Service Pump Improvements

The City has three (3) high service pumps with a total combined capacity of 3.0 MGD. These pumps pump treated water into the water distribution system and fill the elevated storage reservoirs. These pumps should be sized to meet the TCEQ Standards. Based upon these requirements an additional high service pump is presently needed.

2.10 Elevated Storage Improvements

The elevated storage capacity requirements are based upon the Texas Commission on Environmental Quality Standard of 200 gallons per connection. Elevated storage provides water stored in above ground elevated tanks for use by customers and for fire protection without the need for additional pumping. The capacity of the three (3) existing elevated tanks is 1,050,000 gallons. Based upon the requirement of 200 gallons per connection, additional elevated storage is required prior to Year 2027.

The three (3) existing reservoirs are all constructed to the same overflow elevation. As growth occurs to the northwest of the City along FM 2001 and S.H. 130 the existing elevated storage reservoirs will not be able to provide adequate pressures because the natural terrain in these areas is higher in elevation than the City. Pump stations and elevated storage tanks will be required at higher elevations, as shown in Figure 1 – Water System Capital Improvements Plan. The new elevated tank is proposed to be 500,000 gallons in capacity.

2.11 Distribution System Improvements

The City's present distribution system consists of water mains ranging in size from 2-inch to 18-inch in diameter. The Texas Commission on Environmental Quality (TCEQ) requires that a residual pressure of 35 psi be maintained during peak water use periods and a residual pressure of 20 psi be maintained during fire flow situations. Indicated in Figure 1 – Water System Capital Improvements Plan are the major pipelines needed to meet requirements for future development of the city based upon the City's Annexation Plan. The majority of the water mains proposed in this Capital Improvements Plan are within the City's Water Service Area certified by TCEQ.

Unlined iron pipe has not been used in water distribution systems for several decades because of its lack of resistance to corrosion and deterioration. It is recommended that the City eventually replace the remaining 75,000 linear feet of unlined iron pipe. A long-range program of line replacement should be considered because of the high cost associated with replacing these lines. Detailed records should also be kept on line repairs and condition to aid in setting replacement priorities. The cost of replacing these existing mains is not included in the impact fee analysis.

2.12 Cost Estimates

Cost estimates for all the improvements proposed, based upon today's cost, including construction and engineering are shown in **Table 4 – Proposed Water System Improvement Plan**.

Table 4 - Proposed Water System Improvements

Name	Quantity	Description	Unit Price[(1)]	Cost
W-1	2,850 Feet	18" Pipe toward WTP from FM 1322	$110	$313,500
W-2	2,610 Feet	18" Pipe along MLK Industrial Blvd.	$110	$287,100
W-3	3,195 Feet	18" Pipe Cunningham Dr. to FM 20	$110	$351,450
W-4	4,650 Feet	12" Pipe along FM 1322 - CR 205 to Bufkin Ln.	$90	$418,500
W-5	5,170 Feet	12" Pipe along FM 1322 - CR 205 to Summerside	$90	$465,300
W-6	5,370 Feet	12" Pipe along San Antonio St. from Borchert Loop East	$90	$483,300
W-7	3,000 Feet	12" Pipe west of SH 130 from north of Maple St. to Borchert St.	$90	$270,000
W-8	4,290 Feet	12" Pipe along FM 2001 - Stueve Ln. to SH 130	$90	$386,100
W-9	3,000 Feet	12" Pipe West of SH 130 at Maple St. north and south	$90	$270,000
W-10	3,225 Feet	12" Pipe along Reed Dr. from FM 20 to Lovers Ln.	$90	$290,250
W-11	5,015 Feet	12" Pipe along Lovers Ln. and Live Oak from Brazos St. to Reed Dr.	$90	$451,350
W-12	3,590 Feet	12" Pipe along Old McMahan Rd.	$90	$323,100
W-13	6,365 Feet	12" Pipe Cross Country - Cunningham Dr. to FM 20	$90	$572,850
W-14	2,500 Feet	12" Pipe along FM 20 West	$90	$225,000
W-15	6,150 Feet	12" Pipe Cross Country FM 20 to SH 130	$90	$553,500
W-16	1,350 Feet	18" Pipe by Maple St. to Pump Station	$110	$148,500
W-17	1,800 Feet	18" Pipe east side SH 130 from W. San Antonio St. to Borchert St.	$110	$198,000
W-18	17,500 Feet	12" Pipe cross country north to Rail Road to limits with Maxwell & Polonia WSC	$90	$1,575,000
W-19	2,000 Feet	18" Pipe West of SH 130 from Borchert St. to San Antonio St.	$110	$220,000
W-20	1,550 Feet	12" Pipe along CR 203 from FM 20 to CR 208	$90	$139,500
W-21	7,650 Feet	12" Pipe from Cunningham Dr. to southwest corner of Airport	$90	$688,500
W-22	6,900 Feet	18" Pipe along SH 130 - San Antonio to FM 2001	$110	$759,000
W-23	4,615 Feet	12" Pipe cross country Hwy 183 to FM 672	$90	$415,350
W-24	3,450 Feet	12" Pipe around south end of Airport	$90	$310,500
W-25	2,900 Feet	12" Pipe south of FM 2001 to south of RR	$90	$261,000
W-26	2,650 Feet	12" Pipe along San Antonio west of Borchert Loop	$90	$238,500
W-27	1 Each	WTP High Service Pump	$300,000	$300,000
W-28	1 Each	City Line Rd. Pump Station	$470,000	$470,000
W-29	1 Each	FM 2001 0.2 MG Elevated Tank	$1,700,000	$1,700,000
W-30	1 Each	Pressure Reducing Valve	$19,000	$19,000
W-31	1 Each	Pressure Reducing Valve	$19,000	$19,000

Name	Quantity	Description	Unit Price[1]	Cost
W-32	1 Each	Pressure Reducing Valve	$19,000	$19,000
W-33	1 Each	Pressure Reducing Valve	$19,000	$19,000
W-34	1 Each	Well	$1,200,000	$1,200,000
		TOTAL		**$14,361,150**

[1]Unit prices are today's prices include engineering and surveying.

2.13 Present Wastewater Flows

The Lockhart collection and treatment system currently collects and treats essentially all of the domestic wastewater generated by the citizens of Lockhart. The wastewater collection system serves approximately 4,710 residential and commercial customers. A review of the wastewater flow records shown in **Table 5 – Historical Wastewater Usage**, indicates the average amount of wastewater flow received at the treatment plants is 92 gallons per capita per day and the peak flow is 447 gallons per capita per day.

Table 5 - Historical Wastewater Usage Data

Month	Year	Average Daily Flow (MGD)	Maximum Daily Flow (MGD)
September	2011	1.20	1.59
October	2011	1.17	1.47
November	2011	1.18	1.49
December	2011	1.48	2.29
January	2012	1.41	3.55
February	2012	1.40	3.53
March	2012	1.49	3.42
April	2012	1.43	1.90
May	2012	1.46	3.14
June	2012	1.23	1.45
July	2012	1.14	1.35
August	2012	1.15	1.39
Average	**2012**	**1.31**	
Maximum	**2012**		**3.55**
Date	**2012**		

Month	Year	Average Daily Flow (MGD)	Maximum Daily Flow (MGD)
September	2012	1.19	2.14
October	2012	1.09	1.57
November	2012	1.03	1.36
December	2012	1.00	1.24
January	2013	1.09	2.26
February	2013	0.78	1.23
March	2013	1.00	1.31
April	2013	1.11	2.16
May	2013	1.09	1.46
June	2013	1.14	1.35
July	2013	1.19	1.42
August	2013	1.08	1.36
Average	**2013**	**1.07**	
Maximum	**2013**		**2.26**
Date	**2013**		

Month	Year	Average Daily Flow (MGD)	Maximum Daily Flow (MGD)
September	2013	1.17	1.96
October	2013	1.39	3.25
November	2013	1.10	1.63
December	2013	0.99	1.23
January	2014	1.01	1.31
February	2014	1.02	1.25
March	2014	1.06	1.34
April	2014	1.06	1.31
May	2014	1.25	4.40
June	2014	1.18	1.55
July	2014	1.19	1.48
August	2014	1.16	1.60
Average	**2014**	**1.13**	
Maximum	**2014**		**4.40**
Date	**2014**		

Month	Year	Average Daily Flow (MGD)	Maximum Daily Flow (MGD)
September	2014	1.20	2.28
October	2014	1.08	1.40
November	2014	1.15	2.48
December	2014	1.06	1.54
January	2015	1.28	4.08
February	2015	1.00	1.25
March	2015	1.37	4.49
April	2015	1.55	3.80
May	2015	2.08	6.02
June	2015	1.39	1.71
July	2015	1.40	1.72
August	2015	1.23	1.70
Average	**2015**	**1.32**	
Maximum	**2015**		**6.02**
Date	**2015**		

Month	Year	Average Daily Flow (MGD)	Maximum Daily Flow (MGD)
September	2015	1.22	1.49
October	2015	1.46	4.81
November	2015	1.15	1.55
December	2015	1.11	1.70
January	2016	1.06	1.42
February	2016	1.10	1.61
March	2016	1.30	3.74
April	2016	1.51	3.74
May	2016	1.87	5.08
June	2016	1.67	3.97
July	2016	1.27	1.53
August	2016	1.41	2.58
Average	**2016**	**1.34**	
Maximum	**2016**		**5.08**
Date	**2016**		

AVERAGE FOR Sept. 2011 THROUGH 2016
1.234 MGD

MAXIMUM FOR Sept. 2011 THROUGH 2016
6.02 MGD

Average Per LUE Usage (gal/day) = 219

Peak Per LUE Usage (gal/day) = 1,005

2.14 Collection System

The existing sewage collection system that serves the City of Lockhart was initiated in early 1900, and has been extended as necessary through the years to keep pace with the City's growth. The majority of the older system is constructed of vitrified clay tile sewer pipe. The recently installed collector mains (mains installed in the past 30 years) are constructed of heavy weight

PVC pipe. Collector line sizes are generally 6-inch and 8-inch and interceptor lines range from 10-inch to 24-inch in diameter. The depth of the collection system ranges from 3-feet to 18-feet below the ground surface, with a median depth of 6-7 feet for the majority of the lines. Most of the lines in the collection system have sufficient grades to maintain self-cleaning velocities. The majority of the collection system is in good condition.

The existing collection system is divided into two major drainage areas. Treatment Plant No.1 located on Larrimore Street serves the northern drainage area and Treatment Plant No.2 on FM 20 West serves the southern drainage area

2.15 Wastewater Treatment Plants

2.15.1 WWTP No. 1

WWTP No. 1 was the only treatment facility to serve the City until WWTP No. 2 was constructed and placed into service in the spring of 1999. WWTP No. 1 received major upgrades in 1950 and 1986. The 1986 upgrade included construction of a number of process basins and replacement of the majority of process equipment within the existing concrete structures. The plant has a design capacity of 1.1 MGD and chlorination, sludge handling, and dewatering with drying beds. The aeration process is operated in the contact stabilization mode of the activated sludge process.

2.15.2 WWTP No. 2

Construction was complete on WWTP No. 2 in 1998. The plant has a design capacity of 1.5 MGD and a peak capacity of 4.5 MGD, but the site layout was designed to allow expansion of the facilities to 4.5 MGD design and 13.5 MGD peak. The screenings and grit removal units will handle a capacity of 3.0 MGD design and 9.0 MGD peak. The facility is located on a 20.9-acre site on FM 20, southeast of town. The plant consists of raw sewage screening, grit removal, aeration basin, clarification, ultraviolet disinfection, sludge handling, and dewatering with a belt filter press. Thus, the two (2) treatment facilities have a combined capacity of 2.6 MGD design and 8.5 MGD peak.

2.16 Future Wastewater Flows

The future wastewater flows are given in **Table 6 – Projected Future Wastewater Flows**. These flows are based upon an average flow of 92 gallons per capita per day for the projected population.

Table 6 - Projected Future Wastewater Flows

Year	Population	Projected Average Flow (MGD)
2016	13,459	1.234
2026	16,813	1.541

2.17 Collection System Improvements

The existing collection system is in relatively good condition, but has a number of problems related to broken and deteriorated clay sewer mains.

There is approximately 122,000 linear feet of clay tile sewer pipe in the system. The probability is very high that a large percentage of the remainder of the clay tile pipe is in deteriorated condition and allows storm water flow to enter into the wastewater collection system. It is recommended that the City enter into a line TV-ing program to determine which lines are in the most deteriorated condition and to assist in setting priorities for line replacements.

Indicated in Figure 2 – Sewer System Capital Improvements Plan are the proposed improvements needed to serve the future development of the City. Major trunk mains and lift stations are shown to provide service within the service area. Lift stations are expensive to construct, maintain, and operate, but are required in some instances to move the wastewater from one (1) drainage area to a drainage area that has a treatment facility. Additional lift stations are required to provide service for future growth in Lockhart, including:

1. FM 20 East
2. Pecan Branch
3. Boggy Creek
4. Plum Creek

The proposed FM 20 East Lift Station will serve the area between FM 20 East and County Road 202. The proposed Pecan Branch lift station will serve portion of the Pecan Branch drainage basin. The Boggy Creek Lift Station will serve a portion of the Boggy Creek drainage basin north of County Road 218 between County Road 219 and the service area boundary. This Lift Station would eventually be abandoned by the extension of a trunk main from the airport lift station. The proposed Plum Creek Lift Station will serve the area within the northern City limits along Highway 183 North. Future development in the Town Branch drainage area to the northwest of the City can be served by extending the present trunk main across Stueve Lane and northwest to FM 2001.

2.18 Future Wastewater Treatment Needs

The City of Lockhart has two (2) wastewater treatment facilities to receive and treat the raw sewage production from the City residences and businesses. WWTP No. 1 was upgraded in 1986 and WWTP No. 2 was initially placed into operation in February, 1999. Both plants are operated by the Guadalupe-Blanco River Authority, who has the responsibility for meeting the effluent requirements imposed by the TCEQ. The combined plant capacity is 2.6 MGD design flow and 8.5 MGD peak flow, which is adequate to meet the City's needs through the year 2017.

2.19 Cost Estimates

Cost estimates for all the proposed wastewater system improvements based on today's cost including construction and engineering are shown in **Table 7 – Proposed Wastewater System Improvements**.

Table 7 - Proposed Wastewater System Improvements

Name	Quantity	Description	Unit Price[1]	Cost
S-1	2,650 Feet	12" Pipe from FM 20 to Lovers Ln.	$110	$291,500
S-2	5,650 Feet	12" Pipe along Cunningham Dr.	$110	$621,500
S-3	4,575 Feet	12" Pipe from Old McMahan West to FM 1322	$110	$503,250
S-4	5,270 Feet	12" Pipe from Hwy 183 East to FM 1322	$110	$579,700
S-5	4,085 Feet	18" Pipe from Cunningham Dr. to Lockhart State Park	$110	$449,350
S-6	9,900 Feet	15" Pipe along SH 130 and San Antonio St.	$110	$1,089,000
S-7	2,300 Feet	12" Pipe along UP RR from Tank St. to Stueve Ln.	$110	$253,000
S-8	3,800 Feet	12" Pipe along FM 2001 to SH 130	$110	$418,000
S-9	2,900 Feet	12" Pipe along UP RR from Stueve west	$110	$319,000
S-10	4,600 Feet	12" Pipe along UP RR to SH 130	$110	$506,000
S-11	1,500 Feet	12" Pipe along south side of UP RR	$110	$165,000
S-12	3,450 Feet	12" Pipe parallel to Hwy 183 to SH 130	$110	$379,500
S-13	2,900 Feet	12" Pipe from east of HWY 183 to SH 130	$110	$319,000
S-14	2,300 Feet	12" Pipe along SH 130 Northeast from UP RR	$110	$253,000
S-15	6,630 Feet	10" Pipe from FM 20 LS to Old McMahan Rd. LS	$110	$729,300
S-16	1,135 Feet	12" Pipe from Plum Crk. LS North parallel to Hwy 183	$110	$124,850
S-17	1,500 Feet	12" Pipe along Lovers Ln.	$110	$165,000
S-18	4,000 Feet	12" Pipe along Pecan Branch West from Lift Station	$110	$440,000
S-19	1,500 Feet	12" Pipe across RR at Windridge lift station	$110	$165,000
S-20	9,640 Feet	18" Pipe along Clear Fork Crk. From State Park to CR 218	$120	$1,156,800
S-21	2,400 Feet	12" Pipe along SH 130 west from Hwy 183	$110	$264,000
S-22	3,200 Feet	12" Pipe parallel to Hwy 183 South from Plum Creek Lift Station	$110	$352,000
S-23	4,000 Feet	12" Pipe along SH 130 Northeast from FM 2001	$110	$440,000
S-24	4,400 Feet	12" Pipe from SH 130 to UP RR and along FM 2720	$110	$484,000
S-25	2,600 Feet	12" Pipe south to old Fentress Rd.	$110	$286,000
S-26	3,600 Feet	12" Pipe along State Park Rd.	$110	$396,000
S-27	2,700 Feet	12" Pipe west of FM 2720	$110	$297,000
S-28	3,000 Feet	12" Pipe northeast of SH 130 and south of FM 2001	$110	$330,000
S-29	1 Each	F.M. 20 East Lift Station	$300,000	$300,000
S-30	1 Each	Boggy Creek Lift Station	$300,000	$300,000

Name	Quantity	Description	Unit Price[1]	Cost
S-31	1 Each	Plum Creek Lift Station	$400,000	$400,000
S-32	1 Each	Pecan Branch Lift Station	$300,000	$300,000
S-33	1,200 Feet	12" Pipe east of SH 130 RR to San Antonio	$110	$132,000
		TOTAL		**$13,208,750**

[1]Unit prices are today's prices including engineering and surveying.

3.0 Calculation of Fee

3.1 Unit Usage Statistics

Design standards (unit usage statistics) for the water and sewer systems have been developed by TRC Engineers, Inc. Those standards are shown in **Table 8 – Capacity Demand for Each New Water LUE** and **Table 9 – Capacity Demand for Each New Water LUE**.

3.2 Conversion Table

Section 395.014(a)(4) of the Impact Fee Act requires:

> **...an equivalency or conversion table establishing the ratio of a service unit to various types of land used, including residential, commercial, and industrial....**

Water meter size (expressed in the common units of LUE's) was determined to be the most appropriate measure for calculating the fees due from any individual customer. Water meter size was selected as the unit determinant for fee collection for the following reasons:

- It allows the use of an American Water Works Association (AWWA) published standard.
- This standard includes both safe continuous flow and safe maximum flow which will thereby accommodate all requests for service.
- These standards are those used by building owners, professional engineers and architects, and City staff for sizing meters and plumbing fixtures.
- Meters are a physical element which can be maintained and controlled by the City, thus allowing the monitoring of the accuracy of meter sizing. The City can require any necessary replacement of meters which can be shown to have been sized too small for a development and collect additional impact fees required by the change in meters.
- Particularly in the larger meter sizes, the builder may have to pay for more capacity than needed for the development, thus resulting in a potential payment above actual

costs. However, these large-meter customers will be able to use that excess capacity if later building expansions occur or if use patterns change. Moreover, the capacity purchased would be a marketable amenity which would add value to the property.

- The use of water meter size allows equitable cost assignment to each of the three (3) customer classes identified in Chapter 395 (residential, commercial and industrial).

Since water meter size is the basis for calculation of both water and wastewater fees, the base fee should be applied to the smallest meter used by the City. The following policies are suggested:

- The standard used for the ratio of the continuous duty maximum flow rate should be derived from AWWA C700-C703 (in gpm).

- The City's smallest water meter (3/4") should be the base unit for impact fee assessment.

- The Impact Fee Ordinance should have the schedule published as shown in **Table 10 – LUE Equivalencies for Various Types and Sizes of Water Meters**, which includes both compound and turbine meters.

- The use of a turbine meter, in connection with displacement meters in a compound meter installation, would require the use of the turbine meter schedule.

Table 10 – LUE Equivalencies for Various Types and Sizes of Water Meters shows a conversion table for various types and sizes of water meters in the Lockhart water system. Because the fee calculation was based on water meter size, the LUE/meter conversion table applies equally to all land used. **Table 11 – Current Meter Count and Estimation of Living Units Equivalent** shows the current number of LUE's on the Lockhart water system.

Typically, some concern is expressed that water meters are not always a reasonable means of calculating wastewater flows, particularly for certain consumptive types of commercial uses (car washes, restaurants) or industrial processes. Additionally, any land use might have a large meter for irrigation purposes, thus overrepresenting its wastewater flows. However, experience has indicated that few such exceptional customers choose to have a separate wastewater meter because of the installation and maintenance expense incurred. Because no alternative means for assessing flow is practical, it is recommend that the water meter also be adopted as the basis for wastewater impact fees.

However, given the potential that some consumptive commercial and industrial customers may be considerably overcharged for sewer capacity demand when water meter size is used for calculating wastewater impact fees, it is also recommends that the ordinance provide for exceptions. Specifically, the ordinance should permit individual wastewater customers to present data, prepared by a professional engineer, documenting expected wastewater flow below

that which is indicated by meter-size determinations for a lower sewer fee. For irrigation-only water meters, the ordinance should provide for a water-only impact fee.

3.3 Projected Service Units for New Development

The estimated demand per LUE shown in **Table 8 – Capacity Demand for Each New Water LUE** and **Table 9 – Capacity Demand for Each New Water LUE** was applied to the existing population of 13,459 and projected population of 16,813 in 2027 to yield the estimated water and wastewater service demands shown in **Table 12 – Estimated Water Service Demand by Facility Type** and **Table 13 – Estimated Wastewater Service Demand by Facility Type**.

3.4 CIP Development for Existing and Future Needs

Facility unit statistics shown in **Table 8 – Capacity Demand for Each New Water LUE** and **Table 9 – Capacity Demand for Each New Wastewater LUE** were used to project facility needs for both existing and future customers. **Table 12 – Estimated Water Service Demand by Facility Type** and **Table 13 – Estimated Wastewater Service Demand by Facility Type** show current needs and deficiencies, if any, for existing customers, as well as projected capacity needs for growth. Although not shown in **Table 12 – Estimated Water Service Demand by Facility Type** and **Table 13 – Estimated Wastewater Service Demand by Facility Type**, both the water and sewer system will require additional lines by 2027, which are addressed in the capital improvements program (see Table 15 – Water CIP Inventory and Costing and Table 16 – Wastewater CIP Inventory and Costing).

Table 15 – Water CIP Inventory and Costing and **Table 16 – Wastewater CIP Inventory and Costing** present the inventory of facilities as required in Chapter 395. They show the required allocation of existing and future CIP facility needs for existing development; future development within the next ten (10) years; and excess capacity for subsequent future development. For each generation of utility customers, these tables show facility needs which will be met by Existing Facilities and Future Facilities.

Cost allocations are also shown in **Table 15 – Water CIP Inventory and Costing** and **Table 16 – Wastewater CIP Inventory and Costing**. Cost estimates for each facility were taken from actual cost of existing facilities which have excess capacity (see Table 14 – Cost of Existing Facilities with Excess Capacity) and projected costs of future facilities (see Table 4 – Proposed Water System Improvements and Table 7 – Proposed Wastewater System Improvements). An appropriate cost share was attributed to 2017-2027 growth, as determined from capacity allocations shown. Finance cost was added by increasing the construction cost by fifty (50) percent. Finally, cost were expressed on a per-LUE basis. Total capital costs for 2017-2027 growth were then summed for each utility.

Table 8 - Capacity Demand for Each New Water LUE

FACILITY	BASIS	CAPACITY PER LUE
Wells	TCEQ Standards 0.6 gal./min. per connection	725 gallons/day
Raw Water Transmission	TCEQ Standards 0.6 gal./min. per connection	725 gallons/day
Treatment	TCEQ Standards 0.6 gal./min. per connection	725 gallons/day
Booster Pumps	TCEQ Standards 0.6 gal./min. per connection	725 gallons/day
Ground Storage	Engineering Analysis	305 gallons
Elevated Storage	TCEQ Standards 200 gal./min. per connection	168 gallons
Major Transmission	TCEQ Standards 2 gal./min. per connection	2,416 gallons/day

SOURCE: TRC Engineers, Inc.

Table 9 - Capacity Demand for Each New Wastewater LUE

FACILITY	BASIS	CAPACITY PER LUE
Treatment	TCEQ Standards Average Day	219 gallons/day
Pumping	TCEQ Standards - Peak Flow	759 gallons/day
Major Collection	TCEQ Standards - Peak Flow	759 gallons/day

SOURCE: TRC Engineers, Inc.

Table 10 - LUE Equivalencies for Various Types and Sizes of Water Meters

METER TYPE	METER SIZE	CONTINUOUS DUTY MAXIMUM RATE (gpm)	RATIO TO 3/4" METER
Simple	5/8" x 3/4"	10	0.667
Simple	3/4"	15	1.000
Simple	1"	25	1.667
Simple	1-1/2"	50	3.333
Simple	2"	80	5.333
Compound	2"	80	5.333
Turbine	2"	100	6.667
Compound	3"	160	10.667
Turbine	3"	240	16.000
Compound	4"	250	16.667
Turbine	4"	420	28.000
Compound	6"	500	33.333
Turbine	6"	920	61.333
Compound	8"	800	53.333
Turbine	8"	1600	106.667
Compound	10"	1150	76.667
Turbine	10"	2500	166.667
Turbine	12"	3300	220.000

SOURCE: AWWA Standards C700, C701, C702, C703.

Table 11 - Current Meter County and Estimation of Living Units Equivalent

METER SIZE	NUMBER OF METERS[a]	LUEs PER METER[b]	NUMBER OF LUEs
3/4"	4,445	1.000	4,445
1"	114	1.667	190
1-1/2"	14	3.333	47
2"	108	5.333	576
3"	21	10.667	224
4"	8	16.667	133
TOTAL	**4,710**		**5,615**
Population			13,459
Population/LUE			2.40

[a]SOURCE: City of Lockhart
[b]See Table 10

Table 12 - Estimated Water Service Demand by Facility Type

	VOLUME	
	2017	2027
LUE'S (a)	**5,615**	**7,014**
WELLS MGD:		
Estimated Demand (b)	4.071	5.085
Existing Capacity (h)	4.880	4.880
Excess/(Deficiency)	0.809	(0.205)
RAW WATER TRANSMISSION		
Estimated Demand (c)	4.071	5.085
Existing Capacity (h)	5.200	5.200
Excess/(Deficiency)	1.129	0.115
WATER TREATMENT PEAK MGD:		
Estimated Demand (d)	4.071	5.085
Existing Capacity (h)	5.700	5.700
Excess/(Deficiency)	1.629	0.615
BOOSTER PUMP MGD:		
Estimated Demand (e)	4.071	5.085
Existing Capacity (h)	3.000	3.000
Excess/(Deficiency)	(1.071)	(2.085)
GROUND STORAGE MG: (d)		
Estimated Demand (f)	1.713	2.139
Existing Capacity (h)	2.300	2.300
Excess/(Deficiency)	0.587	0.161
ELEVATED WATER STORAGE MG: (e)		
Estimated Demand (g)	0.943	1.178
Existing Capacity (h)	1.050	1.050
Excess/(Deficiency)	0.107	(0.128)

[a]2016 LUE's based on count of equivalent meters. 2026 and ultimate LUE's determined by 2016 persons per LUE and projected 2026 population.
[b]Capacity Demand = 725 gallons/LUE/day.
[c]Capacity Demand = 725 gallons/LUE/day.
[d]Capacity Demand = 725 gallons/LUE/day.
[e]Capacity Demand = 725 gallons/LUE/day.
[f]Capacity Demand = 305 gallons/LUE.
[g]Capacity Demand = 168 gallons/LUE.
[h]Existing Capacity details are contained in Table 15.

Table 13 - Estimated Wastewater Service Demand by Facility Type

FACILITY TYPE	VOLUME	
	2017	2027
LUE'S (a)	5,615	7,014
WASTEWATER TREATMENT PEAK MGD:		
Estimated Demand (b)	1.234	1.536
Existing Capacity (d)	2.600	2.600
Excess/(Deficiency)	1.366	1.064
WASTEWATER PUMPING MGD:		
Estimated Demand (c)	0.500	1.350
Existing Capacity (d) (Airport Lift Station)	1.400	1.400
Excess/(Deficiency)	0.900	0.050

[a]Wastewater LUE's same as water.
[b]Capacity demand = 219 gallons/LUE/day
[c]Capacity demand = 759 gallons/LUE/day
[d]Capacity demand = 759 gallons/LUE/day

Table 14 - Cost of Existing Facilities with Excess Capacity

WATER			
SUPPLY			
Well	3B	$169,148	
	4A	$118,917	
	5A	$96,025	
	9A	$623,902	
	10	$623,902	
	11	$412,793	
	12	$402,258	
	Total		**$2,446,945**
Raw Water Transmission			
Raw Water Pump Station		$296,495	
Well 9 Transmission Main		$300,415	
Plum Creek Raw Water Main		$349,246	
Ethridge Raw Water Main		$394,413	
Well 12 Transmission Main		$146,183	
18" Raw Water Main		$49,353	
	Total		**$1,536,105**
Treatment			
Water Plant			$2,310,484
Ground Storage			
2 MG Ground Storage			$300,000

WATER			
Elevated Storage			
0.5 MG Elevated Storage			$602,510
Transmission Mains			
SH 130 12" & 8" Water Main		$462,517	
SH 130 Casings & Maple St. 12" Water		$548,146	
Hwy. 183 12" Water Main		$275,227	
Hwy. 142 12" Water Main		$104,400	
Elevated Tank Water Main		$365,758	
	Total		**$1,756,048**
	TOTAL WATER		**$8,952,092**

WASTEWATER			
Treatment			$3,653,000
Pumping			
Airport Lift Station			$658,482
Collection Lines			
FM 20 Trunk Main		$1,827,000	
Borchert Lane 12" Sewer		$133,349	
	Total		**$1,960,349**
		TOTAL WASTEWATER	**$6,271,831**

Table 15 - Water CIP Inventory and Costing

FACILITY		CONSTRUCT COST	CONSTRUCT COST PLUS INTEREST	FACILITY CAPACITY (mgd or gals)				NEXT 10-YEAR CAPITAL COST TOTAL	NEXT 10-YEAR COST PER LUE
TYPE	NAME			TOTAL	FOR CURRENT CUST.	EXCESS <10 YEARS	EXCESS >10 YEARS		
SUPPLY									
EXISTING FACILITIES				MGD					
	Wells	$2,446,945	$3,670,418	4.880	4.071	0.809	0.000	$608,567.20	$435.00
	Subtotal Existing Wells	$2,446,945	$3,670,418	4.880	4.071	0.809	0.000	$608,567.20	$435.00
NEW FACILITIES									
	Well 13 (W-34)	$1,200,000	$1,800,000	1.000		0.205	0.795	$369,000.00	$263.76
	Subtotal New Wells	$1,200,000	$1,800,000	1.000	0.000	0.205	0.795	$369,000.00	$263.76
TOTAL WELL		**$3,646,945**	**$5,470,418**	**5.880**	**4.071**	**1.014**	**0.795**	**$977,567.20**	**$698.76**
RAW WATER TRANSMISSION									
EXISTING FACILITIES				MGD					
	Raw Water Main	$1,536,105	$2,304,158	5.200	4.071	1.014	0.115	$449,430.32	$321.25
	Subtotal Existing Raw Water	$1,536,105	$2,304,158	5.200	4.071	1.014	0.115	$449,430.32	$321.25
TOTAL RAW WATER		**$1,536,105**	**$2,304,158**	**5.200**	**4.071**	**1.014**	**0.115**	**$449,430.32**	**$321.25**
TREATMENT									
EXISTING FACILITIES				MGD					
	Water Treatment Plant	$2,310,484	$3,465,726	5.700	4.071	1.014	0.615	$616,699	$440.82
	Subtotal Existing Treatment	$2,310,484	$3,465,726	5.700	4.071	1.014	0.615	$616,699	$440.82
TOTAL WATER TREATMENT		**$2,310,484**	**$3,465,726**	**5.700**	**4.071**	**1.014**	**0.615**	**$616,699**	**$440.82**

FACILITY		CONSTRUCT COST	CONSTRUCT COST PLUS INTEREST	FACILITY CAPACITY (mgd or gals)				NEXT 10-YEAR CAPITAL COST TOTAL	NEXT 10-YEAR COST PER LUE
TYPE	NAME			TOTAL	FOR CURRENT CUST.	EXCESS <10 YEARS	EXCESS >10 YEARS		
PUMPING									
NEW FACILITIES									
	WTP High Service Pump (W-27)	$300,000	$450,000	3.000	1.071	1.014	0.915	$152,100	$108.72
	City Line Road Pump Station (W-28)	$470,000	$705,000	1.000		0.200	0.800	$141,000	$100.79
	Subtotal New Facilities	$770,000	$1,155,000	4.000	1.071	1.214	1.715	$293,100	$209.51
	TOTAL WATER PUMPAGE	**$770,000**	**$1,155,000**	**4.000**	**1.071**	**1.214**	**1.715**	**$2933,100**	**$209.51**
GROUND STORAGE									
EXISTING FACILITIES				MG					
	Water Treatment Plant Storage	$300,000	$450,000	2.300	1.713	0.427	0.161	$55,656	$39.78
	Subtotal Existing Facilities	$300,000	$450,000	2.300	1.713	0.427	0.161	$55,656	$39.78
	TOTAL GROUND STORAGE	**$300,000**	**$450,000**	**2.300**	**1.713**	**0.427**	**0.161**	**$55,656**	**$39.78**
ELEVATED STORAGE									
EXISTING FACILITIES				MG					
	Elevated Storage	$602,510	$903,765	1.050	0.943	0.107	0.000	$91,822	$65.63
	Subtotal Existing Facilities	$602,510	$903,765	1.050	0.943	0.107	0.000	$91,822	$65.63
NEW FACILITIES									
	FM 2001 Elevated Tank (W-29)	$1,700,000	$2,550,000	0.500		0.128	0.372	$652,800	$466.62
	Pressure Reducing Valves (W-30, W-33)	$76,000	$114,000	0.200		0.050	0.150	$28,500	$20.37
	Subtotal New Facilities	$1,776,000	$2,664,000	0.700		0.178	0.522	$681,300	$487.00
	TOTAL ELEVATED STORAGE	**$2,378,510**	**$3,567,765**	**1.750**	**0.943**	**0.285**	**0.522**	**$773,122**	**$552.63**

FACILITY		CONSTRUCT COST	CONSTRUCT COST PLUS INTEREST	FACILITY CAPACITY (mgd or gals)				NEXT 10-YEAR CAPITAL COST TOTAL	NEXT 10-YEAR COST PER LUE
TYPE	NAME			TOTAL	FOR CURRENT CUST.	EXCESS <10 YEARS	EXCESS >10 YEARS		
MAJOR TRANSMISSION LINES									
EXISTING FACILITIES				MGD					
	Major Transmission Lines	$1,756,048	$2,634,072	6.000	2.000	0.200	3.800	$87,802	$62.76
	Subtotal Existing Pumpage	$1,756,048	$2,634,072	6.000	2.000	0.200	3.800	$87,802	$62.76
NEW FACILITIES									
	Major Transmission Lines (W-1 to W-26)	$10,616,150	$15,924,225	31.000		2.900	28.100	$1,489,686	$1,064.83
	Subtotal New Facilities	$10,616,150	$15,924,225	31.000	0.000	2.900	28.100	$1,489,686	$1,064.83
TOTAL TRANSMISSION LINES		**$12,372,198**	**$18,558,297**	**37.000**	**2.000**	**3.100**	**31.900**	**$1,577,488**	**$1,127.59**
FEE UPDATE COST								**$13,750**	**$9.83**
TOTALS		**$23,314,242**	**$34,971,363**					**$4,756,811**	**$3,400.17**

Table 16 - Wastewater CIP Inventory and Costing

FACILITY		CONSTRUCT COST	CONSTRUCT COST PLUS INTEREST	FACILITY CAPACITY (mgd or gals)				NEXT 10-YEAR CAPITAL COST TOTAL	NEXT 10-YEAR COST PER LUE
TYPE	NAME			TOTAL	FOR CURRENT CUST.	EXCESS <10 YEARS	EXCESS >10 YEARS		
TREATMENT									
EXISTING FACILITIES				PEAK MGD					
	FM 20 WWTP	$3,653,000	$5,625,620	2.600	1.234	0.302	1.064	$653,437	$467.08
	Subtotal Existing Facilities	$3,653,000	$5,625,620	2.600	1.234	0.302	1.064	$653,437	$467.08
TOTAL WASTEWATER TREATMENT		**$3,653,000**	**$5,625,620**	**2.600**	**1.234**	**0.302**	**1.064**	**$653,437**	**$467.08**
PUMPING									
EXISTING FACILITIES				MGD					
	Airport Lift Station	$658,482	$1,014,062	1.400	0.500	0.800	0.100	$579,464	$414.20
	Subtotal Existing Facilities	$658,482	$1,014,062	1.400	0.500	0.800	0.100	$579,464	$414.20
NEW FACILITIES									
	FM 20 East Lift Station (S-29)	$300,000	$462,000	0.300		0.025	0.275	$38,500	$27.52
	Boggy Crk Lift Station (S-30)	$300,000	$462,000	0.700		0.050	0.650	$33,000	$23.59
	Plum Crk Lift Station (S-31)	$400,000	$616,000	0.700		0.050	0.650	$44,000	$31.45
	Pecan Branch Lift Station (S-32)	$300,000	$462,000	0.300		0.025	0.275	$38,500	$27.52
	Subtotal New Facilities	$1,300,000	$2,002,000	2.000		0.150	1.850	$154,000	$110.08
TOTAL WASTEWATER PUMPING		**$1,958,482**	**$3,016,062**	**3.400**	**0.500**	**0.950**	**1.950**	**$733,464**	**$524.28**
MAJOR COLLECTION LINES									
EXISTING FACILITIES				MGD					
	FM 20 Trunk Main & Borchert Lane 12" Sewer	$1,960,349	$3,018,937	1.000	0.250	0.100	0.650	$301,894	$215.79
	Subtotal Existing Facilities	$1,960,349	$3,018,937	1.000	0.250	0.100	0.650	$301,894	$215.79

FACILITY		CONSTRUCT COST	CONSTRUCT COST PLUS INTEREST	FACILITY CAPACITY (mgd or gals)				NEXT 10-YEAR CAPITAL COST TOTAL	NEXT 10-YEAR COST PER LUE
TYPE	NAME			TOTAL	FOR CURRENT CUST.	EXCESS <10 YEARS	EXCESS >10 YEARS		
NEW FACILITIES									
	Major Collection Line (S-1 to S-28 and S-33)	$11,908,750	$18,339,475	8.000		0.900	7.100	$2,063,191	$1,474.77
	Subtotal New Facilities	$11,908,750	$18,339,475	8.000		0.900	7.100	$2,063,191	$1,474.77
TOTAL MAJOR COLLECTION LINES		**$13,869,099**	**$21,358,412**	**9.000**	**0.250**	**1.000**	**7.750**	**$2,365,085**	**$1,630.56**
FEE UPDATE COST								**$13,750**	**$9.83**
TOTALS		**$19,480,581**	**$30,000,095**					**$3,765,736**	**$2,691.75**

4.0 Summary

Table 17 – Water and Wastewater Maximum Impact Fees shows the remainder of the fee calculation process. A credit of fifty (50) percent of the total calculated fee is required by recent legislative changes to Chapter 395 if a credit for ad valorem tax and utility service revenues is not applied.

The maximum total water impact fee, with credits is $1,700.07. For wastewater, the maximum fee, with credits, is $1,345.87. The total for the two utilities is $6,091.92 for one LUE of service.

Higher fees will be charged for larger meter sizes, according to the fee multipliers shown in **Table 10 – LUE Equivalencies for Various Types and Sizes of Water Meters**.

Table 17 - Water and Wastewater Capital Cost Summary

UTILITY	FACILITY	COST/LUE	CREDIT/LUE	MAXIMUM FEE/LUE
WATER	Wells	$698.76	$349.38	$349.38
	Raw Water Pumping	$321.25	$160.63	$160.63
	Treatment	$440.82	$220.41	$220.41
	Pumping	$209.51	$104.75	$104.75
	Ground Storage	$39.78	$19.89	$19.89
	Elevated Storage	$552.63	$276.31	$276.31
	Major Transmission	$1,127.59	$563.79	$563.79
	Fee Update Cost	$9.83	$4.91	$4.91
TOTAL WATER CAPITAL COSTS		**$3,400.17**	**$1,700.07**	**$1,700.07**
WASTEWATER	Treatment	$467.08	$233.54	$233.54
	Lift Stations (a)	$524.28	$262.14	$262.14
	Major Collection	$1,690.56	$845.28	$845.28
	Fee Update Cost	$9.83	$4.91	$4.91
TOTAL WASTEWATER CAPITAL COSTS		**$2,691.75**	**$1,345.87**	**$1,345.87**
TOTAL WATER AND WASTEWATER CAPITAL COSTS		**$6,091.92**	**$3,045.96**	**$3,045.96**

Figure 1
Water System Capital Improvements Plan

WATER SYSTEM CAPITAL IMPROVEMENTS PLAN

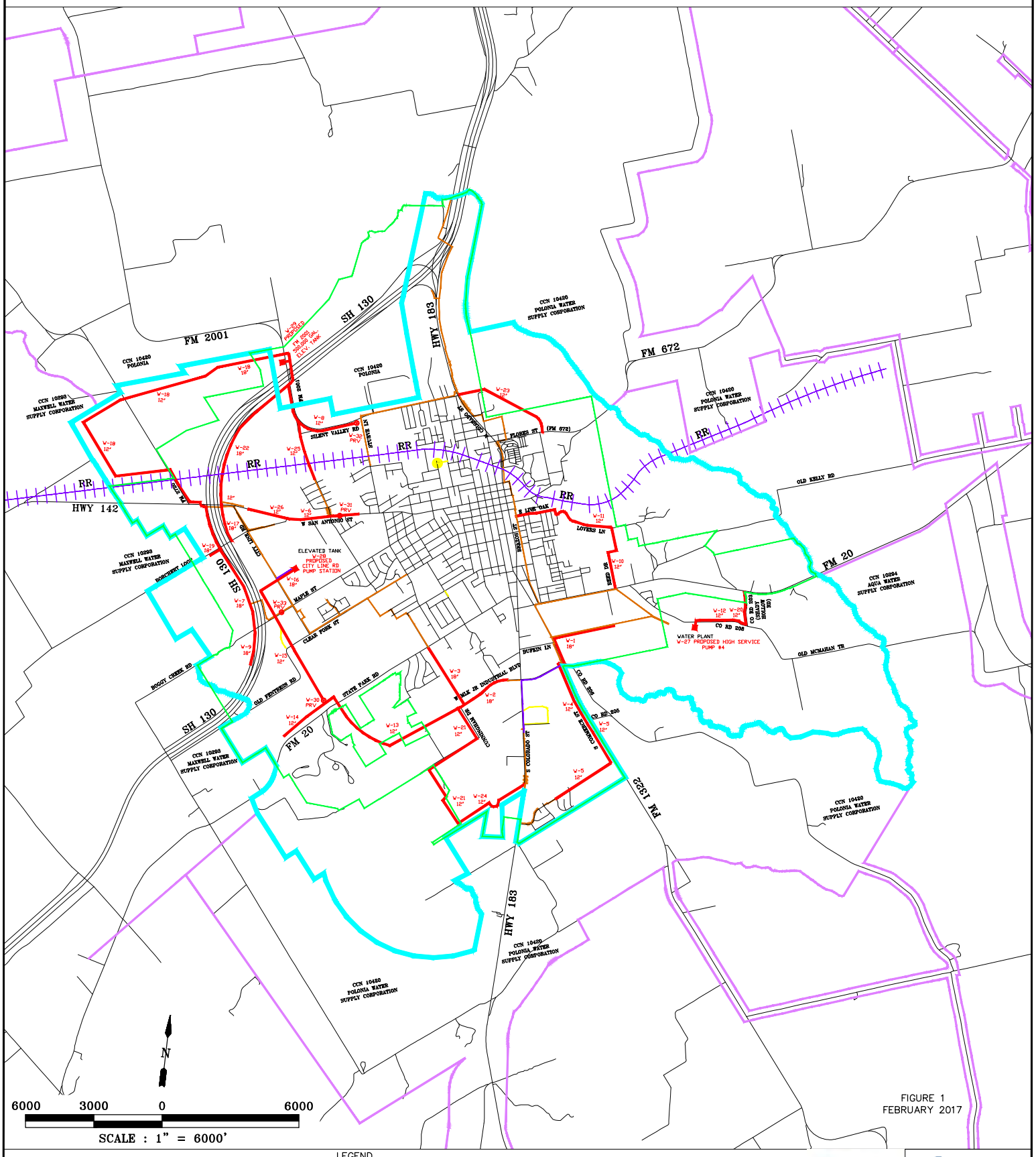

FIGURE 1
FEBRUARY 2017

LEGEND

- EXISTING RAIL ROAD
- WATER CCN LIMITS OF WSC WITH CITY OF LOCKHART SERVICE AREA
- EXISTING WATER LINE 18"
- EXISTING WATER LINE 10"
- EXISTING WATER LINE 12"
- CITY LIMITS
- WATER SERVICE AREA (CCN)
- W-1 PROPOSED IMPROVEMENTS

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505 E. HUNTLAND DRIVE, STE. 250 AUSTIN, TX 78752
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Figure 2
Sewer System Capital Improvements Plan

WASTEWATER SYSTEM CAPITAL IMPROVEMENTS PLAN

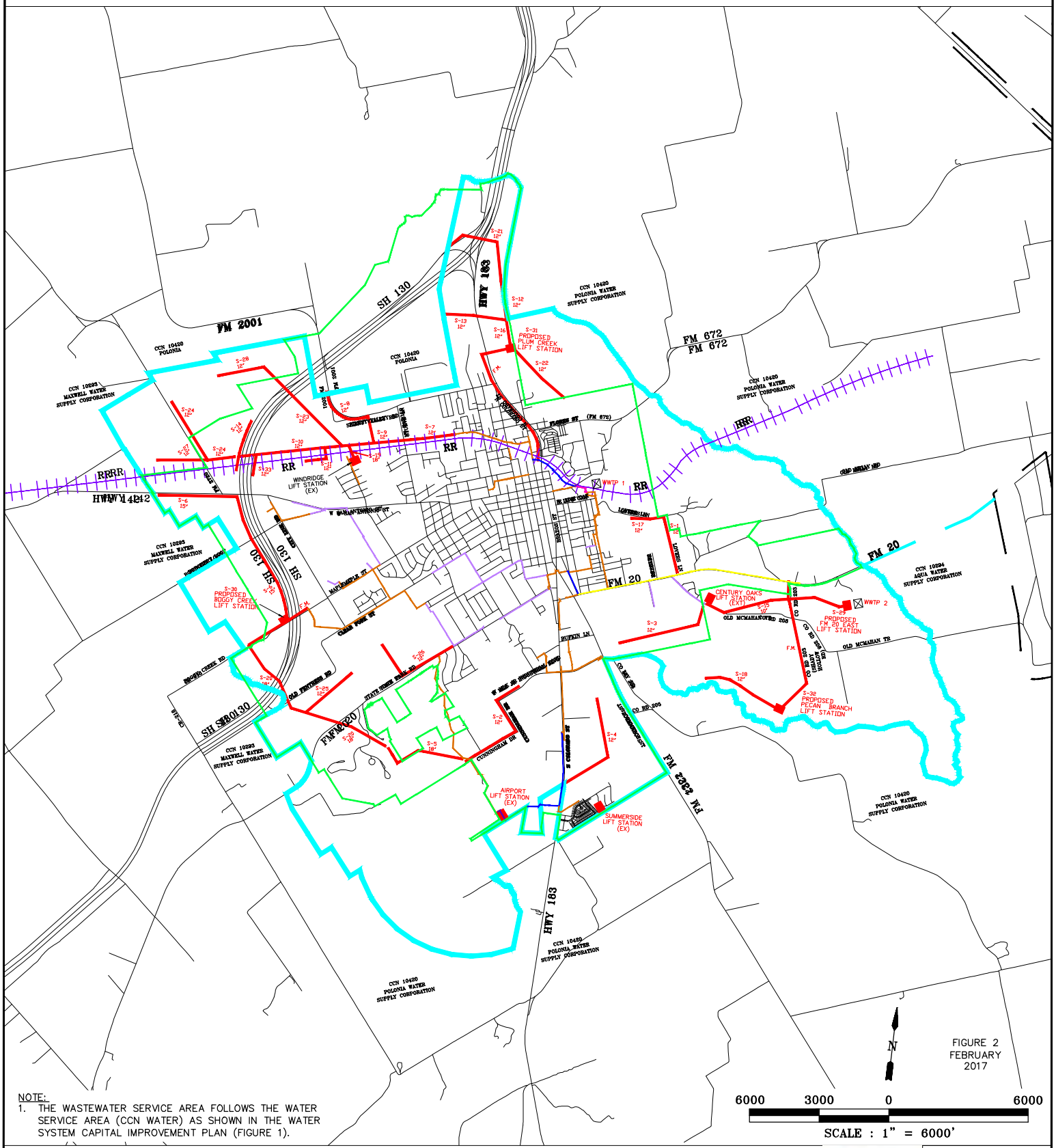

FIGURE 2
FEBRUARY 2017

NOTE:
1. THE WASTEWATER SERVICE AREA FOLLOWS THE WATER SERVICE AREA (CCN WATER) AS SHOWN IN THE WATER SYSTEM CAPITAL IMPROVEMENT PLAN (FIGURE 1).

LEGEND

- EXISTING RAIL ROAD
- EXISTING WASTE WATER LINE 10"
- EXISTING WASTE WATER LINE 12"
- EXISTING WASTE WATER LINE 15"
- EXISTING WASTE WATER LINE 18"
- EXISTING WASTE WATER LINE 21"
- EXISTING WASTE WATER LINE 24"
- CITY LIMITS
- WASTEWATER SERVICE AREA
- S-1 PROPOSED IMPROVEMENTS

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