where quality meets life

PFLUGERVILLE

TEXAS

CITY OF PFLUGERVILLE
ENGINEERING REPORT AND CAPITAL IMPROVEMENTS PLAN FOR IMPLEMENTATION OF WATER AND WASTEWATER IMPACT FEES

Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY

where quality meets life

PFLUGERVILLE

TEXAS

CITY OF PFLUGERVILLE

ENGINEERING REPORT AND CAPITAL IMPROVEMENTS PLAN FOR IMPLEMENTATION OF WATER AND WASTEWATER IMPACT FEES

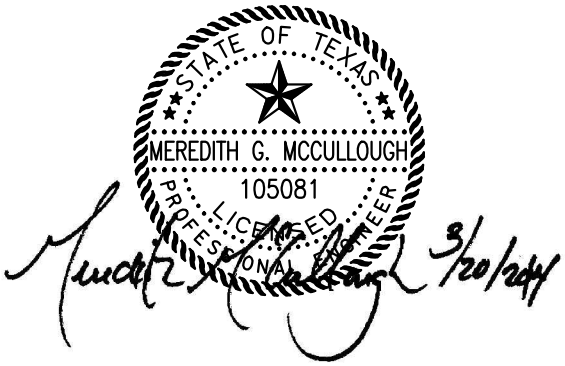
JANUARY 22, 2014

REVISED MARCH 20, 2014

FINAL

PREPARED BY:

MEREDITH McCULLOUGH, PE



Lockwood, Andrews & Newnam, Inc.
A LEO A DALY COMPANY
TEXAS REGISTERED ENGINEERING FIRM F-2614

TABLE OF CONTENTS

List of Appendices

List of Tables

A. INTRODUCTION

An "Impact Fee" is a charge or assessment imposed by a political subdivision for new development within its service area in order to generate revenue for funding or recouping costs of capital improvements necessitated by and attributable to the new development. The Land Use Assumptions used in this report to determine the impact fees were prepared by Design Workshop and are presented in a separate document entitled *Land Use Assumptions for the Implementation of Impact Fees* found in Appendix A attached. The City of Pflugerville water and wastewater service areas are shown as Exhibits within the Design Workshop document.

Design Workshop prepared land use and growth assumptions for the service areas over the next ten years. Within this report, Lockwood, Andrews and Newnam, Inc. (LAN) consulted with the City to determine those Capital Improvement Projects which are designed to serve the anticipated land uses and growth. The costs that can be considered in the impact fee calculation include:

1. The cost of new infrastructure paid by the City including engineering, property acquisition, and construction.
2. The cost of existing excess capacity in lines and facilities available to serve future growth paid for in whole or part by the City.
3. Interest and other finance charges on bonds issued by the City to cover its portion of the cost.

These items are summed and the anticipated utilized capacity over the 10-year impact fee period is calculated. The total utilized capital improvement costs are divided by the total number of new Service Unit Equivalents (SUE's). The result is the maximum impact fee that can be charged per new SUE.

This report is the engineering analysis of the City's water and wastewater Capital Improvements Plan and utilized capacity for the ten-year period of 2013 through 2023. It is based upon the City's projected population increases through the study period.

B. LAND USE AND POPULATION ASSUMPTIONS SUMMARY

As discussed above, Design Workshop provided an analysis of the anticipated population growth within the City's water and wastewater service areas. The ten-year growth projections were calculated based upon historical trends in residential building permitting as well as assumed residential building permitting based on known and anticipated development projects within the City's service area. Ultimate build out scenarios were based upon the holding capacity of vacant land developed with similar land use patterns as existing development.

The existing 2013 population was determined based off of the 2010 US Census data. The additional population through the year 2013 was added by studying the known developments that have occurred within the City Limits over the past three years. The future population and housing unit demand was determined based upon the amount of residential unit growth within the study area over a three year period. A full list of the assumptions used to determine this

demand can be found in the *Land Use Assumptions for the Implementation of Impact Fees* report found in Appendix A of this report. Table 1 summarizes the projected population and housing unit demand. A unit equates to a single residential household for both a water and wastewater system. The study found that the 2018 projected population is an additional 7,125 people which corresponds to an additional 2,407 required housing units. The projected increase in population is 12,950 between 2018 and 2023 which corresponds to an additional 4,375 required housing units. In total, there will be an increase of 20,075 people which will require an additional 6,782 housing units.

TABLE 1: Population and Projected Housing Demand

	2013	2018	2023
Pflugerville & ETJ Population	65,668	72,793	85,743
Growth from previous benchmark year		7,125	12,950
Projected Demand for Housing Units		2,407	4,375
Percent Growth Rate from previous benchmark year	n/a	10.8%	17.8%
2023 Total Projected Housing Demand			6,782 units

The subdivisions with planned development projections were then studied to determine the projected housing units that would be developed over the next 10 years. The City of Pflugerville assisted with identifying the planned development subdivisions that would be improving within this time period. The estimated date of development was based upon demographics and current development trends. There are 18 subdivisions consisting of 6,441 units that were identified as having development inventory over the next ten years. A list of the projected growth in units per each development is shown in Table 2.

TABLE 2: Planned Development Projects

	Subdivision	Current Count (August 2013)	Total Projected Units (2013-2018)	Total Projected Units (2018-2023)
Developing Subdivisions	Avalon	313	500	764
	Blackhawk	769	1,045	1,447
	Commons at Rowe Lane	345	527	791
	Falcon Pointe	1,053	1,429	Full Build Out
	Highland Park	632	900	1,272
	Reserve at West Creek	332	526	Full Build Out
	SHTC Apartments	370	520	Full Build Out
	Spring Trails	205	360	Full Build Out
	Villages of Hidden Lake	1,000	1,219	Full Build Out
Future Subdivisions	Carmel	0	228	570
	Carrington Court	0	135	Full Build Out
	Pacana	0	340	Full Build Out
	Penley Park	0	169	Full Build Out
	Rowe Lane Condos	0	228	Full Build Out
	Sorento	0	228	570
	Springbrook Apartments Ph 1	0	270	Full Build Out
	Springbrook Apartments Ph 2	0	350	Full Build Out
	Verona	0	228	Full Build Out
	Additional Projected Units:	**0**	**4,183**	**2,258**

*All figures in this table were provided by the City of Pflugerville.

Based on of the planned developments described above it was determined that a total of 6,441 additional housing units are planned to be developed in the next 10 years. Considering the projected demand was determined to be 6,782 housing units, the projected development would be 341 household units short.

A density and future development analysis was then performed to determine the location of these additional 341 required housing units and to determine the overall projected housing units per service area. The future density growth was determined for each city parcel as shown on the Pflugerville 10 Year Density Projections Map found in Appendix A. Each parcel was assigned a projected parcel density based off of the contributing land use types and the proximity of the parcel to existing sewer, water and roadway infrastructure. The projected land use types were divided into mixed use, medium-high, low-medium employment, and agriculture within and

outside of the service area. The historical trends in residential building permitting as well as assumed residential building permitting based on known and anticipated development projects within the City's service area were considering in determining the future land type.

Each land use was then given a potential density based on the City of Pflugerville's Comprehensive plan. Where multiple land uses types were shown on a parcel, the parcel was divided to best calculate the density using a density factor for each land use type. The density factors used for the land uses are shown in the Future Land Use Density Chart found in Appendix A.

After the density factors were applied, the parcels were then ranked based on their proximity to infrastructure. This ranking system was used to best determine the location of the additional 341 units projected to be in demand by 2023 so that the demand from the projected population growth would be met.

The City of Pflugerville Existing Density Map found in Appendix A was then updated to show the projected new developments and the expected change in density over the next 10 years. The housing units determined by both the known development projects from Table 2, and the additional 341 units were added to the map. Based upon this map and the GIS Density analysis described above, the projected unit growth was determined for the Cottonwood wastewater service areas, Central wastewater service area and Pflugerville water service areas. A summary of this information is found in Table 3.

TABLE 3: Service Area Growth

	Cottonwood Wastewater Service Area	Central Wastewater Service Area	Pflugerville Water Service Area
2013 Existing Units	-	16,001	15,032
2023 Projected Units	129	22,282	20,449
Growth	129	6,281	5,417
Growth Percent	100.00%	39.00%	36.04%

This growth rate, which represents an approximate 36.04 percent compounded average growth rate for the water impact fee service area and an approximate 39.00 percent and 100.00 percent average growth rate for the wastewater impact fee service areas, is considered to be a strong rate of growth for any municipality.

C. SERVICE UNITS FOR WATER AND WASTEWATER

The existing water meter count by size category (obtained from the City of Pflugerville) was the starting point for calculating water and wastewater service unit equivalents (SUE). Since wastewater meters do not exist, the number of units developed from the land use calculations were used for determining the wastewater SUEs.

A 5/8-inch x 3/4-inch tap is considered a service unit equivalent connection for both a water and wastewater system. As shown on Table 4, there are approximately 13,969 meters ranging from 5/8-inch to 6-inch in the Pflugerville Water Service Area. Based on this meter data and on AWWA conversion factors for different size meters, the water service area contains a total of approximately 15,930 SUEs.

TABLE 4: Standard Unit Equivalent Connections for Water

Meter Type & Size	Active Meter Quantity	SUE/ Meter Size	Equivalent No. of 5/8" x 3/4" Connections (SUEs)	Apartment SUEs
5/8" Meter	13,612	1.0	13,612	# of Units:
3/4" Meter	40	1.5	60	1,222
1" Meter	96	2.5	240	
1.5" Meter	70	5.0	350	Occupancy:
2" (Non-Turbine) Meter	104	8.0	832	93.4%
3" (Non-Turbine) Meter	34	16.0	544	
4" (Non-Turbine) Meter	2	25.0	50	
6" (Non-Turbine) Meter	3	50.0	150	
6" (Turbine) Meter	1	92	92	50% units
Total	**13,969**		**15,930**	**571**
Combined Total	**16,501 SUEs**			

The apartment SUEs were calculated separately since apartment master meter sizes have been found to not clearly correlate to apartment use. LAN researched several methods of how to account for the apartment connections in the impact fees. The method that was selected is the same process used by the San Antonio Water System (SAWS). The apartment SUEs were added at the end of the SUE calculation. The apartment water use was considered to represent 50 percent of residential use. The City of Pflugerville identified that there are 1,222 apartment units and they are 93.4 percent occupied. Taking these considerations into account, it was determined that there are 571 additional apartment SUEs. Including the apartment SUEs, the water service area contains a total of approximately 16,501 SUEs.

The wastewater SUEs were calculated based upon the percent of the service area each meter represented. There are currently 16,001 existing wastewater units, including apartment units based on the land used density calculations provided by Design Workshop. All of these existing units are from the Central sewer shed since it has the only existing wastewater service in the area as of 2013. The overall wastewater service area includes almost all of the water service area plus additional areas outside of the City, as shown on Exhibit 2 from Appendix A attached. It was determined that there are 15,994 non apartment existing wastewater units as shown in Table 5. Similar to the water SUE calculations, the apartment SUEs were also calculated separately for wastewater. As indicated in Table 5, these calculations resulted in a total of 18,828 SUEs for wastewater.

TABLE 5: Standard Unit Equivalent Connections for Wastewater

Meter Type & Size	Unit count	Percent by Size	Active Meter Quantity	SUE/ Meter Size	Equivalent No. of 5/8" x 3/4" Connections (SUEs)	Apartment SUEs
5/8" Meter	16,001	97.44%	15,592	1	15,592	# of Units:
3/4" Meter		0.29%	46	1.5	69	1,222
1" Meter		0.69%	110	2.5	275	
1.5" Meter		0.50%	80	5	401	Occupancy:
2" (Non-Turbine) Meter		0.76%	119	8	955	93.4%
3" (Non-Turbine) Meter		0.24%	39	16	623	
4" (Non-Turbine) Meter		0.03%	3	25	65	
6" (Non-Turbine) Meter		0.02%	3	50	172	
6" (Turbine) Meter		0.01%	1	92	105	50% units
Total			**15,994**		**18,257**	**571**
Combined Total	**18,828 SUEs**					

The total SUEs for water and wastewater are summarized in Table 6.

TABLE 6: Existing SUEs

	Non-Apartment SUEs	Apartment SUEs	Total 2013 SUEs
Water	15,930	571	16,501
Wastewater	18,257	571	18,828

After consulting with the City, it was determined there is a total of 16,501 water and 18,828 wastewater SUEs respectively. The number of meters anticipated in 2023 was calculated using the growth rate assumptions of 36.04 percent for water and 100.00 percent and 39.00 percent for the Cottonwood and Central wastewater connections, respectively, compounded annually for service growth.

The projected 2023 SUEs are summarized in Table 7. For the water service area, the 36.04 percent growth rate resulted in a projection of 22,448 total SUEs in 2023. This is an increase of 5,947 water SUEs during the study period. This number will factor into the calculation for the water impact fee calculation.

TABLE 7: Projected SUEs

	Ten Year Growth Rate	2013 SUEs	2023 SUEs	New SUEs in 10 Years
Water	36.04%	16,501	22,448	5,947
Wastewater – Central	39.00%	18,828	26,170	7,343
Wastewater – Cottonwood	100.00%	-	129	129

For the wastewater service area, the 39.0 percent and 100.00 percent annual growth rate results in a projection of 26,170 and 129 SUEs in 2023 for the Central and Cottonwood wastewater service areas respectively. The Cottonwood service area is a new development with no existing SUEs. There is an increase of 7,343 wastewater SUEs for the Central wastewater service area, and an increase of 129 wastewater SUEs for the Cottonwood service area during the study period. This number will factor into the calculation for the wastewater impact fee calculation.

D. WATER SYSTEM

LAN worked closely with the City staff to identify the projects within the current Capital Improvements Plan (CIP) that will serve growth in the next ten years in the water service area. Table 8 presents projects that will serve the growth in the area.

These projects are broken into four basic categories: water distribution, pump station, planning, and supply. The table lists each project by name and provides the anticipated cost for each project over the first five years (2013-2018) and through the subsequent five years (2018-2023). These costs were derived by the City as part of their CIP and include engineering costs. The bond costs associated with financing the project have also been calculated and included. The interest rate of 4.5 percent over a thirty year period was provided by the City of Pflugerville. Finally, the percentage of each project that is anticipated to be utilized in the next 10 years has been determined. This percentage effectively determines the portion of the project cost that can be paid through impact fees.

The percentage of each project attributable to future growth was determined by water and wastewater models developed from the master plans based on 5 to 10 year growth periods. The models were developed in 2013, thus the 10 year projections are for the year 2023. To calculate the percent of each project that can be attributable to new growth for the next 10 years, the 2023 flows were compared to the existing flows in context of the ultimate flows. These flow values came from the models prepared for the Wastewater Master Plan and Water Master Plan as adopted by the City.

TABLE 8: Water Project CIP

Project Year	Project Type	Project Name	Previous Costs	Cost Over Next 5 Years	Cost in 5 to 10 Years	Total Cost for Construction + Bond Interest	% Attributable to New Growth	Impact Fee Total
2013	Other	Sorento CCN Purchase		$250,000		$460,000	100%	$460,000
2013	Transmission	Kelly Lane Transmission Main Phase 1a	-	$1,163,000	-	$2,139,920	31%	$654,917
2014	Elevated Storage	Wilke and Heatherwilde Blvd Transmission Main	-	$1,507,000	-	$2,772,880	41%	$1,143,212
2014	Facility	Pfennig Ground Storage Tank and Yard Piping Upgrades	-	$788,000	-	$1,449,920	36%	$521,971
2014	Facility	WTP Membrane Upgrade	-	$4,175,600	-	$7,683,104	36%	$2,768,991
2014	Facility	Pfennig Pump Station Upgrades	-	$5,724,000	-	$10,532,160	36%	$3,795,790
2014	Transmission	Pfennig Lane Connection	-	$571,000	-	$1,050,640	77%	$813,772
2014	Transmission	Pfennig Lane Transmission Main Upgrade	-	$196,000	-	$360,640	86%	$308,568
2014	Distribution	Pecan Street Parkway Drive Interconnect	-	$318,000	-	$585,120	70%	$410,194
2014	Transmission	NTC MUD #5 Transfer: Pflugerville Parkway TM Connection	-	$180,600	-	$242,004	36%	$87,218
2014	Transmission	NTC MUD #5 Connection Pflugerville Parkway and Heatherwilde	-	$50,000	-	$67,000	36%	$24,147

*Bond interest rate of 4.5% with a 30-year period was used.

TABLE 8: Water Project CIP (Continued)

Project Year	Project Type	Project Name	Previous Costs	Cost Over Next 5 Years	Cost in 5 to 10 Years	Total Cost for Construction + Bond Interest	% Attributable to New Growth	Impact Fee Total
2014	Transmission	NTC MUD #5 Connection Pflugerville Parkway to Dansworth Dr.	-	$70,000	-	$93,800	36%	$33,806
2014	Transmission	NTC MUD #5 Heatherwilde TM from Kingston Lacy to New Meister	-	$369,200	-	$494,728	36%	$178,300
2014	Transmission	NTC MUD # 5 Heatherwilde TM from Heatherwilde to Great Basin	-	$232,200	-	$311,148	36%	$112,138
2014	Transmission	NTC MUD #5 New Meister to Timothy John Dr cul-de-sac	-	$63,000	-	$84,420	36%	$30,425
2014	Transmission	NTC MUD #5 Heatherwilde TM from Pflugerville Parkway to North Cascades	-	$119,300	-	$159,862	36%	$57,614
2015	Transmission	Pflugerville Parkway TM Capacity Improvements 888 ft-msl	-	$934,000	-	$1,718,560	55%	$946,343
2015	Transmission	Weiss Transmission from WTP to Hidden Lake Phase 1	-	$1,712,000	-	$3,150,080	93%	$2,926,000
2016	Facility	1.25 MG Elevated Storage Tank	-	$7,560,000	-	$13,910,400	36%	$5,013,308
2016	Distribution	PRV South of Pecan and Heatherwilde for 942 ft-msl Pressure Plane	-	$30,000	-	$55,200	100%	$55,200
2017	Distribution	PRV for Bohl's Place Neighborhood	-	$30,000	-	$55,200	96%	$52,849

*Bond interest rate of 4.5% with a 30-year period was used.

TABLE 8: Water Project CIP (Continued)

Project Year	Project Type	Project Name	Previous Costs	Cost Over Next 5 Years	Cost in 5 to 10 Years	Total Cost for Construction + Bond Interest	% Attributable to New Growth	Impact Fee Total
2019	Planning	Update Water CIP	-		$303,000	$557,520	36%	$200,930
2019	Transmission	Well Supply Transmission Main to 950 Heatherwilde Phase 1	-	-	$856,000	$1,575,040	61%	$960,700
2020	Transmission	Oxford Transmission Main Extension	-	-	$686,000	$1,262,240	47%	$598,153
2020	Transmission	SH-45 Interconnect	-	-	$848,000	$1,560,320	33%	$507,822
2020	Transmission	Well Supply Transmission Main to 950 Old Austin Pflugerville Road Ph 2	-	-	$527,000	$969,680	66%	$637,178
2022	Transmission	South Weiss Transmission Main	-	-	$4,941,000	$9,091,440	37%	$3,363,249
2022	Distribution	Obed /Stone Hill Pressure Plane Interconnection	-	-	$57,000	$104,880	0%	-
2022	Distribution	Wells Branch Loop	-	-	$475,000	$874,000	77%	$677,218
2022	Facility	River Intake Relocation	-	-	$1,887,000	$3,472,080	36%	$1,251,338
Previous	Supply	Raw Water Pipe Line	$11,159,563	-	-	$20,533,596	24%	$4,913,292.93
Previous	Supply	Reservoir	$13,398,037	-	-	$24,652,388	24%	$5,898,840
Previous	Ground Storage	Total System GS including Well 4,5,6,7, N&S SP, WTP GS and Pfennig	$1,386,904	-	-	$2,551,903	18%	$468,533
Previous	Treatment	Surface Water Plant	$17,730,924	-	-	$32,624,900	32%	$10,559,797
Water Projects Totals			**$43,675,428**	**$26,042,900**	**$10,580,000**	**$147,206,744**		**$50,431,812**

*Bond interest rate of 4.5% with a 30-year period was used.

Based on the analysis, it was determined that $50,431,812 in water related project costs are anticipated to be spent by the City in the next 10 years to support growth in the water service area.

E. WASTEWATER SYSTEM

As discussed for the water system, LAN also worked closely with the City to determine projects in the wastewater system that will support growth in the wastewater service area. The projects were broken up by the Central and the Cottonwood sewer sheds. Table 9 and Table 10 on the following pages present the projects that will serve the growth in the areas of Central and Cottonwood sewer sheds respectively.

These wastewater projects are broken into three basic categories: wastewater collections, treatment, and lift stations. The tables list the same information as discussed for the water system above. The table lists each project by name and provides the anticipated cost for each project over the first five years (2013-2018) and through the subsequent five years (2018-2023). These costs were derived by the City as part of their CIP and include engineering costs. The bond costs associated with financing the project have also been calculated and included. The interest rate of 4.5 percent over a thirty year period was provided by the City of Pflugerville. Finally the percentage of each project that is anticipated to be utilized in the next 10 years has been determined. This percentage effectively determines the portion of the project cost that can be paid through impact fees.

The percentage of each project attributable to future growth was determined on a project by project basis. Specific information was known about the wastewater projects and more definitive percentages were set in the same manner discussed in Section D Water System.

TABLE 9: Central Wastewater CIP

Project Year	Project Type	Project Name	Previous Costs	Cost Over Next 5 Years	Cost in 5 to 10 Years	Total Cost for Construction + Bond Interest	% Attributable to New Growth	Impact Fee Total
2014	Interceptor	Highland Park and Pfluger Lane Interconnector Phase 1	-	$460,000	-	$846,400	24%	$200,715.63
2014	Interceptor	Sorento/Carmel Forcemain	-	$1,134,000	-	$2,086,560	100%	$2,086,560
2014	Interceptor	Sorento Interceptor Phase 1	-	$1,647,000	-	$3,030,480	2%	$66,598
2014	Facility	Sorento/Carmel Lift Station	-	$2,571,000	-	$4,730,640	100%	$4,730,640
2016	Interceptor	Carmel Interceptor Phase 1	-	$2,079,000	-	$3,825,360	19%	$730,709
2016	Interceptor	Lakeside Interceptor Phase 1	-	$995,000	-	$1,830,800	7%	$131,192
2016	Interceptor	SH-45 Connector Interceptor Phase 1	-	$901,000	-	$1,657,840	14%	$232,176
2017	Facility	Design of Central WWTP Capacity Upgrades 6.9 MGD	-	$3,122,000	-	$5,744,480	100%	$5,744,480
2017	Study	Update Master Plan and CIP	-	$374,000	-	$688,160	28%	$191,156
2018	Interceptor	West SH-130 Interceptor Phase 1	-	$5,909,000	-	$10,872,560	44%	$4,744,261

*Bond interest rate of 4.5% with a 30-year period was used.

TABLE 9: Central Wastewater CIP (Continued)

Project Year	Project Type	Project Name	Previous Costs	Cost Over Next 5 Years	Cost in 5 to 10 Years	Total Cost for Construction + Bond Interest	% Attributable to New Growth	Impact Fee Total
2019	Interceptor	West SH-130 Interceptor Phase 2	-	-	$1,889,000	$3,475,760	47%	$1,638,732
2019	Interceptor	Highland Park and Pfluger Lane Interconnector Phase 2	-	-	$704,000	$1,295,360	25%	$328,287
2019	Interceptor	Highland Park and Pfluger Lane Interceptor Upsize	-	-	$422,000	$776,480	48%	$372,295
2019	Facility	Construction of Central WWTP Capacity Upgrades 6.9 MGD	-	-	$21,516,000	$39,589,440	24%	$9,567,821
2020	Interceptor	SH-45 Connector Interceptor Phase 2	-	-	$1,644,000	$3,024,960	15%	$445,619
2022	Interceptor	Lakeside Interceptor Phase 2	-	-	$599,000	$1,102,160	2%	$ 19,490
2022	Study	Update Master Plan and CIP	-	-	$423,000	$778,320	28%	$216,200
2023	Facility	Central WWTP Capacity Upgrade 8.3 MGD (New Carrousel® unit)	-	-	$3,564,000	$6,557,760	100%	$6,557,760
Previous	Interceptors	Southside, Gilleland, Weiss (1C & 1D)	$3,845,880	-	-	$7,076,419	28%	$2,008,204.65
Central Wastewater Projects Totals			**$3,845,880**	**$19,192,000**	**$30,761,000**	**$98,989,939**		**$40,012,897**

*Bond interest rate of 4.5% with a 30-year period was used.

TABLE 10: Cottonwood Wastewater CIP

Project Year	Project Type	Project Name	Previous Costs	Cost Over Next 5 Years	Cost in 5 to 10 Years	Total Cost for Construction + Bond Interest	% Attributable to New Growth	Impact Fee Total
2017	Interceptor	New Sweden/Cottonwood Interceptor Phase 1	-	$896,000	-	$1,648,640	2%	$37,735
2017	Facility	New Sweden Package WWTP 0.475 MGD	-	$3,680,000	-	$6,771,200	13%	$874,571
Cottonwood Wastewater Projects Totals				**$4,576,000**	**-**	**$8,419,840**		**$912,306**

*Bond interest rate of 4.5% with a 30-year period was used.

Based on the analysis, it was determined that a total of $40,925,202 in wastewater related project costs are anticipated to be spent by the City in the next 10 years to support growth in the wastewater service area. The Central sewer shed requires a total of $40,012,897 in wastewater costs and the Cottonwood sewer shed requires a total of $912,306 in wastewater costs anticipated.

F. CALCULATION OF MAXIMUM IMPACT FEES FOR WATER AND WASTEWATER SYSTEMS

The maximum impact fees for the water system and the wastewater system are calculated separately by first computing the total eligible costs of capital improvements and facility expansions for each system. The resulting cost must then be credited with the portion of utility system revenues anticipated to be generated by new service units and that will be used to pay for capital improvements, including debt service, identified in the capital improvements plans during the 10-year period of the capital improvements program.

In this study, the amount of credit is assumed to be 50 percent of the total eligible proposed facility costs. Finally, the net cost of the improvements after the 50 percent credit is applied is divided by the total increase in the number of service units expected for each facility over the 10-year life of the program. These calculations are presented below.

The water system impact fee was calculated as follows:

$$\text{Maximum Impact Fee} = \frac{\text{Eligible Proposed Facility Costs Less 50\% Credit}}{\text{No. of New Service Units added to Water Service Area}}$$

$$= \frac{\$50{,}431{,}812 \times 50\%}{5{,}947}$$

Maximum Water Impact Fee = ***$4,241***

The wastewater system impact fee for Central was calculated as follows:

$$\text{Maximum Impact Fee} = \frac{\text{Eligible Proposed Facility Costs Less 50\% Credit}}{\text{No. of New Service Units added to WW Service Area}}$$

$$= \frac{\$40{,}012{,}897 \times 50\%}{7{,}343}$$

Maximum Wastewater Impact Fee for Central= ***$2,725***

The wastewater system impact fee for Cottonwood is calculated as follows:

$$\text{Maximum Impact Fee} = \frac{\text{Eligible Proposed Facility Costs Less 50\% Credit}}{\text{No. of New Service Units added to WW Service Area}}$$

$$= \frac{\$912{,}306 \times 50\%}{129}$$

*Maximum Wastewater Impact Fee for Cottonwood= **$3,537***

The combined wastewater system impact fee was calculated as follows:

$$\text{Maximum Impact Fee} = \frac{\text{Eligible Proposed Facility Costs Less 50\% Credit}}{\text{No. of New Service Units added to WW Service Area}}$$

$$= \frac{\$40{,}925{,}202 \times 50\%}{7{,}472}$$

*Maximum Wastewater Impact Fee = **$2,739***

Table 11 summarizes the water and wastewater impact fees calculated.

TABLE 11: Maximum Impact Fee for Water and Wastewater

Basin	Water Impact Fee	Wastewater Impact Fee	Total
Central	$4,241	$2,725	$6,966
Cottonwood	n/a	$3,537	$3,537

G. COMPARISON OF IMPACT FEES

Impact fees generate revenue for funding or recouping costs of capital improvements necessitated by and attributable to new development. However, if a city's impact fees are not competitive with neighboring cities, then new development may be lost to those neighboring communities. Therefore, after calculating the maximum water and wastewater impact fees, it is important to compare values with neighboring cities. Table 12 presents water and wastewater impact fees for cities in the surrounding region.

TABLE 12: Comparison of Neighboring Cities Impact Fees

Neighboring City	Last Updated	Water Impact Fee	Wastewater Impact Fee	Total Fees
Georgetown	2010	$4,714	$1,694	$6,408
New Braunfels	2011	$2,311	$1,571	$3,882
Round Rock	2012	$4,446	$2,383	$6,829
Cedar Park	2007	$2,250	$2,000	$4,250
Seguin	2007	$1,875	$2,374	$4,249
Hutto	2013	$3,625	$2,128	$5,753
Leander	2012	$3,880	$1,615	$5,495
Pflugerville (Current)	2007	$2,403	$2,414	$4,817
Buda	2010	$2,187	$2,531	$4,718
Kyle	2008	$2,115	$2,216	$4,331
Average Fees		**$2,981**	**$2,093**	**$5,073**

Compared to the average impact fees from neighboring cities, the Pflugerville proposed water and wastewater total maximum allowable impact fee of $6,966 is 38 percent higher than average and ranks highest among neighboring cities. For water the maximum allowable impact fee of $4,241 is 42.3 percent higher than average and is third highest among neighboring cities. For wastewater the maximum allowable impact fee of $2,725 is 30.2 percent higher and ranks highest among neighboring cities.

The numbers shown in Table 12**,** show that the proposed maximum allowable water and wastewater impact fees described in Section F, are on average higher than neighboring communities but still sufficient and competitive with neighboring cities.

END

Appendix A:

Land Use Assumptions for the Implementation of Impact Fees Report
Written by Design Workshop

Development Projections in Support of Impact Fee Calculations

The land use development projections for the City of Pflugerville impact fee calculations used a combination of historic and current development data provided by the city to create a GIS analysis of parcels, infrastructure and future land use. This approach created a general understanding of near and long term growth distribution and density, allowing for an improved understanding of future water demand in the City and ETJ of Pflugerville, Texas.

Population and Unit Demand

The population calculations for the City of Pflugerville used the 2010 US Census as a base. The known development that has occurred within the City and ETJ limits since the 2010 Census was added to this base population to arrive at a 2013 Population of 65,898. This 2013 Population was then used as the starting point for the City of Pflugerville growth projections. Based on counts of residential unit development within the study area over a three year period, the following growth figures were assumed:

- Growth rate of 1% in the City and 6% in the ETJ
- Home vacancy rate of 3.8%.
- 2.96 persons per household

The results of this initial analysis were as follows

	2013	2017	2023
Pflugerville & ETJ Population	65,668	72,793	85,743
Growth from previous benchmark year		7,125	12,950
Projected Demand for Units from previous benchmark year		2,407	4,375
Percent Growth Rate from previous benchmark year	n/a	10.8%	17.8%
2023 Total Projected Housing Demand			6,782 units

Known Development Projects

Parcels currently planned for development were given first development priority. This included any parcels identified as residential inventory as well as City identified preliminary and approved subdivision plats. The City planning department reviewed this analysis to identify any specific parcels that were under platting discussions or development.

There were 18 subdivision developments identified as residential inventory for the next ten years. All have undergone preliminary platting efforts. Nine are currently partially developed. Though certain of these developments have shown little growth within recent years, their status as approved or

preliminarily approved subdivisions makes them candidates to absorb future growth more quickly and easily than land that has not been through the platting process.

Within these subdivisions, there currently exist 928 units of inventory, and 6,441 units planned for future development.

The City provided estimates of when these subdivisions might develop based upon demographics and current development trends. These were categorized by the city planning department as either potential 2017 development, 2023 development or far future development based upon the existing knowledge of the staff.

	SUBDIVISION	CURRENT COUNT (AUG. 2013)	PROJECTED UNITS (2017 TOTALS)	PROJECTED UNITS (2023 TOTALS)
DEVELOPING SUBDIVISIONS	Avalon	313	500	764
	Blackhawk	769	1,045	1,447
	Commons at Rowe Lane	345	527	791
	Falcon Pointe	1,053	1,429	FBO
	Highland Park	632	900	1,272
	Reserve at West Creek	332	526	FBO
	SHTC Apartments	370	520	FBO
	Spring Trails	205	360	FBO
	Villages of Hidden Lake	1,000	1,219	FBO
FUTURE SUBDIVISIONS	Carmel	0	228	570
	Carrington Court	0	135	FBO
	Pacana	0	340	FBO
	Penley Park	0	169	FBO
	Rowe Lane Condos	0	228	FBO
	Sorento	0	228	570
	Springbrook Apartments Ph 1	0	270	FBO
	Springbrook Apartments Ph 2	0	350	FBO
	Verona	0	228	FBO
	Totals (less previously built)	**0**	**4,183**	**2,258**

2017 and 2023 Development Projections

Excluding current supply, 4,183 units are projected to be developed within Pflugerville and the ETJ by 2018. An additional 2,258 units are projected to be developed by 2023.

The total additional units projected for development by 2023 is 6,441. This supply falls short of projected demand of 6,782 by 341 units.

2023 Density Analysis

To illustrate the changes in density expected by growth over the next 10 years, the existing density map was updated by placing new dwelling units into the subdivisions identified by the city as development to be underway or completed by 2023.

The additional 341 units projected to be in demand by 2023 were placed on the map based upon a weighted GIS analysis that prioritized parcels for development due to proximity to existing road and water infrastructure. The units were placed on currently undeveloped land identified as residential, agricultural, or open space on Pflugerville's future land use plan. Parcels were prioritized based on proximity to existing infrastructure.

Future Development Analysis

Much of this analysis was completed using a weighted Geographic Information Systems (GIS) analysis to identify where future growth was most likely to occur. This process is described in greater detail below. The purpose of this was to anticipate where growth is likely to develop based upon proximity to sewer, water and roadway infrastructure. These calculations allow for more refined projections of future water demand.

The Future Land Use Map from the City's Comprehensive Plan was used as an indicator of future development. Each parcel in the City was designated with the corresponding future land use from this map. When multiple future land uses existed on a parcel, the parcel was divided into those land uses for density calculation purposes.

Each future land use was assigned a density for the purposes of this water study. These densities are based upon averages from the Comprehensive Plan. When a neighborhood center, commercial center or regional center was present over a parcel, the densities were adjusted to reflect the type of development that is anticipated for center type development.

Future Land Use Density Chart

	Base Land use		Center	
Land Use	**% of Area**	**Density**	**% of Area**	**Density**
Mixed Use	20%	25 DU/AC	100%	Non-Residential
	80%	Non-Residential		
Med-High	20%	20 DU/AC	15%	20 DU/AC
	80%	10 DU/AC	75%	10 DU/AC
			10%	Non-Residential
Low-Med	10%	20 DU/AC	10%	10 DU/AC
	90%	4 DU/AC	80%	4 DU/AC
			10%	Non-Residential
Employment	10%	20 DU/AC	10%	20 DU/AC
	90%	Non-Residential	90%	Non-Residential
Agriculture (Service Area)	100%	.2 DU/AC	95%	.2 DU/AC
			5%	Non-Residential
Agriculture (Outside Service Area)	100%	.05 DU/AC	95%	.05 DU/AC
			5%	Non-Residential

Below is an example of how this information was applied to the GIS analysis. The result was each parcel having a potential development density.

Parcel	**Acres**	**Future Land Use**	**Density**	**Potential Parcel Density**
Example Parcel A	.5	Low-Med	5.6 du/ac	2.8 units
Example Parcel B	10	Low-Med Center	4.2 du/ac	42 units
Example Parcel C	2	Mixed Use	5 du/ac	10 units

All parcels were then ranked based upon proximity to existing water/wastewater lines and roads. The closer the parcel was to existing infrastructure, the lower a score the parcel received. The rankings of the road and waterline analysis were then weighted based upon importance to development. Waterlines ranked highest, followed by roads. The total was created by adding up the weighted water and road scores to create an overall parcel score. Parcels were then ranked in the order of lowest score

to highest score. The lower scores were closer to water/wastewater lines and roads. The lower the score, the lowest the potential cost of future development. The higher the score, the higher the cost of future development.

Parcel Development Potential Score Matrix

	Road			***Water***			
	road	road weight factor	***road score***	water	water weight factor	***water score***	***Total score***
adjacent to	1	x.33	***.33***	1	x.66	***.66***	***.99***
0-5 feet	2	x.33	***.66***	2	x.66	***1.32***	***1.98***
5-10 feet	3	x.33	***.99***	3	x.66	***1.98***	***2.97***
10-20 feet	4	x.33	***1.32***	4	x.66	***2.64***	***3.96***
20-50 feet	5	x.33	***1.65***	5	x.66	***3.3***	***4.95***
50-200 feet	6	x.33	***1.98***	6	x.66	***3.96***	***5.94***
200+ feet	7	x.33	***2.31***	7	x.66	***4.62***	***6.93***

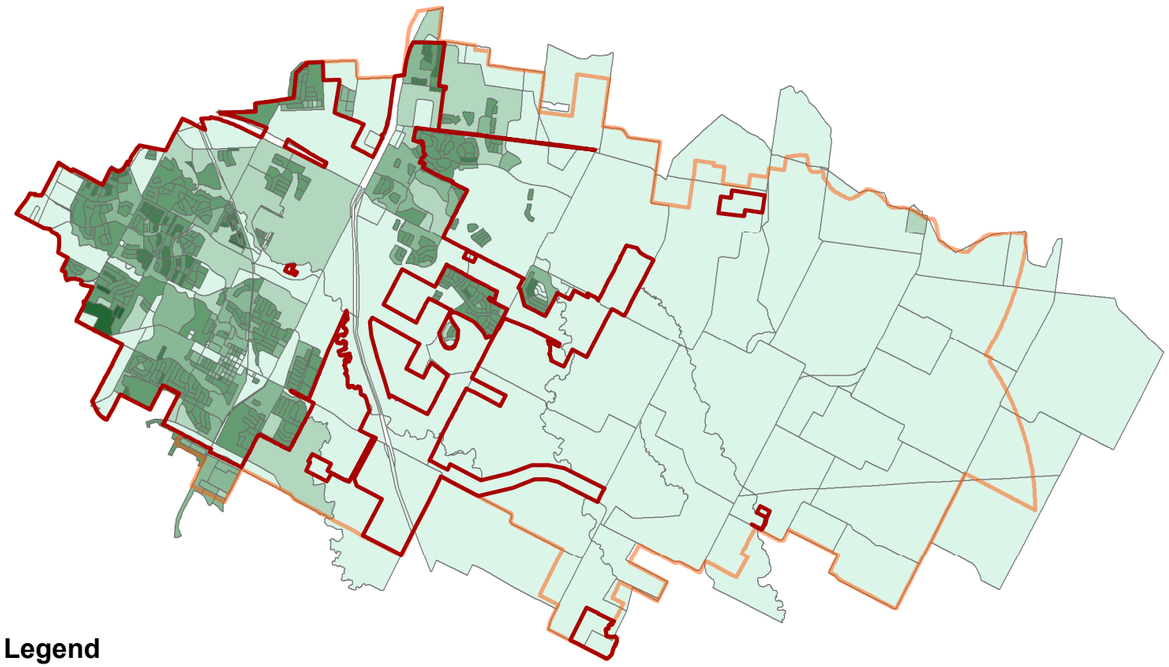
Future Development Projections

Based upon this ranking, parcels were selected to meet an additional 341 units that are projected for future development by 2023. The parcels were selected from parcels that are currently undeveloped, and identified on the City of Pflugerville's future land use map as Vacant, Agricultural, Residential or Open Space. From those parcels, the GIS analysis was applied and parcels with the lowest scores were selected and assumed built out at full potential density, per the potential density descriptions listed above. Additional parcels were selected as likely development until the total number of developed units reached 341 to satisfy the projected demand for the City of Pflugerville in 2023.

Population Growth within Service Areas

Based on the GIS analyses, the following chart provides the 10 year estimated population growth within the water and waste water service areas identified as part of the Pflugerville water master plan.

	Cottonwood Wastewater Service Area	Central Wastewater Service Area	Pflugerville Water Service Area
2013 Existing Units	-	16,001	15032
2023 Projected Units	129	22,282	20449
Growth	129	6,281	5417
Growth Percent	100.00%	39.00%	36.04%



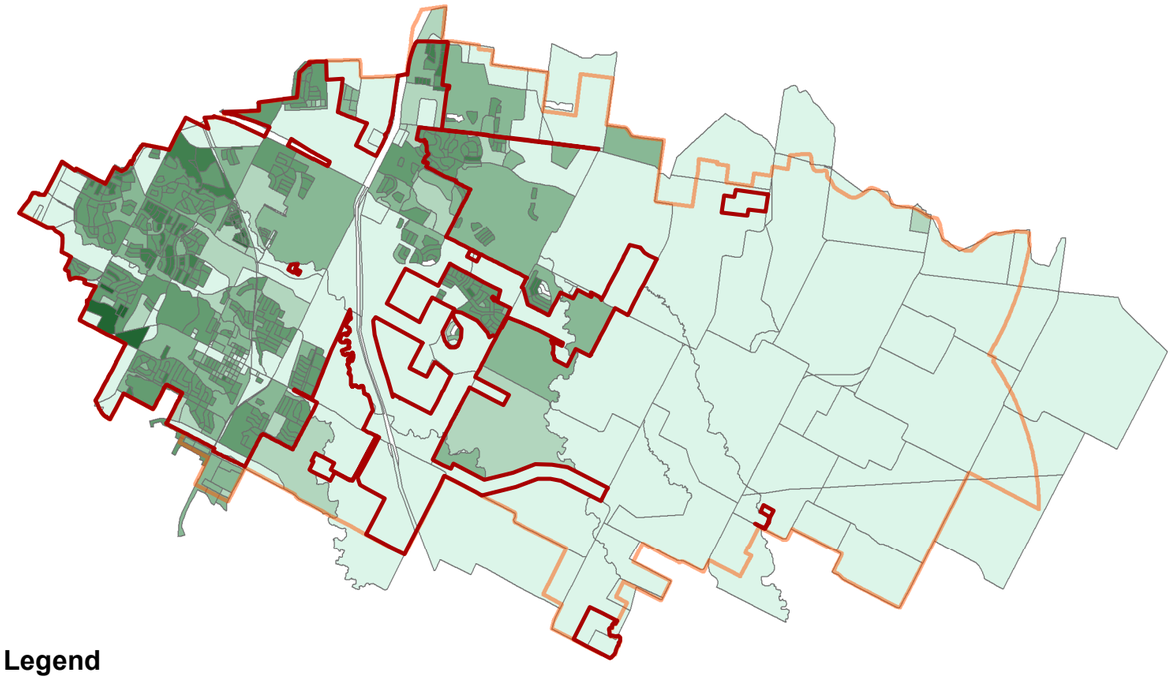
Legend

- Pflugerville City Limits
- Pflugerville ETJ

Pflugerville Density 2013

du_acre

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 5.00
- 5.01 - 7.00
- 7.01 - 10.00



Legend

- Pflugerville City Limits
- Pflugerville ETJ

Pflugerville Density 2013

du_acre

- 0.00 - 0.50
- 0.51 - 1.00
- 1.01 - 2.00
- 2.01 - 5.00
- 5.01 - 7.00
- 7.01 - 10.00

Pflugerville 10 year Density Projections

Exhibit 1

9.23.2013 DESIGNWORKSHOP

0 1.25 2.5 5 7.5 10 Miles

Legend

- Pflugerville Water Service Area
- Pflugerville City Limits
- Pflugerville ETJ

WaterServiceAreas

- Central Wastewater Treatment 10 Year
- Cottonwood Wastewater Treatment 10 yr

Pflugerville 10 Year Service Areas

Exhibit 2

9.23.2013 DESIGNWORKSHOP

0 0.5 1 2 3 4 Miles

Legend

- Pflugerville City Limits
- Pflugerville ETJ

Pflugerville 2023 Future Land Use

- Ag
- Employment
- Low to Med Density Res
- Med to High Density Res
- Mixed Use
- Park & Open Space
- Public

Pflugerville Future Land Use Map

Exhibit 3

9.23.2013 DESIGNWORKSHOP

0 0.5 1 2 3 4 Miles