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TBPE No-F882

San Antonio Water System

Water and Wastewater Facilities  
Land Use Assumptions Plan, Capital Improvements Plan,  
and Maximum Impact Fees Study

FINAL | June 2019



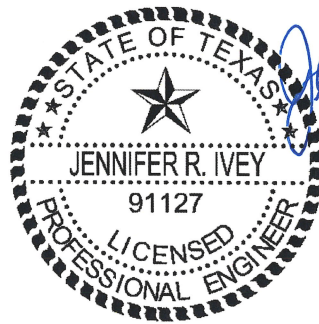




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*Jennifer R. Ivey*  
6/4/2019



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## Abbreviations

ADD	average day demand
ADF	average daily flow
AF	acre-foot
AFY	acre-feet per year
Carollo	Carollo Engineers, Inc.
CCN	Certificate of Convenience and Necessity
CIAC	Capital Improvements Advisory Committee
CIP	Capital Improvements Program
COSA	City of San Antonio
CRWA	Canyon Regional Water Authority
DOR	Drought of Record
EAA	Edwards Aquifer Authority
EDU	Equivalent dwelling unit. For SAWS, one (1) Water EDU is proposed as 290 gal/day and one (1) Wastewater EDU is proposed as 200 gal/day.
EST	elevated storage tank
ETJ	extraterritorial jurisdiction
GBRA	Guadalupe – Blanco River Authority
gpd	gallons per day
gpcd	gallons per capital per day
GST	ground storage tank
Impact Fee	A charge or assessment imposed upon new development in order to generate revenue for funding and recovering the costs of capital improvements or facility expansions required to serve that development.
I/I	Inflow and infiltration. For SAWS, I/I equals 600 gallons per acre.
LUAP	Land Use Assumptions Plan
Maximum Impact Fee	Maximum amount that can be charged by a political subdivision; calculated by subtracting statutory credits from the estimated capital costs to be included in rates that will be charged to the new EDUs over the study period from the calculated impact fee per EDU.
MDD	maximum day demand
MDPF	maximum day peaking factor
MG	million gallons
mgd	million gallons per day
MHD	maximum hour demand
MHPF	maximum hour peaking factor
PWWF	Peak wet weather flow. For SAWS, the PWWF is 650 gpd per EDU.

Rate Credit	A credit for the portion of ad valorem tax and utility service revenues generated by new EDUs during the program period that is used for the payment of improvements, including the payment of debt, that are included in the CIP. As an alternative to calculating this credit a political subdivision may award a credit equal to 50 percent of the total projected cost of implementing the CIP.
SAWS	San Antonio Water System
Service Area	The area within the corporate boundaries or extraterritorial jurisdiction are determined under Chapter 42 of the Texas Local Government Code (TLGC §42). The political subdivision to be served by the capital improvements or facilities expansions specified in the capital improvements plan, except roadway facilities and storm water, drainage, and flood control facilities. (TLGC §395)
Service Unit	A standardized measure of consumption, use, generation, or discharge attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standard and based on historical data and trend applicable to the political subdivision in which the individual unit of development is located during the previous 10 years. For this report, one service unit is equivalent to one EDU.
SSLGC	Schertz/Seguin Local Government Corporation. The SSGLC distributes water supplied from the Carrizo-Wilcox Aquifer to its customers, including SAWS.
TCEQ	Texas Commission on Environmental Quality
TLGC	Texas Local Government Code
WIP	2017 Water Infrastructure Plan (Freese and Nichols, Inc.)
WMP	2017 Water Management Plan
WRC	Water Recycling Center
WWTP	wastewater treatment plant

# Section 1 Executive Summary

## 1.1 Introduction

San Antonio Water System (SAWS) retained Carollo Engineers (Carollo), to conduct a Capital Improvements Plan and Maximum Impact Fees Study. SAWS provides water and wastewater service to large portions of Bexar County and has authority to provide service to parts of Medina and Atascosa counties. This report details the approach to update the existing Land Use Assumptions Plan (LUAP) and review the capital improvements plan (CIP) to calculate maximum allowable impact fees for the 10-year period 2019 through 2028.

The Texas Local Government Code Chapter 395 (TLGC §395) authorizes a political subdivision, such as SAWS, to impose impact fees on new development within its corporate boundaries and extraterritorial jurisdiction (ETJ). The most recent impact fee update for SAWS was in June 2014 after the integration of the former Bexar Metropolitan Water District into one combined system. As such, SAWS continues to update the impact fees as an integrated system.

Impact fees provide utilities with a mechanism for funding or recouping the cost associated with capital improvements or facility expansions of the water and/or wastewater systems necessitated and attributable to new development. For SAWS, impact fees are based on five components across the Water System and Wastewater System service areas. For Water service areas, Carollo calculated the impact fee for three components: Water Supply, Water Delivery—Flow, and Water Delivery—System Development. For Wastewater service areas, Carollo calculated the impact fee for two components: Wastewater Treatment and Wastewater Collection.

## 1.2 Land Use Assumptions Plan

Identification of potential changes to improve the impact fee equity requires an evaluation of existing service areas. The LUAP focuses on the existing and projected SAWS data for service area populations and equivalent dwelling units (EDU). The projections help determine where capacity will be required to serve new development and what portion of planned capital improvements will be eligible for inclusion in the subsequent impact fee calculation.

Projected land use assumptions are based on existing land use data and growth projections from the 2017 SAWS Water Management Plan (WMP), historical operations data, and hydraulic analysis of the water and wastewater systems. SAWS' service areas remain consistent; however, some land use acreage has changed. Table 1.1 summarizes the service area land use distribution.

Table 1.1 Service Area Land Use Distribution

Land Use	Water		Wastewater	
	Acres	Percentage	Acres	Percentage
Commercial	95,981	16%	92,930	17%
Industrial	5,796	1%	5,354	1%
Residential	168,995	29%	152,881	28%
Undevelopable	93,727	16%	90,687	17%
Vacant	221,648	38%	195,034	36%
<b>Total</b>	<b>586,147</b>		<b>536,886</b>	

Population data is collected and converted into an EDU which is the standard measure of demand expressed as water usage and wastewater discharge for an average household unit. For SAWS, one water EDU is equivalent to 290 gallons per day (gpd) and one wastewater EDU is equivalent to 200 gpd. Table 1.2 presents population and EDU projections for water and wastewater by service area.

Table 1.2 Water and Wastewater Service Area Population and EDU Projections

Component	Service Area	Population <sup>(1)</sup>		EDUs		
		2018	2028	2018	2028	Change
<b>Total Water Supply / Flow</b>	<b>All</b>	<b>1,851,348</b>	<b>2,190,178</b>	<b>774,623</b>	<b>916,393</b>	<b>141,770</b>
<b>System Development</b>	Low Elevation	1,167,848	1,355,336	488,639	567,086	78,447
	Middle Elevation	626,725	761,709	262,229	318,707	56,478
	High Elevation	56,774	73,134	23,755	30,600	6,845
<b>Total System Development</b>		<b>1,851,348</b>	<b>2,190,178</b>	<b>774,623</b>	<b>916,393</b>	<b>141,770</b>
<b>Treatment</b>	Medio Creek	128,601	167,581	50,039	65,207	15,168
	Leon Creek / Dos Rios	1,722,747	2,022,597	670,330	787,002	116,672
<b>Total Treatment</b>		<b>1,851,348</b>	<b>2,190,178</b>	<b>720,369</b>	<b>852,209</b>	<b>131,840</b>
<b>Collection</b>	Medio Creek	128,601	167,581	50,039	65,207	15,168
	Upper Medina	47,632	77,616	18,534	30,201	11,667
	Lower Medina	17,944	29,278	6,982	11,392	4,410
	Upper Collection	450,173	551,404	175,165	214,554	39,389
	Middle Collection	626,973	682,919	243,958	265,727	21,769
	Lower Collection	580,025	681,380	225,691	265,128	39,437
<b>Total Collection</b>		<b>1,851,348</b>	<b>2,190,178</b>	<b>720,369</b>	<b>852,209</b>	<b>131,840</b>

Note:

(1) Service area populations are as of December 31 of the year. Totals may not add due to rounding.

### 1.3 Capital Improvements Plan

SAWS owns and operates an infrastructure-intensive system comprised of water production facilities, pumping stations, storage facilities, water transmission and distribution pipelines, wastewater treatment facilities, lift stations and wastewater collection mains that are continuously improved and expanded. The schedule for future investment in the water and wastewater system, known as the CIP, was updated by SAWS staff with the assistance of other consultants for this study.

Projects included in the CIP can serve to rehabilitate and renew the system, enhance the system to improve efficiency and meet regulatory requirements, increase the system capacity, or achieve a combination of these objectives. However, only those projects required to provide capacity to serve new development during the 2019 through 2028 study period, as defined by the LUAP, can be included in the Maximum Impact Fee calculation. The following tables provide the value of water and wastewater facilities by infrastructure type that are eligible to be included in the calculation of the Maximum Impact Fees.

The Water Supply impact fee includes growth-related costs for existing water supplies and for new projects to be constructed. SAWS staff developed the Water Supply criteria and CIP. In Table 1.3, the total capital costs for Water Supply projects needed to serve 141,770 new water EDUs is approximately \$519.0 million.

Table 1.3 2019 – 2028 Eligible Water Supply CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
<b>All</b>	<b>\$1,135.6</b>	<b>\$120.5</b>	<b>\$32.4</b>	<b>\$1,130.0</b>	<b>\$366.1</b>	<b>\$0.0</b>	<b>\$2,265.6</b>	<b>\$519.0</b>

Note:

(1) Values may not add due to rounding.

The Water Delivery—Flow impact fee includes growth-related costs associated with projects for the distribution mains that are 12 inches to 20 inches in diameter. Based on discussions with SAWS staff, the capacity of the distribution mains is increased as needed to maintain 10 percent excess capacity. Costs of the unused portion of existing excess water distribution assets are eligible to be allocated to the Flow impact fee calculation.

In Table 1.4, the total capital costs for Flow projects needed to serve 141,770 new water EDUs is approximately \$182.2 million.

Table 1.4 2019 – 2028 Eligible Water Delivery Flow CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
<b>All</b>	<b>\$707.3</b>	<b>\$70.7</b>	<b>\$22.4</b>	<b>\$251.9</b>	<b>\$89.1</b>	<b>\$0.0</b>	<b>\$959.1</b>	<b>\$182.2</b>

Note:

(1) Values may not add due to rounding.

The Water Delivery—System Development impact fee includes growth-related costs for several infrastructure types which include well pumps, high service and booster pump stations, elevated and ground storage tanks, and transmission mains (24-inch and larger). With the exception of well pumps, each infrastructure type currently has three service areas for the System Development impact fee: High Elevation, Middle Elevation, and Low Elevation. To determine the eligible allocation of existing and future CIP to the System Development impact fee, the available capacities and growth-related demands must be determined for the five infrastructure types by service area. SAWS staff provided the capacities of the existing well pumps and the future well pumps in the CIP.

In Table 1.5, the total capital costs for System Development well pump projects needed to serve 141,770 new water EDUs is approximately \$24.5 million.

Table 1.5 2019 – 2028 Eligible Water Delivery Well Pumps CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
<b>All</b>	<b>\$123.5</b>	<b>\$12.3</b>	<b>\$3.9</b>	<b>\$20.9</b>	<b>\$8.3</b>	<b>\$0.0</b>	<b>\$144.3</b>	<b>\$24.5</b>

Note:

(1) Values may not add due to rounding.

In Table 1.6, the total capital costs for System Development pump station projects needed to serve 141,770 new water EDUs across the three service areas is approximately \$35.4 million.

Table 1.6 2019 – 2028 Eligible Water Delivery High Service and Booster Pump Stations CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
High Elevation	\$8.8	\$0.9	\$0.3	\$4.5	\$0.7	\$0.0	\$13.3	\$1.8
Middle Elevation	63.8	6.9	2.2	20.8	5.2	0.0	84.5	14.4
Low Elevation	77.2	9.5	3.0	6.8	6.8	0.0	84.0	19.3
<b>Total</b>	<b>\$149.8</b>	<b>\$17.2</b>	<b>\$5.5</b>	<b>\$32.0</b>	<b>\$12.7</b>	<b>\$0.0</b>	<b>\$181.9</b>	<b>\$35.4</b>

Note:

(1) Values may not add due to rounding.

In Table 1.7, the total capital costs for System Development elevated storage projects needed to serve 141,770 new water EDUs across the three service areas is approximately \$33.6 million.

Table 1.7 2019 – 2028 Eligible Water Delivery Elevated Storage Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
High Elevation	\$4.1	\$0.0	\$0.0	\$8.5	\$2.0	\$0.0	\$12.6	\$2.0
Middle Elevation	31.3	2.9	0.9	14.6	8.1	0.0	45.9	11.9
Low Elevation	37.1	1.8	0.6	18.3	17.2	0.0	55.4	19.6
<b>Total</b>	<b>\$72.5</b>	<b>\$4.8</b>	<b>\$1.5</b>	<b>\$41.4</b>	<b>\$27.3</b>	<b>\$0.0</b>	<b>\$113.9</b>	<b>\$33.6</b>

Note:

(1) Values may not add due to rounding.

In Table 1.8, the total capital costs for System Development ground storage projects needed to serve 141,770 new water EDUs across the three service areas is approximately \$2.2 million.

Table 1.8 2019 – 2028 Eligible Water Delivery Ground Storage CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
High Elevation	\$3.9	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$3.9	\$0.0
Middle Elevation	24.7	0.2	0.0	21.5	0.1	0.0	46.2	0.3
Low Elevation	36.8	1.3	0.4	3.3	0.1	0.0	40.1	1.8
<b>Total</b>	<b>\$65.5</b>	<b>\$1.5</b>	<b>\$0.5</b>	<b>\$24.7</b>	<b>\$0.3</b>	<b>\$0.0</b>	<b>\$90.2</b>	<b>\$2.2</b>

Note:

(1) Values may not add due to rounding.

In Table 1.9, the total capital costs for System Development transmission mains projects needed to serve 141,770 new water EDUs across the three service areas is approximately \$44.3 million.

Table 1.9 2019 – 2028 Eligible Water Delivery Transmission Mains CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
High Elevation	\$3.8	\$0.4	\$0.1	\$19.0	\$2.9	\$0.0	\$22.8	\$3.4
Middle Elevation	27.3	3.0	0.9	79.4	20.1	0.0	106.8	24.0
Low Elevation	33.1	4.1	1.3	11.6	11.6	0.0	44.7	16.9
<b>Total</b>	<b>\$64.2</b>	<b>\$7.4</b>	<b>\$2.3</b>	<b>\$110.0</b>	<b>\$34.6</b>	<b>\$0.0</b>	<b>\$174.2</b>	<b>\$44.3</b>

Note:

(1) Values may not add due to rounding.

In Table 1.10 the total eligible Water Delivery—System Development CIP costs by service area is approximately \$140.0 million.

Table 1.10 2019 – 2028 Eligible Water Delivery – System Development CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
High Elevation	\$24.5	\$1.8	\$0.6	\$33.0	\$6.0	\$0.0	\$57.4	\$8.5
Middle Elevation	188.9	17.9	5.7	144.7	36.8	0.0	333.6	60.3
Low Elevation	262.1	23.5	7.4	51.3	40.3	0.0	313.5	71.2
<b>Total</b>	<b>\$475.5</b>	<b>\$43.2</b>	<b>\$13.7</b>	<b>\$229.0</b>	<b>\$83.1</b>	<b>\$0.0</b>	<b>\$704.5</b>	<b>\$140.0</b>

Note:

(1) Values may not add due to rounding.

SAWS staff analyzed the planned treatment and collection system projects to determine the eligible future CIP projects. The Wastewater Treatment Impact fee includes growth-related costs associated with existing treatment infrastructure and the costs for new projects. For the two service areas, the Medio Creek Water Recycling Center (WRC) and the combined Leon Creek/Dos Rios WRCs, the portion of capacity that is required to serve new growth during the study period was estimated by using the average daily flows.

In Table 1.11, the total capital costs for Treatment projects needed to serve 131,840 new wastewater EDUs across the two service areas is approximately \$102.0 million.

Table 1.11 2019 – 2028 Eligible Wastewater Treatment CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
Medio Creek	\$63.9	\$12.1	\$3.7	\$21.1	\$4.0	\$0.0	\$85.0	\$19.8
Leon Creek / Dos Rios	403.5	55.1	16.8	132.2	10.3	0.0	535.6	82.2
<b>Total</b>	<b>\$467.4</b>	<b>\$67.2</b>	<b>\$20.6</b>	<b>\$153.2</b>	<b>\$14.3</b>	<b>\$0.0</b>	<b>\$620.6</b>	<b>\$102.0</b>

Notes:

- (1) Some values may not add due to rounding.
- (2) Some of these CIP projects do not add capacity, but increase the value of existing available capacity. They are listed in Table B-15 of the Appendices.

The Wastewater Collection Impact Fee includes growth-related costs associated with the interceptors and wastewater collection mains that are 10 inches or greater in diameter. SAWS staff estimated the portion of each project that is required to serve new growth during the study period.

In Table 1.12, the total capital costs for Collection projects needed to serve 131,840 new wastewater EDUs across the six collection system service areas is approximately \$235.2 million.

Table 1.12 2019 – 2028 Eligible Wastewater Collection CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
Medio Creek	\$31.5	\$5.7	\$1.8	\$19.1	\$6.2	\$0.0	\$50.6	\$13.7
Upper Medina	27.2	4.4	1.3	16.0	5.3	0.0	43.2	11.0
Lower Medina	40.4	6.1	1.9	4.1	1.1	0.0	44.5	9.0
Upper Collection	87.6	14.9	4.5	71.1	13.4	0.0	158.8	32.8
Middle Collection	202.4	23.1	7.1	232.5	41.5	0.0	434.9	71.6
Lower Collection	318.1	38.0	11.6	402.7	47.4	0.0	720.9	97.0
<b>Total</b>	<b>\$707.2</b>	<b>\$92.1</b>	<b>\$28.2</b>	<b>\$745.5</b>	<b>\$114.9</b>	<b>\$0.0</b>	<b>\$1,452.7</b>	<b>\$235.2</b>

Note:

- (1) Values may not add due to rounding.



In Table 1.13 the total Water System and Wastewater System CIP costs by impact fee component is approximately \$1.18 billion for the study period.

Table 1.13 Summary of 2019 – 2028 Eligible Water and Wastewater CIP Costs

Component	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
<b>Water</b>								
Supply	\$1,135.6	\$120.5	\$32.4	\$1,130.0	\$366.1	\$0.0	\$2,265.6	\$519.0
Delivery – Flow	707.3	70.7	22.4	251.9	89.1	0.0	959.1	182.2
Delivery – SD	475.5	43.2	13.7	229.0	83.1	0.0	704.5	140.0
<b>Water Total</b>	<b>\$2,318.4</b>	<b>\$234.4</b>	<b>\$68.6</b>	<b>\$1,610.9</b>	<b>\$538.3</b>	<b>\$0.0</b>	<b>\$3,929.2</b>	<b>\$841.3</b>
<b>Wastewater</b>								
Treatment	\$467.4	\$67.2	\$20.6	\$153.2	\$14.3	\$0.0	\$620.6	\$102.0
Collection	707.2	92.1	28.2	745.5	114.9	0.0	1,452.7	235.2
<b>Wastewater Total</b>	<b>\$1,174.6</b>	<b>\$159.3</b>	<b>\$48.7</b>	<b>\$898.8</b>	<b>\$129.2</b>	<b>\$0.0</b>	<b>\$2,073.3</b>	<b>\$337.2</b>
<b>Water &amp; Wastewater Total</b>								
	<b>\$3,492.9</b>	<b>\$393.7</b>	<b>\$117.3</b>	<b>\$2,509.6</b>	<b>\$667.5</b>	<b>\$0.0</b>	<b>\$6,002.6</b>	<b>\$1,178.5</b>

Note:

(1) Values may not add due to rounding.

## 1.4 Impact Fees Calculation

The impact fee per service unit (EDU) by service area is calculated by first determining the eligible capital costs for growth-related CIP. Then, those eligible capital costs per service area are divided by the projected number of added EDUs to be served by each service area, respectively.

Table 1.14 presents the calculated impact fees for water and wastewater service. The EDUs used in this calculation represent the incremental EDUs, which may include EDUs from another service area that will be served by the infrastructure in the respective service area. They do not represent the incremental EDUs that will be located in the service area, which are shown in Table 1.2.

Table 1.14 Water and Wastewater Calculated Impact Fees

Impact Fee Component	Service Area	Eligible CIP Value	EDU	Calculated Impact Fee per EDU
Supply	All	\$519,048,777	141,770	<b>\$3,661</b>
Flow	All	182,232,572	141,770	<b>1,285</b>
System Development	High Elevation	8,467,874	6,845	<b>1,237</b>
	Middle Elevation	60,338,483	56,478	<b>1,068</b>
	Low Elevation	71,192,942	78,447	<b>908</b>
Treatment	Medio Creek	19,820,413	15,168	<b>1,307</b>
	Leon Creek / Dos Rios	82,224,287	116,672	<b>705</b>
Collection	Medio Creek	13,693,357	15,168	<b>903</b>
	Upper Medina <sup>(1)</sup>	11,011,473	11,667	<b>1,504</b>
	Lower Medina	9,011,045	16,077	<b>560</b>
	Upper Collection <sup>(2)</sup>	32,831,501	39,389	<b>2,969</b>
	Middle Collection <sup>(3)</sup>	71,615,338	61,158	<b>2,136</b>
	Lower Collection	97,029,230	100,595	<b>965</b>

Notes:

- (1) Maximum Impact Fee per EDU includes Lower Medina fee.
- (2) Maximum Impact Fee per EDU includes Middle Collection fee.
- (3) Maximum Impact Fee per EDU includes Lower Collection fee.

### 1.4.1 Credit Calculation

Chapter 395 of the TLGC requires utilities to calculate a credit for growth-related CIP, to be subtracted from the calculated impact fee. The credit is based on the amount of projected future rate revenues or taxes expected to be generated by the new development and used to pay for capital improvements identified in the CIP.<sup>1</sup> This credit provides an adjustment to benefit fee payers who will pay for CIP in both the impact fee and their future rates or taxes. Although SAWS is a municipally-owned utility, it is managed separately and independently from the City of San Antonio, including, the City's tax revenue and budget. SAWS relies on the revenue it generates from its customers to construct, manage, and operate its water and wastewater systems. Therefore, no tax revenue is used to fund the growth-related CIP. Utilities can calculate this credit and apply it to the calculated impact fee or, alternatively, can forgo the credit calculation by opting to use the statutory credit equal to 50 percent of the calculated impact fee. SAWS opted to calculate the credit.

Credits for the value of existing and future debt are allocated among the impact fees and service areas based on the proportion of eligible existing and future capacity value. SAWS plans to fund most of its growth-related CIP with cash from impact fee revenues. However, it plans to fund approximately 85 percent of the Water Supply CIP and 60 percent of all other future CIP with debt.

<sup>1</sup> For SAWS, the credit is based on the cost of growth-related CIP projected to be in future rates of the projected new development as they do not receive tax revenue from the City of San Antonio.

### 1.4.2. Maximum Impact Fees per EDU

The Maximum Impact Fees per EDU include both the existing value of infrastructure with capacity available to serve new development projected for the study period, 2019 through 2028, as well as the value of new water supply, water delivery, and wastewater capacity available to serve new development during the study period. Calculated impact fees, rate credits, and Maximum Impact Fees by service area are presented in Table 1.15.

Table 1.15 Maximum Water and Wastewater Impact Fees per EDU

Impact Fee Component	Service Area	Calculated Impact Fee per EDU	Calculated Rate Credit per EDU	Maximum Impact Fee per EDU
Water Supply	All	\$3,661	\$339	<b>\$3,322</b>
Flow	All	1,285	97	<b>1,188</b>
System Development	High Elevation	1,237	34	<b>1,203</b>
	Middle Elevation	1,068	54	<b>1,014</b>
	Low Elevation	908	53	<b>855</b>
Treatment	Medio Creek	1,307	85	<b>1,222</b>
	Leon Creek / Dos Rios	705	54	<b>651</b>
Collection	Medio Creek	903	42	<b>861</b>
	Upper Medina	1,504	82	<b>1,422</b>
	Lower Medina	560	40	<b>520</b>
	Upper Collection	2,969	169	<b>2,800</b>
	Middle Collection	2,136	123	<b>2,013</b>
	Lower Collection	965	63	<b>902</b>

Table 1.16 compares the Maximum Impact Fee per EDU to the current impact fee per EDU.

Table 1.16 Comparison of Maximum Impact Fees per EDU and Existing Fees per EDU

Impact Fee Component	Service Area	Recommended Impact Fee per EDU	Current Impact Fee per EDU	Change	% Change
Water Supply	All	\$3,322	\$2,796	\$526	19%
Flow	All	1,188	1,182	6	1%
System Development	High	1,203	883	320	36%
	Middle	1,014	799	215	27%
	Low	855	619	236	38%
Treatment	Medio Creek	1,222	1,429	(207)	(14%)
	Leon Creek / Dos Rios	651	786	(135)	(17%)
Collection	Medio Creek	861	838	23	3%
	Upper Medina	1,422	1,565	(143)	(9%)
	Lower Medina	520	475	45	9%
	Upper Collection	2,800	2,520	280	11%
	Middle Collection	2,013	1,469	544	37%
	Lower Collection	902	719	183	25%

### 1.4.3 Recommended Impact Fees per EDU

The Capital Improvements Advisory Committee (CIAC) recommends that SAWS adopts the calculated maximum impact fees for Water Delivery Service Development, Water Delivery Flow, Wastewater Treatment, and Wastewater Collection. However, the CIAC recommends adopting a reduced Water Supply Impact Fee of \$2,706 per EDU, which is a weighted average of the maximum calculated Water Supply Impact Fee of \$3,322 and the expected future calculated Water Supply Impact Fee of \$2,637, when the Vista Ridge Project will be in operation and be treated as equity rather than CIP. The CIAC’s recommended impact fees by service area are presented in Table 1.17.

Table 1.17 Comparison of Recommended and Existing Impact Fees per EDU

Impact Fee Component	Service Area	Recommended Impact Fee per EDU	Current Impact Fee per EDU	Change	% Change
Water Supply	All	\$2,706	\$2,796	(\$90)	(3%)
Flow	All	1,188	1,182	6	1%
System Development	High	1,203	883	320	36%
	Middle	1,014	799	215	27%
	Low	855	619	236	38%
Treatment	Medio Creek	1,222	1,429	(207)	(14%)
	Leon Creek / Dos Rios	651	786	(135)	(17%)
Collection	Medio Creek	861	838	23	3%
	Upper Medina	1,422	1,565	(143)	(9%)
	Lower Medina	520	475	45	9%
	Upper Collection	2,800	2,520	280	11%
	Middle Collection	2,013	1,469	544	37%
	Lower Collection	902	719	183	25%

## Section 2 Land Use Assumptions Plan

### 2.1 Introduction

SAWS provides water and wastewater service to large portions of Bexar County and has authority to provide service to parts of two adjacent counties. SAWS retained Carollo to review and update the existing LUAP to determine what portions require updates for the 10-year period, 2019 through 2028 in order to assess its impact fees. Impact fees provide utilities with a mechanism for funding or recouping costs associated with capital improvements or facility expansions of water and wastewater systems necessitated and attributable to new development.

From Chapter 395 of the Texas Local Government Code (TLGC §395), utilities adopt a LUAP and CIP before assessing or collecting impact fees to fund capital improvements required to serve new development. The LUAP incorporates the best information available to project future land use and demand for service areas within which a municipality intends to supply utility services.

Identification of potential changes to improve the impact fee equity requires an evaluation of existing service areas. SAWS has a total of five impact fee components. For the Water System, the components evaluated are Water Supply, System Development, and Flow. For the Wastewater System, the components are Wastewater Treatment and Collection. Because land use assumptions are based on a ten-year period, these assumptions may be general and do not require detailed projections for specific tracts of land.

This section summarizes the projected growth in number of EDU for each component by service area for the impact fee study period 2019 through 2028. An EDU is a standardized measure of demand for an average single family household unit. These projections help determine where capacity will be required to serve new development and what portion of planned CIP will be eligible for inclusion in subsequent impact fee calculations.

### 2.2 Methodology

The land use assumption focuses on the existing and projected SAWS data for service area populations and EDUs. Projected land use assumptions are based on existing land use and parcel data from the most recent, census historical operations data, and hydraulic analysis of the water and wastewater systems. The following sections describe the methodologies to evaluate land use, population, and EDUs.

#### 2.2.1 Existing Land Use

SAWS service areas remain consistent; however, some land use acreage has changed. The service area land use distribution is provided in Table 2.1.

Table 2.1 Existing Service Area Land Use Distribution

Land Use	Water		Wastewater	
	Acres	Percentage	Acres	Percentage
Commercial	95,981	16%	92,930	17%
Industrial	5,796	1%	5,354	1%
Residential	168,995	29%	152,881	28%
Undevelopable	93,727	16%	195,034	17%
Vacant	221,648	38%	195,034	36%
<b>Total</b>	<b>586,147</b>		<b>536,886</b>	

The land use includes undevelopable land such as parks, lakes, cemeteries, roads, landfills, easements, and floodplains. Land that is identified as vacant is the largest usage share and does not fall into other categories. Vacant land could be developed into any of the other categories.

### 2.2.2 Population Projections

The SAWS process for projecting population coordinates information from state and local agencies with data from private sector master plans. The water system population projections for these land use assumptions are based upon the 2017 WMP and the most recent census. The wastewater population data is adjusted based on the hydraulic model. The modeling data inputs include existing land uses, household sizes and birthrates, employment numbers and types, future roads and developable land. The model projects future population and households based on common transportation and land use relationships determined by the inputs.

Figure 2.1 and Table 3.2 summarize the existing and projected population change for the Water service areas.

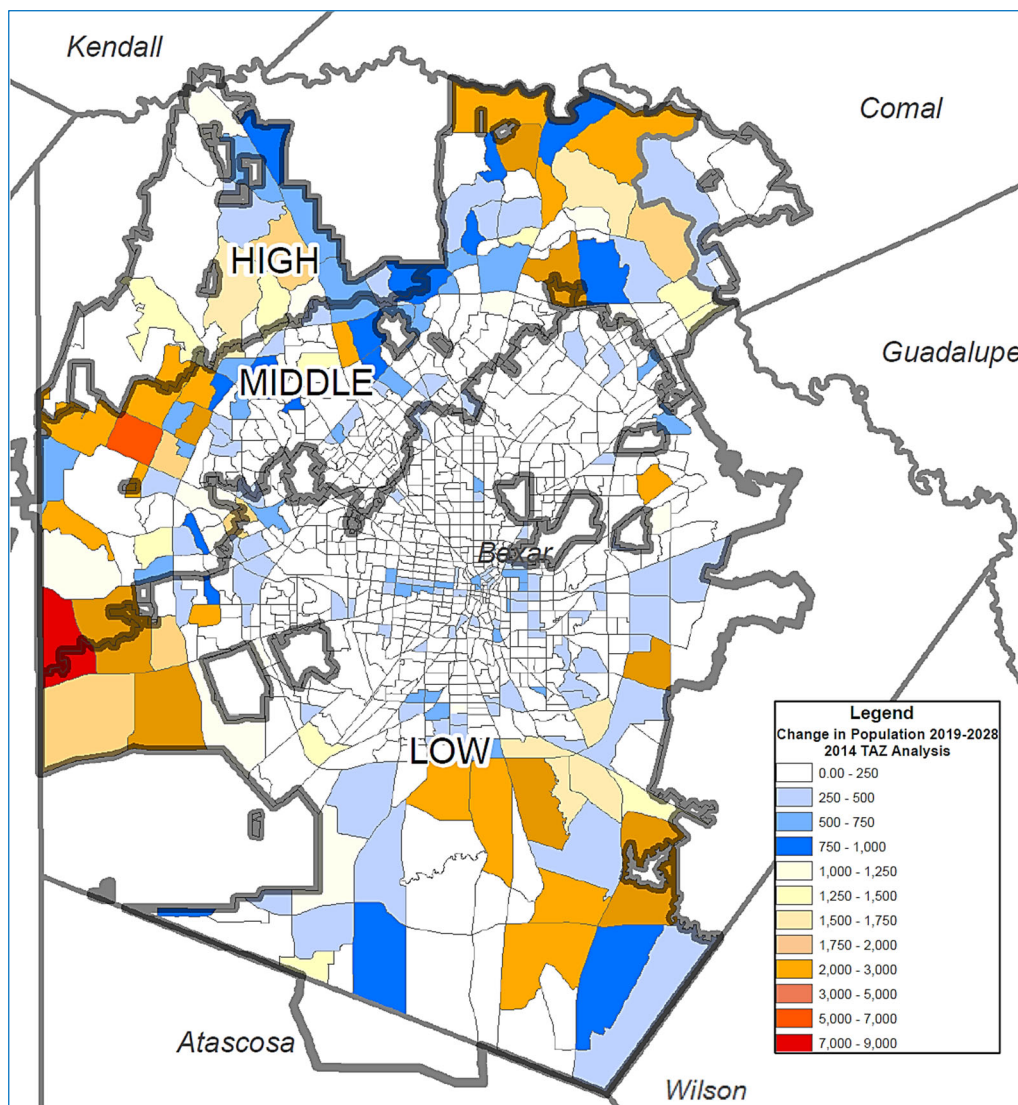


Figure 2.1 Water Service Area Population Change for 2019 through 2028

Table 2.2 Water Service Area Population Years 2018 and 2028

Service Area	Year 2018		Year 2028	
	Population <sup>(1)</sup>	Percentage	Population <sup>(1)</sup>	Percentage
Low Elevation	1,167,848	63%	1,355,336	62%
Middle Elevation	626,725	34%	761,709	35%
High Elevation	56,774	3%	73,134	3%
<b>Total</b>	<b>1,851,348</b>		<b>2,190,178</b>	

Notes:

(1) Service area populations are as of December 31 of the year. Totals may not add due to rounding.

Figure 2.2 and summarize the existing and projected population change for the Wastewater service areas.

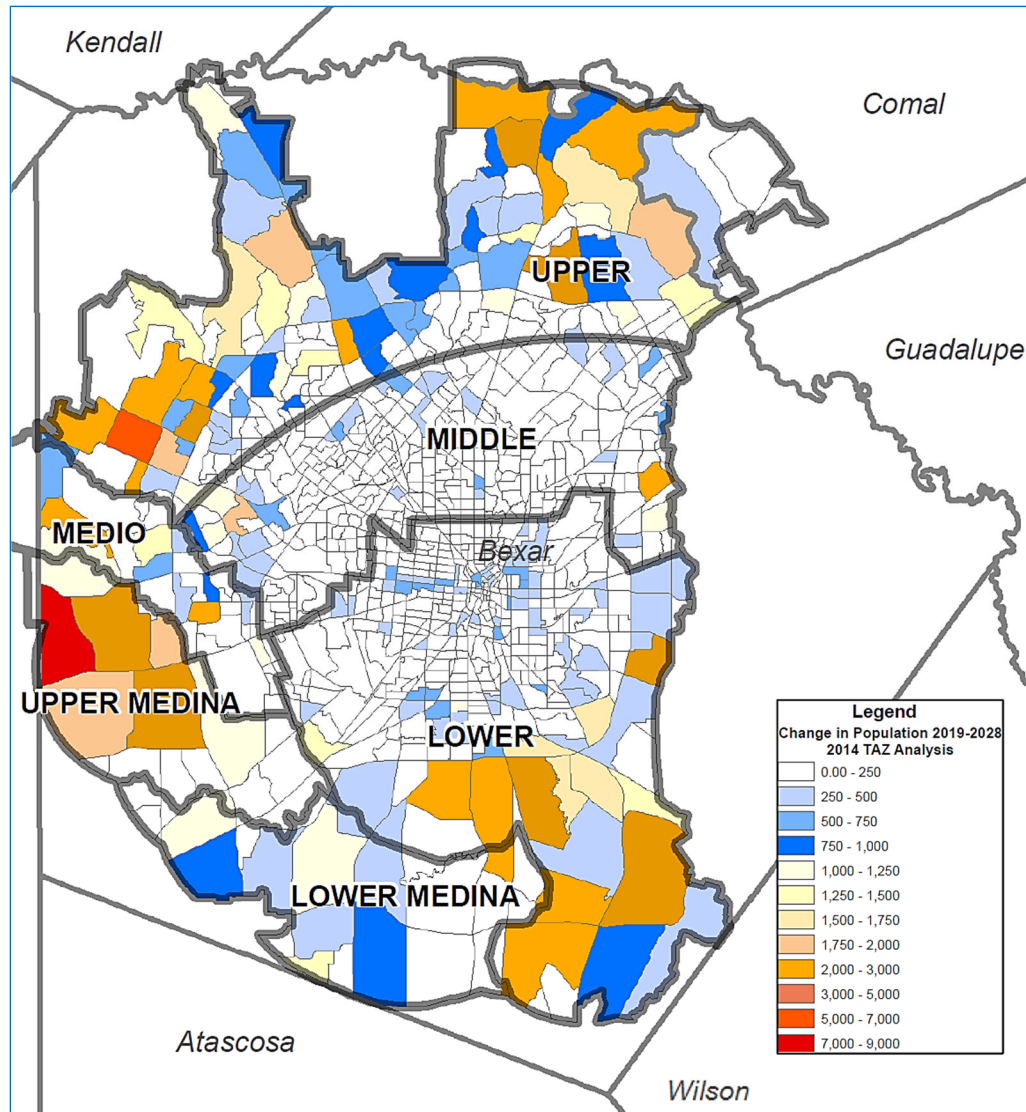


Figure 2.2 Wastewater Service Area Population Change for 2019 through 2028

Table 2.3 Wastewater Service Area Population Years 2018 and 2028

Service Area	Year 2018		Year 2028	
	Population <sup>(1)</sup>	Percentage	Population <sup>(1)</sup>	Percentage
Medio Creek	128,601	7%	167,581	8%
Leon Creek/Dos Rios				
Upper Medina	47,632	3%	77,616	4%
Lower Medina	17,944	1%	29,278	1%
Upper Collection	450,173	24%	551,404	25%
Middle Collection	626,973	34%	682,919	31%
Lower Collection	580,025	31%	681,380	31%
<b>Total</b>	<b>1,851,348</b>		<b>2,190,178</b>	

Note:

(1) Service area populations are as of December 31 of the year. Totals may not add due to rounding.

## 2.3 EDU Definition

### 2.3.1 Water EDU Calculations and Factors

Demand is projected by converting population to EDUs. For the LUAP, an EDU is the common measure since it is the standardized expression of water demand for an average household unit. A single family residence using a 5/8-inch meter has one (1) EDU demand on the water system. Commercial and industrial users have larger meters, higher demand, and higher numbers of EDUs. For the water system, the calculation to determine one (1) EDU is the annual usage in million gallons (MG) divided by the product of total annual EDUs for all days in the year.

This EDU calculation is illustrated by the following formula:

$$1 \text{ EDU} = (\text{Total Annual Flow}) \div (\text{Total Annual EDUs} \times 365 \text{ days})$$

For example, for the water system, the 2017 EDU calculation yields:

$$1 \text{ EDU} = (78,443 \text{ MG}) \div (760,081 \text{ EDUs} \times 365 \text{ days}) = 283 \text{ gpd}$$

However, for this study, one (1) water EDU is proposed to equal 290 gpd. This proposed EDU of 290 gpd is based on the average usage per EDU for the past 5-year period from 2013 through 2017. The SAWS water system experiences a variability of EDU growth per year, but the 5-year period best encompasses the decreasing demand trend that started in 2008. Over the past decade, there was a peak in usage in 2011, but the overall trend is decreasing due to conservation efforts.

Figure 2.3 illustrates the change in actual EDUs and compares it to the EDU projections from the previous LUAPs completed in 2006, 2011, and 2014.



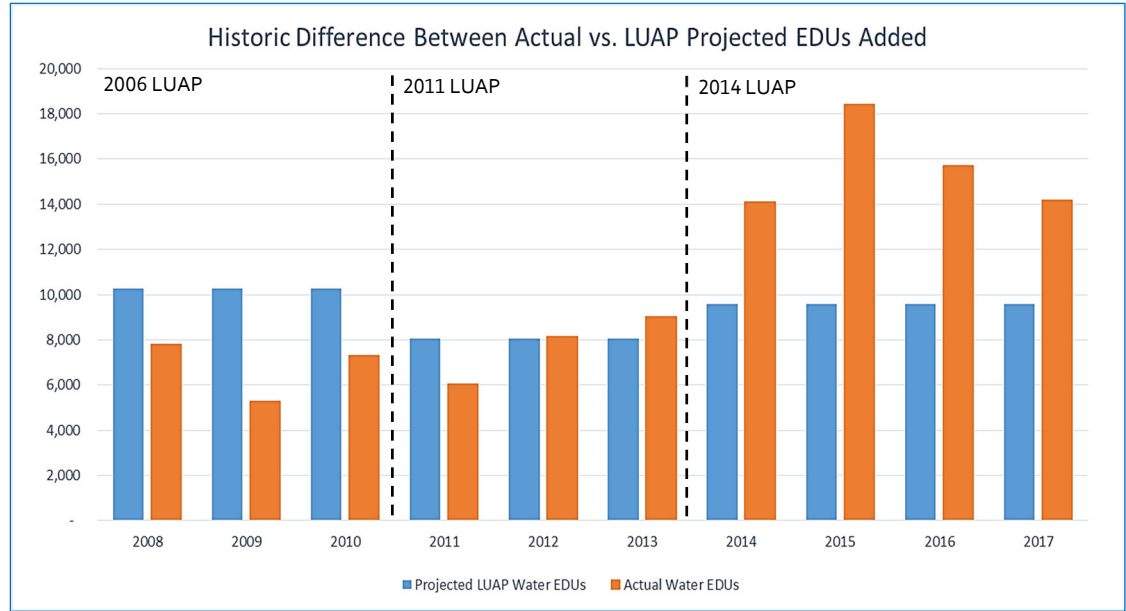


Figure 2.3 Actual vs. Projected EDUs Added from 2008 through 2017

For projections within the 2006 and 2011 LUAPs, the average EDU growth was a static increase of approximately 10,300 and 8,000 EDUs per year, respectively. However, for the 2014 LUAP, a more dynamic approach was implemented in the form of a population to EDU ratio. The population to EDU ratio is useful to represent population as demand, currently and in the future. The 2014 LUAP applied a 2.40 population to EDU ratio to project the number of water EDUs and 2.39 to project wastewater EDUs. EDUs were adjusted to remove customers of the San Antonio River Authority and Leon Springs utilities, as well as those customers with septic tanks.

The following formula is used to calculate the Population to EDU ratio:

$$\text{Population to EDU Ratio} = \left( \frac{\text{Actual Service Area Population}}{\text{Five Year Average}} \right) \div \left( \frac{\text{Actual EDUs}}{\text{Five Year Average}} \right)$$

Similarly for this LUAP, future EDU projections are calculated with the population to EDU ratio based on the preceding 5-year period between 2013 and 2017. However, the ratio is calculated separately for the water and wastewater systems, and the EDUs are calculated using the 2017 WMP data. For the 10-year period beyond 2018, the population to EDU ratio is projected to be 2.39 for the water system and 2.57 for the wastewater system as illustrated by the following calculations:

$$\text{Water Population to EDU Ratio} = (1,745,801 \text{ customers}) \div (729,144 \text{ EDUs}) = 2.39$$

$$\text{Wastewater Population to EDU Ratio} = (1,745,801 \text{ customers}) \div (679,740 \text{ EDUs}) = 2.57$$

The future EDU projection is the future population projection multiplied by the EDU to Population factor. The annual EDU calculations for the water and wastewater systems are shown in Table 2.4.

Table 2.4 Projected Water and Wastewater EDUs Added Annually

Year	Water EDUs Added at 2.39 Ratio	Cumulative Water EDUs	Wastewater EDUs Added at 2.57 Ratio	Cumulative Wastewater EDUs
2018	13,486	774,623	17,082	720,369
2019	14,209	788,832	13,214	733,583
2020	14,210	803,042	13,215	746,798
2021	14,169	817,211	13,176	759,974
2022	14,169	831,380	13,177	773,151
2023	14,169	845,549	13,176	786,327
2024	14,168	859,717	13,177	799,504
2025	14,169	873,886	13,176	812,680
2026	14,169	888,055	13,176	825,856
2027	14,169	902,224	13,177	839,033
2028	14,169	916,393	13,176	852,209

### 2.3.2 Wastewater EDUs

A wastewater EDU equivalent of 200 gpd is proposed in this study. The wastewater EDU calculation is similar to the water calculation, however there is an additional step due to the difference in water customer usage and wastewater customer demand. To determine one EDU for the wastewater system, the wastewater treatment plant (WWTP) flow is divided into the wastewater EDUs for each day of the year.

The following formula illustrates how to calculate a wastewater EDU:

$$1 \text{ EDU} = \left( \frac{\text{Annual WWTP Flow}}{\text{Five Year Average}} \right) \div \left( \frac{\text{Annual EDUs}}{\text{Five Year Average}} \times 365 \text{ days} \right)$$

$$1 \text{ EDU} = (48,331 \text{ MG}) \div (660,198 \text{ EDUs} \times 365 \text{ days}) = 200 \text{ gpd}$$

For SAWS, the 200 gpd wastewater EDU recommendation represents the average daily flow (ADF). For peak wet weather flow (PWWF), that flow is multiplied by the 2.5 peaking factor then infiltration and inflow (I/I) is added. For SAWS, the I/I is assumed to be 600 gpd per acre. At 4 EDUs per acre (150 gpd per EDU), the total PWWF is 650 gpd per EDU. Further details of this PWWF calculation are in the Demand Criterion of the CIP Section.

A wastewater EDU can be based on flow and/or loadings of the system. Many utilities are experiencing conservation that is causing excess hydraulic capacity, but limited loadings capacity. As a result, some utilities are evaluating if an EDU based on hydraulic or loadings capacity—or a combination of both—is most equitable. However, Carollo does not recommend modifying the wastewater EDU to include loadings capacity because SAWS already requires pretreatment for high-strength customers.

## 2.4 Service Areas

According to the TLGC Chapter 395, service areas are the zones within the corporate boundaries or extraterritorial jurisdiction (as determined under Chapter 42) of the political subdivision to be served by the capital improvements or facilities expansions specified in the CIP, except roadway facilities and storm water, drainage, and flood control facilities. State of Texas authority is provided by Certificate of Convenience and Necessity (CCN) and some service is provided by contract outside of the CCN. SAWS service areas remain consistent for this study's land use assumptions.

### 2.4.1 Water Service Areas

The three impact fee components evaluated for the water system are Water Supply, System Development, and Flow. Water Supply facilities are the infrastructure associated with providing new water sources to the system. System Development facilities are the infrastructure associated with pumping, storing, and transmitting water to the distribution system. Flow facilities make up the distribution system. Supply and Flow components are distributed uniformly. However, the System Development component is broken into three service areas due to additional costs to deliver water to higher elevations. The population and EDU projections for the water impact fee service areas are summarized in Table 2.5.

Table 2.5 Water Service Areas Populations and EDU Projections

Component	Service Area	Population <sup>(1)</sup>		EDUs		
		2018	2028	2018	2028	Change
<b>Total Water Supply / Flow</b>	<b>All</b>	<b>1,851,348</b>	<b>2,190,178</b>	<b>774,623</b>	<b>916,393</b>	<b>141,770</b>
System Development	Low Elevation	1,167,848	1,355,336	488,639	567,086	78,447
	Middle Elevation	626,725	761,709	262,229	318,707	56,478
	High Elevation	56,774	73,134	23,755	30,600	6,845
<b>Total System Development</b>		<b>1,851,348</b>	<b>2,190,178</b>	<b>774,623</b>	<b>916,393</b>	<b>141,770</b>

Note:

(1) Service area populations are as of December 31 of the year.

The general water service area for SAWS is illustrated by Figure 2.4. The water system map shows the City of San Antonio (COSA) extraterritorial jurisdiction and the areas of Bexar County served by other purveyors.

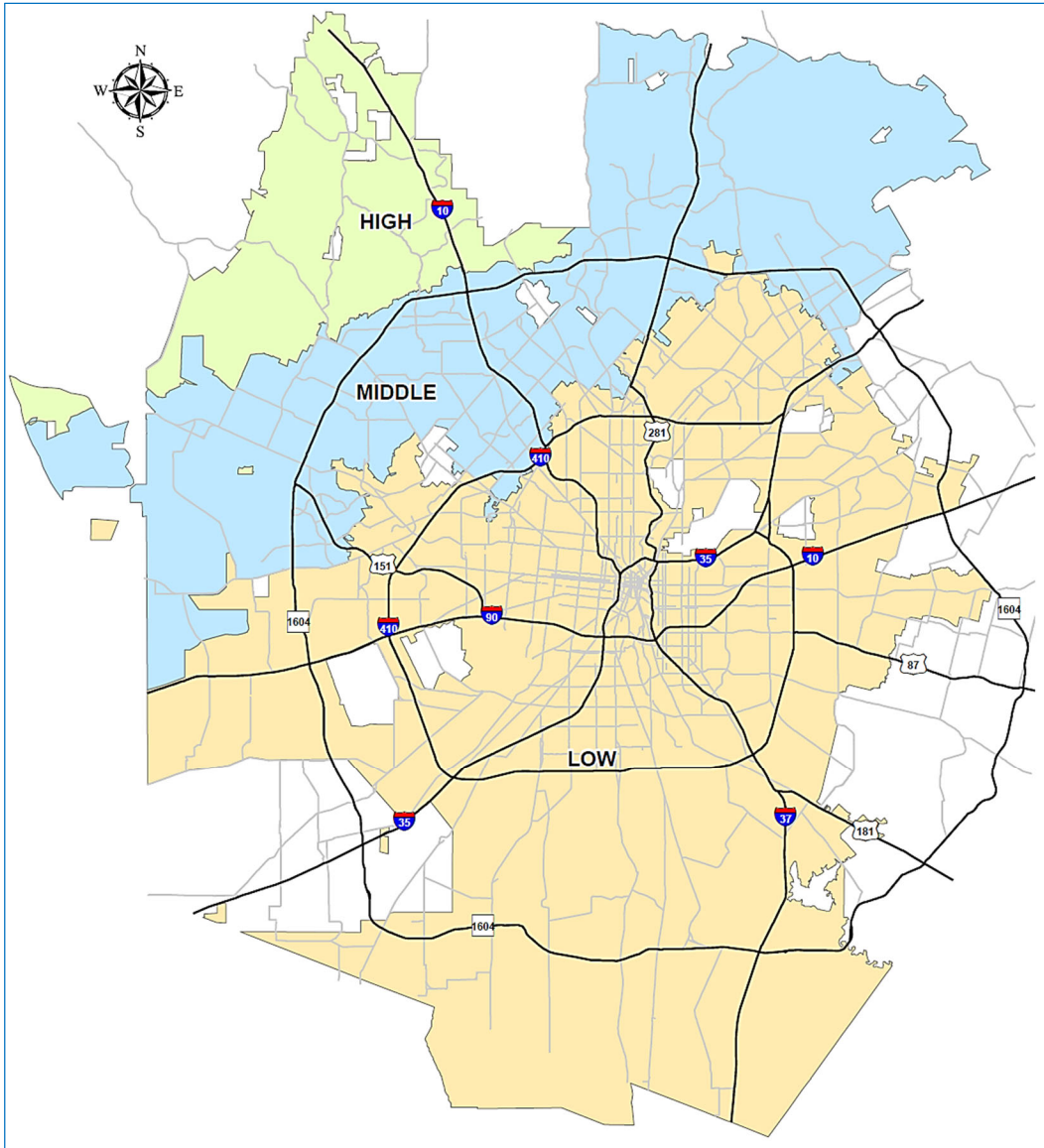


Figure 2.4 Water Service Area from 2019 through 2028

## 2.4.2 Wastewater Service Areas

The impact fee components evaluated for the wastewater system are Treatment and Collection. The Collection Impact Fee service areas reflect the boundaries of the sewersheds served by the WRCs but also designate areas that have higher costs mainly due to distance to the WRC, which are located at the lower elevations to allow for gravity flow. The population and EDU projections for the water and wastewater impact fee service areas are summarized in Table 2.6.

Table 2.6 Wastewater Service Areas Populations and EDU Projections

Component	Service Area	Population <sup>(1)</sup>		EDUs		
		2018	2028	2018	2028	Change
Treatment	Medio Creek	128,601	167,581	50,039	65,207	15,168
	Leon Creek / Dos Rios	1,722,747	2,022,597	670,330	787,002	116,672
<b>Total Treatment</b>		<b>1,851,348</b>	<b>2,190,178</b>	<b>720,369</b>	<b>852,209</b>	<b>131,840</b>
Collection	Medio Creek	128,601	167,581	50,039	65,207	15,168
	Upper Medina	47,632	77,616	18,534	30,201	11,667
	Lower Medina	17,944	29,278	6,982	11,392	4,410
	Upper Collection	450,173	551,404	175,165	214,554	39,389
	Middle Collection	626,973	682,919	243,958	265,727	21,769
	Lower Collection	580,025	681,380	225,691	265,128	39,437
<b>Total Collection</b>		<b>1,851,348</b>	<b>2,190,178</b>	<b>720,369</b>	<b>852,209</b>	<b>131,840</b>

Note:

(1) Service area populations are as of December 31 of the year.

The general wastewater service area is illustrated by Figure 2.5. The wastewater system map shows the COSA extraterritorial jurisdiction and the watersheds that flow into the WRCs operated by SAWS.

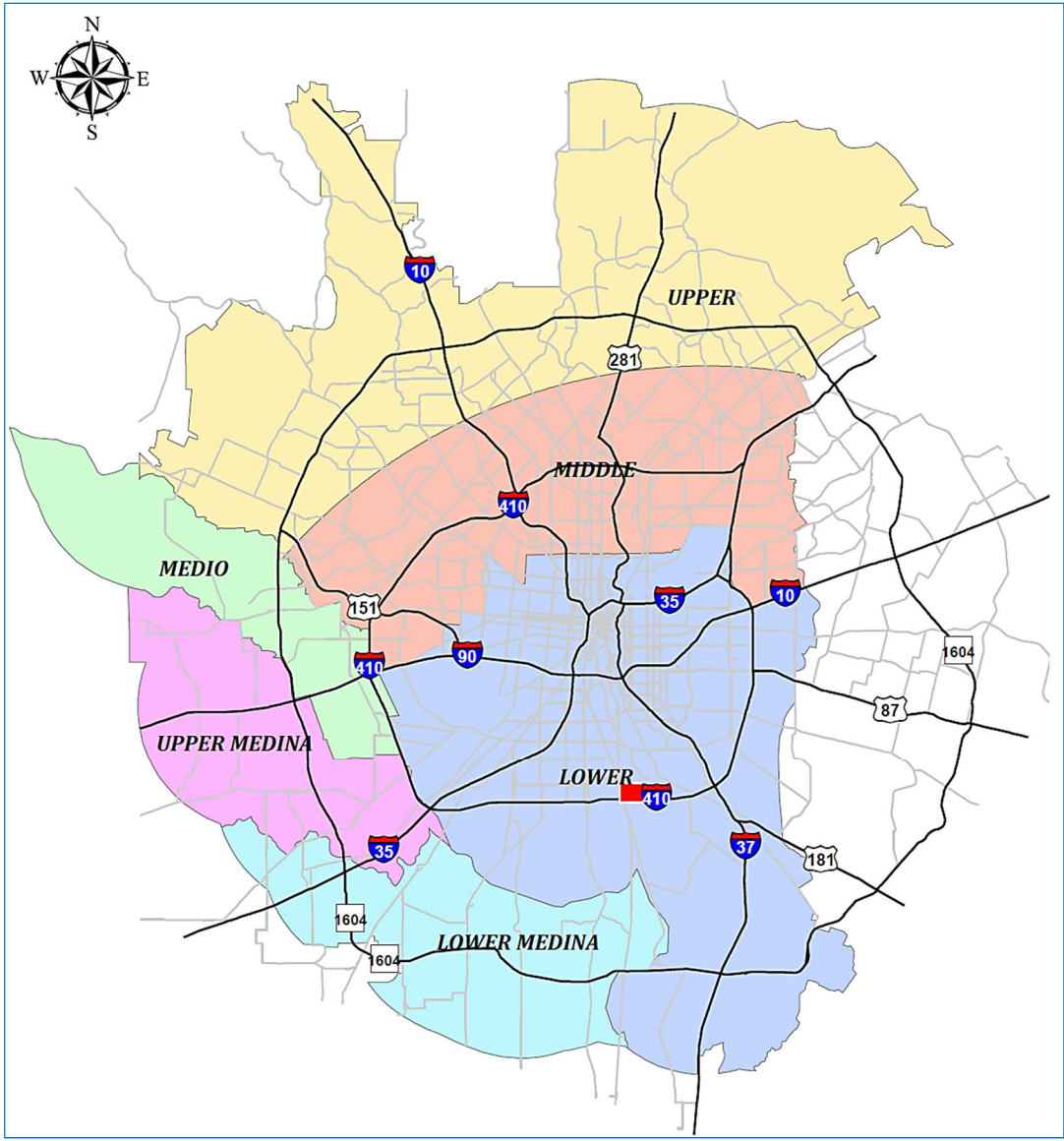


Figure 2.5 Wastewater Service Area from 2019 through 2028

## Section 3 Capital Improvements Plan

### 3.1 Introduction

This CIP section establishes the engineering basis for the capital projects included in the water and wastewater impact fee calculations, updating the previous study completed in 2014. Regarding Water and Wastewater System infrastructure, Chapter 395 of the TLGC states that a capital improvement is any of the following facilities that have a life expectancy of three or more years and are owned and operated by or on behalf of a political subdivision: water supply, treatment, and distribution facilities; wastewater collection and treatment facilities; and storm water, drainage, and flood control facilities; whether or not they are located within the service area.

Impact fees provide SAWS with a mechanism for funding or recouping the cost associated with capital improvements or facility expansions of the municipal water and wastewater systems necessitated by and attributable to the new development, as necessary to accommodate growth in the identified service areas from the 2019 through 2028 study period. A facility expansion does not include the repair, maintenance, modernization, or expansion of an existing facility to better serve existing development.

SAWS owns and operates an infrastructure-intensive system comprised of water production facilities, pumping stations, storage facilities, water transmission and distribution pipelines, wastewater treatment facilities, lift stations and wastewater collection mains that are continuously improved and expanded. The schedule for future investment in the water and wastewater systems is known as the CIP. The CIP was updated by SAWS staff as part of this study. The eligible CIP includes capital project descriptions and cost estimates as developed by combined efforts of SAWS staff, other consultants, and Carollo.

This report includes a description of the basis for establishing which SAWS water and wastewater facilities are eligible to be included in the impact fee analysis. First, the criteria for measuring infrastructure capacity are explained for each infrastructure type. Then, the facilities required to accommodate growth during the 10-year study period, as defined in the LUAP, are identified. Finally, the impact fee per EDU is calculated using the value of the eligible capital facilities and the projected increase in EDUs from the LUAP, as prepared by SAWS and reviewed by the Capital Improvements Advisory Committee (CIAC). The final Maximum Impact Fee per EDU is then calculated by subtracting statutory credits for the estimated capital costs to be included in future rates that will be charged to the new EDUs.

## 3.2 Capacity Criteria

### 3.2.1 General

This section discusses the capacity of facilities that are eligible for inclusion in the calculation of the impact fees. The only capacities that are considered for inclusion are existing available capacities and planned increases in capacities to serve growth projected to occur during the study period. Available existing capacity is infrastructure that has been constructed, but is not yet fully utilized because existing demand is less than existing capacity.

The growth-related capacities and criteria differ for the Water and Wastewater Systems. For the Water System, the capacities considered for inclusion in the calculation of the water impact fees are the water supply facilities, well pumps, high service and booster pump stations, elevated and ground storage tanks, and transmission and distribution mains. The Wastewater System growth-related capacities considered for the wastewater impact fees include the wastewater treatment and collection facilities.

#### DEMAND CRITERION

The combination of plant facilities and service-related activities represents the ability of the systems to meet the quantity, quality, peak loads, and other service requirements of all customers. The values calculated within this section will be reflected throughout the report.

The water system design demand is based on actual water production for the 12 months preceding June 2018, including wet and dry weather conditions, to represent a typical year. In the following calculation, the historical average daily demand is 290 gallons per EDU as detailed in the LUAP Section. Based on this demand per EDU, the average day demand (ADD) is 121 gallons per capita per day (gpcd):

$$\text{Design Average Day Demand} = \text{Average Demand per EDU} \div \text{Population per EDU ratio}$$

$$\text{Design ADD}_{W \text{ System}} = 290 \text{ gpd} \div 2.39 = \mathbf{121 \text{ gpcd}}$$

For the wastewater system, the historical average daily flow is 200 gallons per EDU as detailed in the LUAP Section. The product of the average daily flow and the peaking factor of 2.5 is the peak dry weather flow of 500 gpd per EDU:

$$\text{Peak Dry Weather Flow} = \text{Average Daily Flow per EDU} \times \text{WW Peaking Factor}$$

$$\text{Peak Dry Weather Flow} = 200 \text{ gpd/EDU} \times 2.5 = \mathbf{500 \text{ gpd/EDU}}$$

The design peak dry weather flow combines with an I/I of 600 gallons per acre to total the design PWWF of 650 gpd per EDU. This is based on 4 EDUs per acre as indicated by the calculation below:

$$\text{Design Peak Wet Weather Flow} = \text{Design Peak Dry Weather Flow} + \left[ \text{Inflow \& Infiltration} \right]$$

$$\text{Design PWWF}_{W \text{ System}} = 500 \text{ gpd/EDU} + \left[ \frac{600 \text{ gpd per acre}}{4 \text{ EDUs per acre}} \right] = \mathbf{650 \text{ gpd/EDU}}$$



These design requirements are used to determine the requirements for water supply and delivery capacities for the Water System and treatment and collection capacities for the Wastewater System.

### 3.2.2 Water Supply

SAWS staff developed the Water Supply criteria and CIP. The total amount of Edwards Aquifer water available is determined to be the average during a repeat of the 10-year Drought of Record (DOR), or similar conditions. Table 3.1 summarizes the total as 192,387 acre-feet (AF) for its existing and future Edwards supply. Of this, existing customers through 2018 used 171,171 AF, and customers between 2019 and 2028 are projected to use 21,216 AF, leaving none remaining for customers beyond year 2028.

Table 3.1 Edwards Aquifer Water Supply

Water Supply	Acre-feet (AF)	EDUs
Existing	171,171	526,937
Future	21,216	65,312
<b>Total</b>	<b>192,387</b>	<b>592,249</b>

The 2019 through 2028 projects used in the calculation are the Vista Ridge Integration and the Vista Ridge Pipeline and Wellfield projects. Water supply projects are typically measured in AFY (acre-feet per year).

The following calculation includes the conversion of gallons to AF:

$$\frac{\text{Water Supply}}{\text{Projects EDUs}} = \frac{290 \text{ gallons}}{\text{day}} \times 365 \text{ days} \times \frac{\text{AF}}{325,851 \text{ gallons}} = \mathbf{0.325 \text{ AFY per EDU}}$$

The majority of the SAWS water supply comes from the Edwards Aquifer. SAWS has been granted a groundwater withdrawal permit from the Edwards Aquifer Authority (EAA) that specifies the amount of groundwater that can be pumped from the aquifer. The permitted amount that is available each year can vary depending on the level of the aquifer and upon criteria established by the EAA. The EAA aquifer management criteria require the amount of groundwater pumping to be reduced as the level of the aquifer decreases.

To manage the use of the various water supplies, SAWS has developed a water supply availability scenario based on the DOR from the 1950s. For impact fee calculation purposes, the scenario assumes that a drought equal to the DOR begins in 2018 and continues through 2028. The scenario assumes the projected Edwards Aquifer levels are the same as those that actually occurred during the DOR period. The scenario reduces the amount of SAWS permitted Edwards Aquifer water available using the actual DOR aquifer levels and also using the current EAA critical period reductions.

Table 3.2 summarizes the projected amount of water in AF per year available from each water supply source during a DOR.

Table 3.2 Projected Water Supply Yields During a Drought of Record

Year	Annual Water Supply Yield (AF)									
	Edwards	Local Carrizo	Trinity	GBRA	CRWA	Medina Plant	Brackish Desal.	RC / SSLGC <sup>(1)</sup>	ASR Recovery	Vista Ridge
2018	220,702	9,900	16,100	8,524	6,300	13,000	13,440	11,057	0	0
2019	211,934	9,900	16,100	8,286	6,300	10,000	13,440	11,057	0	25,000
2020	194,152	9,900	16,100	8,048	6,300	1,500	13,440	11,057	0	50,000
2021	177,545	9,900	4,000	7,810	6,300	0	13,440	11,057	0	50,000
2022	162,773	9,900	4,000	7,561	6,300	0	13,440	11,057	0	50,000
2023	136,579	9,900	4,000	7,333	6,800	0	13,440	11,057	0	50,000
2024	112,507	9,900	4,000	7,095	6,800	0	13,440	11,057	21,796	50,000
2025	165,404	9,900	4,000	6,857	6,800	0	13,440	11,057	0	50,000
2026	261,128	9,900	16,100	6,619	6,800	13,000	13,440	11,057	0	50,000
2027	281,146	9,900	16,100	6,381	6,800	13,000	13,440	11,057	0	50,000
2028	220,702	9,900	16,100	8,524	6,300	13,000	13,440	11,057	0	50,000
<b>Average</b>	<b>192,387</b>	<b>9,900</b>	<b>10,050</b>	<b>7,451</b>	<b>6,550</b>	<b>5,050</b>	<b>13,440</b>	<b>11,057</b>	<b>2,180</b>	<b>47,500</b>

Note:

(1) SSLGC is the Schertz/Seguin Local Government Corporation. The SSLGC distributes water supplied from the Carrizo-Wilcox Aquifer to its customers, including SAWS.

The worst year of the DOR scenario occurs in year seven of the 10-year plan. The average amount of existing Edwards Aquifer water available under the EAA restrictions is 192,387 AF. The total amount of water supply available for existing and new customers during the study period that exceeds the Edwards Aquifer amount in the worst year of the DOR will include the Vista Ridge Integration and Wellfield. This total amount of water supply will be the source to fulfill the LUAP projection of 141,770 new EDUs.

### 3.2.3 Water Delivery – Flow

The cost of Water Delivery is separated into two impact fees, Flow and System Development. The Flow impact fee includes growth-related costs for the water distribution mains which are 12 inches to 20 inches. Mains smaller than 12 inches are typically constructed by developers and "dedicated" or contributed to SAWS and, as such, are not included in the costs used to calculate the impact fee.

To determine the eligible capacities to include in costs used to calculate the Flow impact fee, the maximum hour demands of the customers who will come online during the study period must be projected using the average day demand and the maximum hour peaking factor.

The design average day demand for the system is 121 gpcd and, according to the 2017 WIP, the maximum hour peaking factor (MHPF) is 3.31. Using these values and the populations from the LUAP, the estimated 2018 year-end maximum hour demand (MHD) is 741.5 million gallons per day (mgd):

$$\begin{aligned}
 \text{Max Hour Demand} &= \frac{\text{Design Average Day Demand}}{\text{Day Demand}} \times \text{Max Hour Peaking Factor} \times \text{Population} \\
 2018 \text{ MHD}_{\text{Flow}} &= (121 \text{ gpcd} \times 3.31 \times 1,851,348) \div 1,000,000 = 741.5 \text{ mgd}
 \end{aligned}$$

Similarly, the estimated 2028 year-end maximum hour demand for the system is 877.2 mgd:

$$2028 MHD_{Flow} = (121 gpcd \times 3.31 \times 2,190,178) \div 1,000,000 = \mathbf{877.2 mgd}$$

The projected study period increase in maximum hour demand for the distribution system is 135.7 mgd for the system:

$$\Delta MHD = 2028 MDD - 2018 MDD$$

$$\Delta MHD_{Flow} = 877.2 mgd - 741.5 mgd = \mathbf{135.7 mgd}$$

The calculated capacity requirements for the Flow impact fee service area are based on the Water System’s distribution mains as summarized in Table 3.3.

Table 3.3 Study Period Water Distribution Mains Capacity Requirement

Infrastructure Component	Service Area	Capacity Required (mgd)		
		2018 <sup>(1)</sup>	2028	Δ Change
Distribution Mains	All	741.5	877.2	135.7

Note:

(1) Capacity requirements are based on the end of year.

### 3.2.4 Water Delivery – System Development

The System Development impact fee includes growth-related costs for well pumps, high service and booster pump stations, elevated and ground storage tanks, and transmission mains (12-inch to 20-inch). There are currently three service areas for the System Development impact fee: High Elevation, Middle Elevation, and Low Elevation. No changes are proposed for the three existing service area designations. To determine the eligible allocation of existing and future CIP to the System Development impact fee, the available capacities and growth-related demands must be determined for the five infrastructure types by service area.

#### WELL PUMPS

Because the well pumps are directly related to the water supply and provide water to the entire system, they are not separated by service area. All customers within the SAWS system are assumed to require the same well pump capacity. The well pumps are designed to meet the maximum day demand (MDD).

The system design average day demand is 121 gpcd, and the maximum day peaking factor (MDPF) is 1.78 according to the 2017 WIP. Using these values and the populations from the LUAP, the estimated 2018 year-end maximum day demand for the SAWS system is 398.7 mgd:

$$Max Day Demand = \frac{Average Day Demand}{Demand} \times \frac{Max Day}{Peaking Factor} \times Population$$

$$2018 MDD_{WP} = (121 gpcd \times 1.78 \times 1,851,348) \div 1,000,000 = \mathbf{398.7 mgd}$$

Similarly, the estimated 2028 year-end maximum day demand for the system is 471.7 mgd:

$$2028 MDD_{WP} = (121 gpcd \times 1.78 \times 2,190,178) \div 1,000,000 = \mathbf{471.7 mgd}$$

The projected study period increase in maximum day demand for well pumps is 73.0 mgd for the system:

$$\Delta MDD = 2028 MDD - 2018 MDD$$

$$\Delta MDD_{WP} = 471.7 \text{ mgd} - 398.7 \text{ mgd} = \mathbf{73.0 \text{ mgd}}$$

Table 3.4 summarizes the calculated maximum day demands and increase.

Table 3.4 Study Period Well Pumps Capacity Requirement

Infrastructure Component	Service Area	Capacity Required (mgd)		
		2018 <sup>(1)</sup>	2028	Δ Change
<b>Well Pumps</b>	<b>All</b>	<b>398.7</b>	<b>471.7</b>	<b>73.0</b>

Note:

(1) Capacity requirements are based on the end of year.

### HIGH SERVICE AND BOOSTER PUMP STATIONS

Pumping requirements are based on design maximum hour demands and vary by pressure zone. The calculated weighted average day demands and max hour peaking factors for each service area are used to determine the maximum hour demands for the three service areas.

#### High Elevation Service Area

The High Elevation service area has the lowest design average day demand and peaking factors. Using the design average day demand of 121 gpcd, the maximum hour peaking factor of 3.31, and the study period populations from the LUAP, the estimated 2018 year-end maximum hour demand for the High Elevation service area is 22.7 mgd:

$$Max \text{ Hour Demand} = \frac{Design \text{ Average Day Demand}}{Day \text{ Demand}} \times Max \text{ Hour Peaking Factor} \times Population$$

$$2018 MHD_{HE} = (121 \text{ gpcd} \times 3.31 \times 56,774) \div 1,000,000 = \mathbf{22.7 \text{ mgd}}$$

The estimated 2028 year-end maximum hour demand for the High Elevation service area is 29.3 mgd:

$$2028 MHD_{HE} = (121 \text{ gpcd} \times 3.31 \times 73,134) \div 1,000,000 = \mathbf{29.3 \text{ mgd}}$$

The expected increase in maximum hour demand due to growth during the study period in the High Elevation service area is 6.6 mgd:

$$\Delta MHD = 2028 MHD - 2018 MHD$$

$$\Delta MHD_{HE} = 29.3 \text{ mgd} - 22.7 \text{ mgd} = \mathbf{6.6 \text{ mgd}}$$

#### Middle Elevation Service Area

The Middle Elevation service area's design average day demand and peaking factors are lower than the Low Elevation service area and higher than the High Elevation service area. Using the design average day demand of 121 gpcd, the maximum hour peaking factor of 3.31, and the study period populations from the LUAP, the estimated 2018 year-end maximum hour demand for the Middle Elevation service area is 251.0 mgd:

$$2018 MHD_{ME} = (121 \text{ gpcd} \times 3.31 \times 626,725) \div 1,000,000 = \mathbf{251.0 \text{ mgd}}$$

The estimated 2028 year-end maximum hour demand for the Middle Elevation service area is 305.1 mgd:

$$2028 \text{ MHD}_{ME} = (121 \text{ gpcd} \times 3.31 \times 761,709) \div 1,000,000 = \mathbf{305.1 \text{ mgd}}$$

The expected increase in maximum hour demand due to growth during the study period in the Middle Elevation service area is 54.1 mgd:

$$\Delta \text{MHD}_{ME} = 305.1 \text{ mgd} - 251.0 \text{ mgd} = \mathbf{54.1 \text{ mgd}}$$

### Low Elevation Service Area

The Low Elevation service area has significantly higher demands than the other two service areas. Using the design average day demand of 121 gpcd, the maximum hour peaking factor of 3.31, and the study period populations, the estimated 2018 year-end maximum hour demand for the Low Elevation service area is 467.7 mgd:

$$2018 \text{ MHD}_{LE} = (121 \text{ gpcd} \times 3.31 \times 1,167,848) \div 1,000,000 = \mathbf{467.7 \text{ mgd}}$$

The estimated 2028 year-end maximum hour demand for the Low Elevation service area is 542.8 mgd:

$$2028 \text{ MHD}_{LE} = (121 \text{ gpcd} \times 3.31 \times 1,355,336) \div 1,000,000 = \mathbf{542.8 \text{ mgd}}$$

The expected increase in maximum hour demand due to growth during the study period in the Low Elevation service area is 75.1 mgd:

$$\Delta \text{MHD}_{LE} = 542.8 \text{ mgd} - 467.7 \text{ mgd} = \mathbf{75.1 \text{ mgd}}$$

The projected study period increase in pumping requirements is 135.8 mgd for the three System Development service areas, as summarized in Table 3.5.

Table 3.5 Study Period High Service and Booster Pumps Capacity Requirement

Infrastructure Component	Service Area	Capacity Required (mgd)		
		2018 <sup>(1)</sup>	2028	Δ Change
Booster Pump Station	High Elevation	22.7	29.3	6.6
	Middle Elevation	251.0	305.1	54.1
	Low Elevation	467.7	542.8	75.1
	<b>Total</b>	<b>741.4</b>	<b>877.2</b>	<b>135.8</b>

Note:

(1) Capacity requirements are based on the end of year.

### ELEVATED STORAGE TANKS

Elevated storage tank (EST) requirements are based on design criteria and Texas Commission on Environmental Quality (TCEQ) requirements. Minimum design elevated storage capacity is greater than or equal to 100 gallons per connection. Design criteria provided in the 2017 Water Infrastructure Plan (Freese and Nichols, Inc.) (WIP) vary by pressure zone. The weighted average elevated storage capacity requirements are calculated for each System Development service area and used as the impact fee capacity criteria since they exceed the minimum TCEQ requirement of 100 gallons per connection.

### High Elevation Service Area

For the High Elevation service area, the 2018 and 2028 demands for elevated storage capacity are 345 gallons and 298 gallons per connection, respectively. Since these demands exceed the minimum TCEQ requirement of 100 gallons per connection, they are used to estimate the 2018 year-end capacity requirement.

Since one (1) connection is equivalent to 1.54 EDUs, the High Elevation service area capacity requirement is 5.3 MG:

$$\begin{aligned} \text{2018 EST Capacity Requirement}_{HE} &= \frac{\text{Minimum capacity per connection}}{\text{connection}} \times \text{No. of connections} \\ \text{2018 EST Capacity Requirement}_{HE} &= \left( \frac{345 \text{ gallons}}{\text{connection}} \times \frac{23,755 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{5.3 \text{ MG}} \end{aligned}$$

The estimated 2028 year-end capacity requirement for the High Elevation service area is 5.9 MG:

$$\text{2028 EST Capacity Requirement}_{HE} = \left( \frac{298 \text{ gallons}}{\text{connection}} \times \frac{30,600 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{5.9 \text{ MG}}$$

The expected increase in the elevated storage capacity requirement due to growth during the study period in the High Elevation service area is 0.6 MG:

$$\begin{aligned} \Delta \text{EST Capacity Requirement}_{HE} &= \text{2028 Capacity Requirement}_{HE} - \text{2018 Capacity Requirement}_{HE} \\ \Delta \text{EST Capacity Requirement}_{HE} &= 5.9 \text{ MG} - 5.3 \text{ MG} = \mathbf{0.6 \text{ MG}} \end{aligned}$$

### Middle Elevation Service Area

The 2018 and 2028 demands for elevated storage capacity in the Middle Elevation service area are 198 gallons and 196 gallons per connection, respectively. Since these demands exceed the minimum TCEQ requirement of 100 gallons per connection, this data is used to estimate the 2018 year-end capacity requirement for the Middle Elevation service area at 33.7 MG:

$$\text{2018 EST Capacity Requirement}_{ME} = \left( \frac{198 \text{ gallons}}{\text{connection}} \times \frac{262,228 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{33.7 \text{ MG}}$$

The estimated 2028 year-end capacity requirement for the Middle Elevation service area is 40.6 MG:

$$\text{2028 EST Capacity Requirement}_{ME} = \left( \frac{196 \text{ gallons}}{\text{connection}} \times \frac{318,707 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{40.6 \text{ MG}}$$

The expected increase in the elevated storage capacity requirement due to growth during the study period in the Middle Elevation service area is 6.9 MG:

$$\Delta \text{EST Capacity Requirement}_{ME} = 40.6 \text{ MG} - 33.7 \text{ MG} = \mathbf{6.9 \text{ MG}}$$

### Low Elevation Service Area

The 2018 and 2028 demands for elevated storage capacity in the Low Elevation service area are 144 gallons and 142 gallons per connection, respectively. Since these demands exceed the minimum TCEQ requirement of 100 gallons per connection, this data is used to estimate the 2018 year-end capacity requirement for the Low Elevation service area at 45.7 MG:

$$2018 \text{ EST Capacity Requirement}_{LE} = \left( \frac{144 \text{ gallons}}{\text{connection}} \times \frac{488,639 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{45.7 \text{ MG}}$$

The estimated 2028 year-end capacity requirement for the Low Elevation service area is 52.3 MG:

$$2028 \text{ EST Capacity Requirement}_{LE} = \left( \frac{142 \text{ gallons}}{\text{connection}} \times \frac{567,086 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{52.3 \text{ MG}}$$

The expected increase in the elevated storage capacity requirement due to growth during the study period in the Low Elevation service area is 6.6 MG:

$$\Delta \text{ EST Capacity Requirement}_{LE} = 52.3 \text{ MG} - 45.7 \text{ MG} = \mathbf{6.6 \text{ MG}}$$

Table 3.6 summarizes the changes in elevated storage demands for the three service area elevations.

Table 3.6 Study Period Elevated Storage Capacity Requirement

Infrastructure Component	Service Area	Capacity Required (mgd)		
		2018 <sup>(1)</sup>	2028	Δ Change
Elevated Storage Tanks	High Elevation	5.3	5.9	0.6
	Middle Elevation	33.7	40.6	6.9
	Low Elevation	45.7	52.3	6.6
	<b>Total</b>	<b>84.7</b>	<b>98.8</b>	<b>14.1</b>

Note:

(1) Capacity requirements are based on the end of year.

### GROUND STORAGE TANKS

Ground storage tank (GST) requirements are based on design criteria and TCEQ requirements. Minimum design total storage capacity (elevated and ground) is greater than or equal to 200 gallons per connection. Design criteria provided in the 2017 WIP vary by pressure zone. The weighted average ground storage capacity requirements are calculated for each System Development service area and used as the impact fee capacity criteria if they exceed the difference between the minimum TCEQ total storage requirement of 200 gallons per connection and the minimum elevated storage requirement; if they do not exceed the TCEQ minimum, the difference between the TCEQ minimum of 200 gallons per connection and the elevated storage capacity requirements from the 2017 WIP is used.

### High Elevation Service Area

The 2018 and 2028 High Elevation service area demands for ground storage capacity are 2 gallons and 4 gallons per connection, respectively. In the High Elevation service area, the minimum TCEQ requirement of 200 gallons of total storage per connection is met by the elevated storage demand. Therefore, the minimum storage requirement from the 2017 WIP is used to estimate the 2018 capacity requirement. Since one connection is equivalent to 1.54 EDUs, the 2018 year-end capacity requirement for the High Elevation service area is 0.03 MG:

$$2018 \text{ GST Capacity Requirement}_{HE} = \frac{\text{Minimum capacity per connection}}{\text{connection}} \times \text{No. of connections} \div 1,000,000 = \mathbf{0.03 \text{ MG}}$$

$$2018 \text{ GST Capacity Requirement}_{HE} = \left( \frac{2 \text{ gallons}}{\text{connection}} \times \frac{23,755 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{0.03 \text{ MG}}$$

The estimated 2028 year-end capacity requirement for the High Elevation service area is 0.08 MG:

$$2028 \text{ GST Capacity Requirement}_{HE} = \left( \frac{4 \text{ gallons}}{\text{connection}} \times \frac{30,600 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{0.08 \text{ MG}}$$

The expected increase in the ground storage capacity requirement due to growth during the study period in the High Elevation service area is 0.05 MG:

$$\Delta \text{ GST Capacity Requirement}_{HE} = \text{2028 Capacity Requirement}_{HE} - \text{2018 Capacity Requirement}_{HE}$$

$$\Delta \text{ GST Capacity Requirement}_{HE} = 0.08 \text{ MG} - 0.03 \text{ MG} = \mathbf{0.05 \text{ MG}}$$

### Middle Elevation Service Area

The 2018 and 2028 demands for ground storage capacity in the Middle Elevation service area are also 2 gallons and 4 gallons per connection, respectively. In the Middle Elevation service area, the minimum TCEQ requirement of 200 gallons of total storage per connection is not met by the elevated storage demand. Therefore, the TCEQ minimum storage requirement is used to estimate the 2018 year-end capacity requirement for the Middle Elevation service area at 0.34 MG:

$$2018 \text{ GST Capacity Requirement}_{ME} = \left( \frac{2 \text{ gallons}}{\text{connection}} \times \frac{262,229 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{0.34 \text{ MG}}$$

The estimated 2028 year-end capacity requirement for the Middle Elevation service area is 0.83MG:

$$2028 \text{ GST Capacity Requirement}_{ME} = \left( \frac{4 \text{ gallons}}{\text{connection}} \times \frac{318,707 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{0.83 \text{ MG}}$$

The expected increase in the ground storage capacity requirement due to growth during the study period in the Middle Elevation service area is 0.49 MG:

$$\Delta \text{ GST Capacity Requirement}_{ME} = 0.83 \text{ MG} - 0.34 \text{ MG} = \mathbf{0.49 \text{ MG}}$$



### Low Elevation Service Area

Since the elevated storage capacity demand from the 2017 WIP is less than 200 gallons per connection, 56 gallons and 58 gallons of ground storage capacity per connection are needed in the Low Elevation service area for 2018 and 2028, respectively.

This meets the minimum TCEQ requirement of 200 gallons of total storage per connection, and this minimum storage requirement is used to estimate the 2018 year-end capacity requirement for the Low Elevation service area of 17.77 MG:

$$2018 \text{ GST Capacity Requirement}_{LE} = \left( \frac{56 \text{ gallons}}{\text{connection}} \times \frac{488,639 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{17.77 \text{ MG}}$$

The estimated 2028 year-end capacity requirement for the Low Elevation service area is 21.36 MG:

$$2028 \text{ GST Capacity Requirement}_{LE} = \left( \frac{58 \text{ gallons}}{\text{connection}} \times \frac{567,086 \text{ EDUs}}{1.54} \right) \div 1,000,000 = \mathbf{21.36 \text{ MG}}$$

The expected increase in the ground storage capacity requirement due to growth during the study period in the Low Elevation service area is 3.59 MG:

$$\Delta \text{ GST Capacity Requirement}_{LE} = 21.36 \text{ MG} - 17.77 \text{ MG} = \mathbf{3.59 \text{ MG}}$$

Table 3.7 summarizes the changes in ground storage demand for the three service area elevations.

Table 3.7 Study Period Ground Storage Capacity Requirement

Infrastructure Component	Service Area	Capacity Required (mgd)		
		2018 <sup>(1)</sup>	2028	Δ Change
Ground Storage Tanks	High Elevation	0.03	0.08	0.05
	Middle Elevation	0.34	0.83	0.49
	Low Elevation	17.77	21.36	3.59
	<b>Total</b>	<b>18.14</b>	<b>22.27</b>	<b>4.13</b>

Note:

(1) Capacity requirements are based on the end of year.

### TRANSMISSION MAINS

The projected maximum hour demand is used to determine the required capacity for transmission mains. Because the service areas are the same, the capacity criteria for transmission mains are the same as the High Service and Booster Pump Stations capacity criteria previously calculated.

Table 3.8 summarizes the change in demand for the transmission mains during the study period, which match the requirements summarized in Table 3.5.

Table 3.8 Study Period Transmission Mains Capacity Requirement

Infrastructure Component	Service Area	Capacity Required (mgd)		
		2018 <sup>(1)</sup>	2028	Δ Change
Transmission Mains	High Elevation	22.7	29.3	6.6
	Middle Elevation	251.0	305.1	54.1
	Low Elevation	467.7	542.8	75.1
	<b>Total</b>	<b>741.4</b>	<b>877.2</b>	<b>135.8</b>

Note:

(1) Capacity requirements are based on the end of year.

### 3.2.5 Wastewater Treatment

To determine the eligible capacities to include in the Wastewater Treatment Impact Fee calculation, the system design average daily flow was used to estimate the 2018 and 2028 WRC demands. The two service areas proposed for wastewater treatment are Medio Creek and Leon Creek/Dos Rios.

#### MEDIO CREEK SERVICE AREA

Using the system design average daily flow, the estimated capacity requirements for the Medio Creek service area are 10.0 mgd in 2018 and 13.0 mgd in 2028:

$$Design\ ADF = Design\ ADF\ per\ EDU \times No.\ of\ EDUs$$

$$2018\ ADF_{MC} = \left( \frac{200\ gpd}{EDU} \times 50,039\ EDUs \right) \div 1,000,000 = \mathbf{10.0\ mgd}$$

$$2028\ ADF_{MC} = \left( \frac{200\ gpd}{EDU} \times 65,207\ EDUs \right) \div 1,000,000 = \mathbf{13.0\ mgd}$$

The estimated change in average daily flow demand in the Medio Creek service area for the study period is 3.0 mgd:

$$\Delta\ ADF = 2028\ ADF - 2018\ ADF$$

$$\Delta\ ADF_{MC} = 13.0\ mgd - 10.0\ mgd = \mathbf{3.0\ mgd}$$

#### LEON CREEK/DOS RIOS SERVICE AREA

Using the same methodology as for the Medio Creek service area, the estimated capacity requirements for the Leon Creek/Dos Rios service area are 134.1 mgd in 2018 and 157.4 mgd in 2028:

$$2018\ ADF_{LCDR} = \left( \frac{200\ gpd}{EDU} \times 670,330\ EDUs \right) \div 1,000,000 = \mathbf{134.1\ mgd}$$

$$2028\ ADF_{LCDR} = \left( \frac{200\ gpd}{EDU} \times 787,002\ EDUs \right) \div 1,000,000 = \mathbf{157.4\ mgd}$$

The estimated change in average daily flow demand in the Leon Creek/Dos Rios service area for the study period is 23.3 mgd:

$$\Delta\ ADF = 2028\ ADF - 2018\ ADF$$

$$\Delta\ ADF_{LCDR} = 157.4\ mgd - 134.1\ mgd = \mathbf{23.3\ mgd}$$

Table 3.9 summarizes the increase in capacity requirements for each service area for the study period.

Table 3.9 Study Period Treatment Capacity Requirement

Infrastructure Component	Service Area	Capacity Required (mgd)		
		2018 <sup>(1)</sup>	2028	Δ Change
Water Recycling Centers	Medio Creek	10.0	13.0	3.0
	Leon Creek/ Dos Rios	134.1	157.4	23.3
	<b>Total</b>	<b>144.1</b>	<b>170.4</b>	<b>26.3</b>

Note:

(1) Capacity requirements are based on the end of year.

### 3.2.6 Wastewater Collection

PWWF is used to determine the eligible capacities to include in the Wastewater Collection Impact Fee calculation. The six service areas are Medio Creek and the five collection service areas within the Leon Creek/Dos Rios treatment service area.

#### MEDIO CREEK SERVICE AREA

Using the system design PWWF, the estimated capacity requirements for the Medio Creek service area are 32.5 mgd in 2018 and 42.4 mgd in 2028:

$$PWWF = \frac{\text{Design PWWF}}{\text{per EDU}} \times \text{No. of EDUs}$$

$$2018 PWWF_{MC} = (650 \text{ gpd} \times 50,039 \text{ EDUs}) \div 1,000,000 = \mathbf{32.5 \text{ mgd}}$$

$$2028 PWWF_{MC} = (650 \text{ gpd} \times 65,207 \text{ EDUs}) \div 1,000,000 = \mathbf{42.4 \text{ mgd}}$$

The estimated change in PWWF in the Medio Creek service area for the study period is 9.9 mgd:

$$\Delta PWWF = 2028 PWWF - 2018 PWWF$$

$$\Delta PWWF_{MC} = 42.4 \text{ mgd} - 32.5 \text{ mgd} = \mathbf{9.9 \text{ mgd}}$$

#### LEON CREEK/DOS RIOS SERVICE AREAS

Using the same methodology as for the Medio Creek service area, the Wastewater Collection capacity requirements of the five Leon Creek/Dos Rios service areas are calculated below.

##### Upper Medina

The estimated capacity requirements for the Upper Medina service area are 12.0 mgd in 2018 and 19.6 mgd in 2028:

$$2018 PWWF_{UM} = (650 \text{ gpd} \times 18,534 \text{ EDUs}) \div 1,000,000 = \mathbf{12.0 \text{ mgd}}$$

$$2028 PWWF_{UM} = (650 \text{ gpd} \times 30,201 \text{ EDUs}) \div 1,000,000 = \mathbf{19.6 \text{ mgd}}$$

$$\Delta PWWF_{UM} = 19.6 \text{ mgd} - 12.0 \text{ mgd} = \mathbf{7.6 \text{ mgd}}$$

### Lower Medina

The capacity requirements for the Lower Medina service area are based on the number of EDUs in the Upper Medina and Lower Medina service areas because the Upper Medina service area is upstream of the Lower Medina service area. Therefore, the Lower Medina infrastructure must have sufficient capacity to convey flows from both service areas. The total capacity requirements for the Lower Medina service area are estimated as 16.6 mgd in 2018 and 27.0 mgd in 2028:

$$2018 PWWF_{LM} = [ 650 \text{ gpd} \times (18,534 + 6,982) ] \div 1,000,000 = \mathbf{16.6 \text{ mgd}}$$

$$2028 PWWF_{LM} = [ 650 \text{ gpd} \times (30,201 + 11,392) ] \div 1,000,000 = \mathbf{27.0 \text{ mgd}}$$

$$\Delta PWWF_{LM} = 27.0 \text{ mgd} - 16.6 \text{ mgd} = \mathbf{10.4 \text{ mgd}}$$

### Upper Collection

The estimated capacity requirements for the Upper Collection service area are 113.9 mgd in 2018 and 139.5 mgd in 2028:

$$2018 PWWF_{UC} = (650 \text{ gpd} \times 175,165 \text{ EDUs}) \div 1,000,000 = \mathbf{113.9 \text{ mgd}}$$

$$2028 PWWF_{UC} = (650 \text{ gpd} \times 214,554 \text{ EDUs}) \div 1,000,000 = \mathbf{139.5 \text{ mgd}}$$

$$\Delta PWWF_{UC} = 139.5 \text{ mgd} - 113.9 \text{ mgd} = \mathbf{25.6 \text{ mgd}}$$

### Middle Collection

The capacity requirements for the Middle Collection service area are based on the number of EDUs in the Upper Collection and Middle Collection service areas because the Upper Collection service area is upstream from the Middle Collection service area. Therefore, the Middle Collection infrastructure must have sufficient capacity to convey flows from both service areas. The total capacity requirements for the Middle Collection service area are estimated as 272.4 mgd in 2018 and 312.2 mgd in 2028:

$$2018 PWWF_{MC} = (650 \text{ gpd} \times 243,958 \text{ EDUs}) \div 1,000,000 = \mathbf{272.4 \text{ mgd}}$$

$$2028 PWWF_{MC} = (650 \text{ gpd} \times 265,727 \text{ EDUs}) \div 1,000,000 = \mathbf{312.2 \text{ mgd}}$$

$$\Delta PWWF_{MC} = 312.2 \text{ mgd} - 272.4 \text{ mgd} = \mathbf{39.8 \text{ mgd}}$$

### Lower Collection

The capacity requirements for the Lower Collection service area are based on the number of EDUs in the Upper Collection, Middle Collection, and the Lower Collection service areas because the Upper Collection and Middle Collection service areas are upstream from the Lower Collection service area.

Therefore, the Lower Collection infrastructure must have sufficient capacity to convey flows from all three service areas. The estimated capacity requirements for the Lower Collection service area are 419.1 mgd in 2018 and 484.5 mgd in 2028:

$$2018 PWWF_{UM} = (650 \text{ gpd} \times 644,814 \text{ EDUs}) \div 1,000,000 = \mathbf{419.1 \text{ mgd}}$$

$$2028 PWWF_{UM} = (650 \text{ gpd} \times 745,409 \text{ EDUs}) \div 1,000,000 = \mathbf{484.5 \text{ mgd}}$$

$$\Delta PWWF_{LC} = 484.5 \text{ mgd} - 419.1 \text{ mgd} = \mathbf{65.4 \text{ mgd}}$$

Table 3.10 summarizes the increase in PWWF for each service area for the study period.

Table 3.10 Study Period Collection System Capacity Requirement

Infrastructure Component	Service Area	Capacity Required (mgd)		
		2018 <sup>(1)</sup>	2028	Δ Change
Collection System	Medio Creek	32.5	42.4	9.9
	Upper Medina	12.0	19.6	7.6
	Lower Medina	16.6	27.0	10.4
	Upper Collection	113.9	139.5	25.6
	Middle Collection	272.4	312.2	39.8
	Lower Collection	419.1	484.5	65.4
	<b>Total<sup>(2)</sup></b>	<b>468.2</b>	<b>553.9</b>	<b>85.7</b>

Notes:

(1) Capacity requirements are based on the end of year.

(2) Upper Medina capacity is included in the Lower Medina capacity. Upper Collection capacity is included in the Middle Collection and Lower Collection capacities. Middle Collection capacity is included in the Lower Collection capacity.

## 3.3 Eligible Facilities

### 3.3.1 General

This section establishes the SAWS water and wastewater facilities that are eligible for inclusion in the calculation of the impact fees. Projects included in the CIP can serve to rehabilitate and renew the system, enhance the system to improve efficiency and meet regulatory requirements, increase the system capacity, or achieve a combination of these objectives. Only those projects warranted by capacity issues derived from growth projected to occur during the 2019 to 2028 study period can be included in the impact fee calculation. Additionally, if the cost of a project cannot be sufficiently delineated or if alternate mechanisms for cost recovery are in place, the project is not included in the impact fee calculation.

Financing costs associated with existing infrastructure with available capacity to serve new development are included in the eligible impact fee CIP. It is assumed, based on discussions with SAWS staff, that 60 percent of the existing infrastructure was financed with debt. SAWS staff provided debt service payment schedules for Water Resources (Water Supply), Water Delivery, and Wastewater, which were used to determine the proportional interest payments associated with the existing infrastructure eligible for inclusion in the impact fee calculations.

SAWS prefers to use cash generated from impact fee revenues to fund growth-related CIP, to the extent that impact fee collections provide that cash. Although SAWS plans to fund specific future CIP projects with debt, it reserves the option to fund all CIP with cash.

Therefore, based in part on the present level of uncertainty of future funding sources, SAWS elected, for the purposes of this study, to exclude financing costs associated with the future CIP from the impact fee calculation.<sup>2</sup>

<sup>2</sup> Chapter 395 allows the inclusion of financing costs in the impact fee calculation. However, SAWS staff elected to use a more conservative approach and excluded the financing costs from the calculation.

### 3.3.2 Water Supply

SAWS staff developed the Water Supply criteria and CIP. The Water Supply impact fee includes growth-related costs for existing water supplies and for new projects to be constructed as summarized in Table 3.11. The existing water supply facilities have capacity available to serve 91,936 of the 141,770 EDUs projected to be added during the study period. This is equal to 10.6 percent of the total existing water supply capacity.

The capacity of the Vista Ridge project is 50,000 AF or 44.6 mgd (see Table B-1 of the Appendices). At 290 gpd per EDU, this capacity can serve 153,921 EDUs. Therefore, the Vista Ridge project has enough capacity to serve the remaining 49,834 EDUs projected during the study period (32.4 percent), leaving capacity available to serve another 104,051 EDUs after the study period.

Table 3.11 Water Supply Eligible Capacity Calculation

Water Source	Total Capital Costs (\$ mil)	Acre-feet (AF)	Capacity		Eligible Capital Costs (\$ mil)
			EDUs	MGD	
Vista Ridge Integration	\$200.0	50,000	153,921	44.6	\$64.8
Vista Ridge Pipeline/Wellfield	930.0				301.3
<b>Total Water Supply</b>	<b>\$1,130.0</b>	<b>50,000</b>	<b>153,921</b>	<b>44.6</b>	<b>\$366.1</b>

The total capital costs for water supply projects needed to serve 141,770 EDUs is approximately \$519 million, as summarized in Table 3.12.

Table 3.12 2019 – 2028 Eligible Water Supply CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
<b>All</b>	<b>\$1,135.6</b>	<b>\$120.5</b>	<b>\$32.4</b>	<b>\$1,130.0</b>	<b>\$366.1</b>	<b>\$0.0</b>	<b>\$2,265.6</b>	<b>\$519.0</b>

Note:

(1) Values may not add due to rounding.

### 3.3.3 Water Delivery – Flow

The Flow impact fee includes growth-related costs associated with the distribution mains that are 12 inches to 20 inches in diameter. Because the water distribution system is looped, it is difficult to pinpoint the existing and future capacities. Therefore, it is assumed, based on discussions with SAWS staff, that the capacity of the distribution mains is increased as needed to maintain 10 percent excess capacity. The 2018 capacity is the calculated 2018 MHD of 741.5 mgd divided by 90 percent:

$$2018 \text{ Capacity} = \frac{2018 \text{ MHD}}{90\%} = \frac{741.5 \text{ mgd}}{90\%} = 823.9 \text{ mgd}$$

Similarly, the 2028 capacity is 974.7 mgd using the 2028 MHD estimate and the 90 percent capacity assumption:

$$2028 \text{ Capacity} = \frac{2028 \text{ MHD}}{90\%} = \frac{877.2 \text{ mgd}}{90\%} = 974.7 \text{ mgd}$$

It is assumed that growth will utilize available existing capacity first and future CIP capacity if the projected demand requires additional capacity beyond what is available in the existing distribution mains. Of the estimated 823.9 mgd capacity in 2018, 741.5 mgd is needed to meet the demand of existing customers. Therefore, 82.4 mgd is available to serve new development. However, from the Water Delivery – Flow section, 135.7 mgd is required to serve growth during the study period so all of the 82.4 mgd of available existing capacity, or 10 percent of existing capacity, is required to serve growth during the 2018 to 2028 study period:

$$\text{2018 to 2028 Growth Allocation} = \frac{\text{Available Existing Capacity}}{\text{Flow Capacity}} \div \text{2018 Flow Capacity}$$

$$\text{2018 to 2028 Growth Allocation} = 82.4 \text{ mgd} \div 823.9 \text{ mgd} = \mathbf{10\%}$$

Because the available existing capacity is insufficient to serve all of the projected growth during the study period, 35.4 percent (or 53.3 mgd of 150.8 mgd) of future CIP capacity is included in the impact fee calculation:

$$\text{2018 to 2028 Growth Allocation} = \frac{\text{Remaining Study Period Demand}}{\text{Future CIP Capacity}}$$

$$\text{2018 to 2028 Growth Allocation} = 53.3 \text{ mgd} \div 150.8 \text{ mgd} = \mathbf{35.4\%}$$

The costs of the eligible capacities for the Flow service area are summarized in Table 3.13.

Table 3.13 2019 – 2028 Eligible Water Delivery Flow CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
All	\$707.3	\$70.7	\$22.4	\$251.9	\$89.1	\$0.0	\$959.1	\$182.2

Note:

(1) Values may not add due to rounding.

### 3.4 Water Delivery – System Development

As with the capacity criteria, the allocation of existing facilities and future CIP is determined for each type of infrastructure in the System Development impact fee calculation. For each of these infrastructure types, there are multiple facilities within each service area, and each facility is likely to have some available capacity for future growth. Planned expansion projects in the CIP are often construction of a new facility within a service area even though several other facilities within that service area may have available capacity.

Because new System Development facilities are constructed and put into service even when available capacity exists at older facilities, the assumption that growth will utilize all existing available capacity before utilizing future CIP capacity is not realistic. Therefore, existing available and future CIP capacity are considered together as total available capacity during the study period. The amount of that available capacity planned to be used by the growth that occurs within the study period is determined using the Water Delivery – System Development capacity criteria.

## WELL PUMPS

SAWS staff provided the capacities of the existing well pumps and the future well pumps in the CIP. The existing 2018 and planned 2028 well pump capacities for the combined system are 533.6 mgd and 583.2 mgd, respectively. Of the 533.6 mgd of existing capacity in 2018 (see the note on Table A-1 of the Appendices), 398.7 mgd is needed to meet the maximum day demand of existing customers. Therefore, 134.9 mgd is available to serve new development. The CIP includes 49.6 mgd (see Table B-3 of the Appendices) of well pump capacity so the total available capacity during the study period is 184.5 mgd:

$$\text{Total Available Well Pump Capacity} = \text{Available Existing Capacity} + \text{Future CIP Capacity}$$

$$\text{Total Available Well Pump Capacity} = 134.9 \text{ mgd} + 49.6 \text{ mgd} = \mathbf{184.5 \text{ mgd}}$$

From the Well Pumps capacity criteria, approximately 73.0 mgd is required to serve growth during the study period. This represents 39.6 percent of the 184.5 mgd total available capacity:

$$\text{2018 to 2028 Growth Allocation}_{WP} = \frac{\text{Study Period Demand}}{\text{Total Available Well Pump Capacity}}$$

$$\text{2018 to 2028 Growth Allocation}_{WP} = 73.0 \text{ mgd} \div 184.5 \text{ mgd} = \mathbf{39.6\%}$$

Table 3.14 summarizes the total value of available capacity and the value eligible to be included in the System Development impact fee calculation.

Table 3.14 2019 – 2028 Eligible Water Delivery Well Pumps CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
<b>All</b>	<b>\$123.5</b>	<b>\$12.3</b>	<b>\$3.9</b>	<b>\$20.9</b>	<b>\$8.3</b>	<b>\$0.0</b>	<b>\$144.3</b>	<b>\$24.5</b>

Note:

(1) Values may not add due to rounding.

## HIGH SERVICE AND BOOSTER PUMP STATIONS

SAWS staff provided the capacities of the existing and future high service and booster pump stations. The existing 2018 and planned 2028 pump station capacities for the combined system are 1,034.0 mgd and 1,066.7 mgd, respectively. The pump stations are separated into the three System Development service areas.

### High Elevation Service Area

The existing 2018 and planned 2028 capacities of the high service and booster pump stations located in the High Elevation service area are 60.9 mgd and 65.1 mgd, respectively (see the note on Table A-2 of the Appendices). Of the 60.9 mgd of existing capacity in 2018, 22.7 mgd is needed to meet the demand of existing customers. Therefore, 38.2 mgd is available to serve new development in the High Elevation service area. The CIP includes 4.2 mgd (see Table B-4 of the Appendices) of pump station capacity so the total available capacity for future High Elevation service area customers during the study period is 42.4 mgd:



$$\text{Total Available Capacity} = \frac{\text{Service Area}}{\text{Available Capacity}} + \frac{\text{Service Area}}{\text{Future CIP Capacity}}$$

$$\text{Total Available Capacity}_{HE} = 38.2 \text{ mgd} + 4.2 \text{ mgd} = \mathbf{42.4 \text{ mgd}}$$

From the High Service and Booster Pump Stations capacity criteria, approximately 6.6 mgd is required to serve growth in the High Elevation service area during the study period. This represents 15.5 percent of the total available capacity:

$$\text{2018 to 2028 Growth Allocation}_{HE} = \frac{\text{Service Area}}{\text{Study Period Demand}} \div \frac{\text{Service Area Total}}{\text{Available Capacity}}$$

$$\text{2018 to 2028 Growth Allocation}_{HE} = 6.6 \text{ mgd} \div 42.4 \text{ mgd} = \mathbf{15.5\%}$$

### Middle Elevation Service Area

The existing 2018 and planned 2028 capacities of the high service and booster pump stations located in the Middle Elevation service area are 440.1 mgd and 465.1 mgd, respectively (see the note on Table A-3 the Appendices). Of the 440.1 mgd of existing capacity in 2018, 251.0 mgd is needed to meet the demand of existing customers. Therefore, 189.1 mgd is available to serve new development in the Middle Elevation service area. The CIP includes 25.0 mgd (see Table B-5 of the Appendices) of pump station capacity so the total available capacity for future Middle Elevation service area customers during the study period is 214.1 mgd:

$$\text{Total Available Capacity}_{ME} = 189.1 \text{ mgd} + 25.0 \text{ mgd} = \mathbf{214.1 \text{ mgd}}$$

From the High Service and Booster Pump Stations capacity criteria, approximately 54.1 mgd is required to serve growth in the Middle Elevation service area during the study period. This represents 25.3 percent of the total available capacity:

$$\text{2018 to 2028 Growth Allocation}_{ME} = 54.1 \text{ mgd} \div 214.1 \text{ mgd} = \mathbf{25.3\%}$$

### Low Elevation Service Area

The existing 2018 and planned 2028 capacities of the high service and booster pump stations located in the Low Elevation service area are 533.0 mgd and 536.5 mgd, respectively (see the note on Table A-4 of the Appendices). Of the 533.0 mgd of existing capacity in 2018, 467.7 mgd is needed to meet the demand of existing customers. Therefore, 65.3 mgd is available to serve new development in the Low Elevation service area. The CIP includes 3.5 mgd (see Table B-6 of the Appendices) of pump station capacity so the total available capacity for future Low Elevation service area customers during the study period is 68.8 mgd:

$$\text{Total Available Capacity}_{LE} = 65.3 \text{ mgd} + 3.5 \text{ mgd} = \mathbf{68.8 \text{ mgd}}$$

From the High Service and Booster Pump Stations capacity criteria, approximately 75.1 mgd is required to serve growth in the Low Elevation service area during the study period. This represents 109.2 percent of the total available capacity:

$$\text{2018 to 2028 Growth Allocation}_{LE} = 75.1 \text{ mgd} \div 68.8 \text{ mgd} = \mathbf{109.2\%}$$

The allocation for the Low Elevation service area, however, is capped at 100 percent.

The costs of the total available and impact fee eligible pump station capacities for the three System Development service areas are summarized in Table 3.15.

Table 3.15 2019 – 2028 Eligible Water Delivery High Service and Booster Pump Stations CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
High Elevation	\$8.8	\$0.9	\$0.3	\$4.5	\$0.7	\$0.0	\$13.3	\$1.8
Middle Elevation	63.8	6.9	2.2	20.8	5.2	0.0	84.6	14.4
Low Elevation	77.2	9.5	3.0	6.8	6.8	0.0	84.0	19.3
<b>Total</b>	<b>\$149.8</b>	<b>\$17.2</b>	<b>\$5.5</b>	<b>\$32.0</b>	<b>\$12.7</b>	<b>\$0.0</b>	<b>\$181.9</b>	<b>\$35.4</b>

Note:

(1) Values may not add due to rounding.

### ELEVATED STORAGE TANKS

SAWS staff provided the capacities of the existing and future elevated storage tanks. The existing 2018 and planned 2028 elevated storage tank capacities for the combined system are 94.2 MG and 106.7 MG, respectively.

#### High Elevation Service Area

For the High Elevation service area, the existing 2018 and planned 2028 elevated storage capacities are 5.4 MG and 7.9 MG, respectively. Of the 5.4 MG of existing capacity in 2018 (see Table A-5 of the Appendices), 5.3 MG is needed to meet the demand of existing customers. Therefore, 0.1 MG is available to serve new development in the High Elevation service area. The CIP includes 2.5 MG of elevated storage capacity (see Table B-7 of the Appendices) so the total available capacity for future High Elevation service area customers during the study period is 2.6 MG:

$$\begin{aligned}
 \text{Total Available EST Capacity} &= \text{Service Area Available Capacity} + \text{Future CIP Capacity} \\
 \text{Total Available EST Capacity}_{HE} &= 0.1 \text{ MG} + 2.5 \text{ MG} = \mathbf{2.6 \text{ MG}}
 \end{aligned}$$

From the Elevated Storage Tanks capacity criteria, approximately 0.6 MG is required to serve growth in the High Elevation service area during the study period. The growth during the study period results in 23.7 percent of the System Development impact fee allocable to High Elevation service area elevated storage:

$$\text{Allocation}_{HE} = \frac{\text{Study Period Capacity Requirement}}{\text{Total Available Capacity}} = \frac{0.6 \text{ MG}}{2.6 \text{ MG}} = \mathbf{23.7\%}$$

#### Middle Elevation Service Area

For the Middle Elevation service area, the existing 2018 and planned 2028 elevated storage capacities are 40.6 MG and 46.1 MG, respectively. Of the 40.6 MG of existing capacity in 2018 (see Table A-6 of the Appendices), 33.7 MG is needed to meet the demand of existing customers. Therefore, 6.9 MG is available to serve new development in the Middle Elevation service area. The CIP includes 5.5 MG of elevated storage capacity (see Table B-8 of the

Appendices) so the total available capacity for future Middle Elevation service area customers during the study period is 12.4 MG:

$$\frac{\text{Total Available EST Capacity}_{ME}}{EST Capacity_{ME}} = 6.9 \text{ MG} + 5.5 \text{ MG} = \mathbf{12.4 \text{ MG}}$$

From the Ground Storage Tanks capacity criteria, approximately 6.9 MG is required to serve growth in the Middle Elevation service area during the study period. The growth during the study period results in 55.1 percent of the System Development impact fee allocable to Middle Elevation service area elevated storage:

$$\frac{2018 \text{ to } 2028 \text{ EST Allocation}_{ME}}{EST Allocation_{ME}} = \frac{\text{Study Period Capacity Requirement}}{\text{Total Available Capacity}} = \frac{6.9 \text{ MG}}{12.4 \text{ MG}} = \mathbf{55.1\%}$$

### Low Elevation Service Area

For the Low Elevation service area, the existing 2018 and planned 2028 elevated storage capacities are 48.2 MG and 52.7 MG, respectively. Of the 48.2 MG of existing capacity in 2018 (see Table A-7 of the Appendices), 45.7 MG is needed to meet the demand of existing customers. Therefore, 2.5 MG is available to serve new development in the Low Elevation service area. The CIP includes 4.5 MG of elevated storage capacity (see Table B-9 of the Appendices) so the total available capacity for future Low Elevation service area growth during the study period is 7.0 MG:

$$\frac{\text{Total Available EST Capacity}_{LE}}{EST Capacity_{LE}} = 2.5 \text{ MG} + 4.5 \text{ MG} = \mathbf{7.0 \text{ MG}}$$

From the Ground Storage Tanks capacity criteria, approximately 6.6 MG is required to serve growth in the Low Elevation service area during the study period. The growth during the study period results in 94.1 percent of the System Development impact fee allocable to Middle Elevation service area elevated storage:

$$\frac{2018 \text{ to } 2028 \text{ EST Allocation}_{LE}}{EST Allocation_{LE}} = \frac{\text{Study Period Capacity Requirement}}{\text{Total Available Capacity}} = \frac{6.6 \text{ MG}}{7.0 \text{ MG}} = \mathbf{94.1\%}$$

The costs of the total available and impact fee eligible elevated storage capacities for the three System Development service areas are summarized in Table 3.16.

Table 3.16 2019 – 2028 Eligible Water Delivery Elevated Storage CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
High Elevation	\$4.1	\$0.0	\$0.0	\$8.5	\$2.0	\$0.0	\$12.6	\$2.0
Middle Elevation	31.3	2.9	0.9	14.6	8.1	0.0	45.9	11.9
Low Elevation	37.1	1.8	0.6	18.3	17.2	0.0	55.4	19.6
<b>Total</b>	<b>\$72.5</b>	<b>\$4.8</b>	<b>\$1.5</b>	<b>\$41.4</b>	<b>\$27.3</b>	<b>\$0.0</b>	<b>\$113.9</b>	<b>\$33.6</b>

Note:

(1) Values may not add due to rounding.

## GROUND STORAGE TANKS

SAWS staff provided the capacities of the existing and future ground storage tanks. The existing 2018 and planned 2028 ground storage tank capacities for the combined system are 178.9 MG and 192.4 MG, respectively.

### High Elevation Service Area

For the High Elevation service area, the existing 2018 and planned 2028 ground storage capacities is 10.8 MG. Of the 10.8 MG of existing capacity in 2018 (see Table A-8 of the Appendices), 0.03 MG is needed to meet the demand of existing customers. Therefore, the remaining 10.77 MG is available to serve new development in the High Elevation service area. There are no High Elevation service area ground storage tank projects in the CIP, so the total available capacity for growth during the study period is equal to its existing available capacity of 10.77 MG:

$$\begin{aligned} \text{Total Available} \\ \text{GST Capacity} &= \text{Service Area} \\ &\quad \text{Available Capacity} + \text{Future CIP} \\ &\quad \text{Capacity} \\ \text{Total Available} \\ \text{GST Capacity}_{HE} &= 10.77 \text{ MG} + 0.00 \text{ MG} = \mathbf{10.77 \text{ MG}} \end{aligned}$$

From the Ground Storage Tanks capacity criteria, approximately 0.05 MG of ground storage is required to serve growth in the High Elevation service area during the study period. The growth during the study period results in 0.5 percent of the System Development impact fee allocable to High Elevation service area ground storage:

$$\text{2018 to 2028} \\ \text{GST Allocation}_{HE} = \frac{\text{Study Period Capacity Requirement}}{\text{Total Available Capacity}} = \frac{0.05 \text{ MG}}{10.8 \text{ MG}} = \mathbf{0.5\%}$$

### Middle Elevation Service Area

For the Middle Elevation service area, the existing 2018 and planned 2028 ground storage capacities are 67.5 MG and 80.0 MG, respectively. Of the 67.5 MG of existing capacity in 2018 (see Table A-9 of the Appendices), 0.3 MG is needed to meet the demand of existing customers. Therefore, 67.2 MG is available to serve new development in the Middle Elevation service area.

The CIP includes 12.5 MG of ground storage capacity (see Table B-10 of Appendices) so the total available capacity for future Middle Elevation service area growth during the study period is 79.7 MG:

$$\begin{aligned} \text{Total Available} \\ \text{GST Capacity}_{ME} &= 67.2 \text{ MG} + 12.5 \text{ MG} = \mathbf{79.7 \text{ MG}} \end{aligned}$$

From the Ground Storage Tanks capacity criteria, approximately 0.5 MG of ground storage is required to serve growth in the Middle Elevation service area during the study period. The growth during the study period results in 0.6 percent of the System Development impact fee allocable to Middle Elevation service area ground storage:

$$\text{2018 to 2028} \\ \text{GST Allocation}_{ME} = \frac{\text{Study Period Capacity Requirement}}{\text{Total Available Capacity}} = \frac{0.5 \text{ MG}}{79.7 \text{ MG}} = \mathbf{0.6\%}$$

### Low Elevation Service Area

For the Low Elevation service area, the existing 2018 and planned 2028 ground storage capacities are 100.6 MG and 101.6 MG, respectively. Of the 100.6 MG of existing capacity in 2018 (see Table A-10 of the Appendices), 17.8 MG is needed to meet the demand of existing customers. Therefore, 82.8 MG is available to serve new development in the Low Elevation service area. The CIP includes 1.0 MG of ground storage capacity (see Table B-11 of the Appendices) so the total available capacity for growth during the study period is 83.8 MG:

$$\begin{aligned} \text{Total Available} \\ \text{GST Capacity}_{LE} &= 82.8 \text{ MG} + 1.0 \text{ MG} = \mathbf{83.8 \text{ MG}} \end{aligned}$$

From the Ground Storage Tanks capacity criteria, approximately 3.6 MG of ground storage is required to serve growth in the Low Elevation service area during the study period. The growth during the study period results in 4.3 percent of the System Development impact fee allocable to Low Elevation service area ground storage:

$$\text{GST Allocation}_{LE} = \frac{\text{Study Period Capacity Requirement}}{\text{Total Available Capacity}} = \frac{3.6 \text{ MG}}{83.8 \text{ MG}} = \mathbf{4.3\%}$$

The costs of the total available and impact fee eligible ground storage capacities for the three System Development service areas are summarized in Table 3.17.

Table 3.17 2019 – 2028 Eligible Water Delivery Ground Storage CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
High Elevation	\$3.9	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$3.9	\$0.0
Middle Elevation	24.7	0.2	0.0	21.5	0.1	0.0	46.2	0.3
Low Elevation	36.8	1.3	0.4	3.3	0.1	0.0	40.1	1.8
<b>Total</b>	<b>\$65.5</b>	<b>\$1.5</b>	<b>\$0.5</b>	<b>\$24.7</b>	<b>\$0.3</b>	<b>\$0.0</b>	<b>\$90.2</b>	<b>\$2.2</b>

Notes:

(1) Values may not add due to rounding.

### TRANSMISSION MAINS

Transmission mains typically carry treated water from a high service pump station or a booster pump station to the smaller distribution mains within a pressure zone or to another pressure zone. Similar to the distribution mains, it is difficult to estimate the total or available capacity within the transmission mains, so the demands and capacities of the high service and booster pump stations are used to estimate the demands and capacities of the transmission mains.

Therefore, the study period growth allocations for transmission mains are the same as for the high service and booster pump stations. The costs of the total available and impact fee eligible transmission main capacities for the three System Development service areas are summarized in Table 3.18.

Table 3.18 2019 – 2028 Eligible Water Delivery Transmission Mains CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
High Elevation	\$3.8	\$0.4	\$0.1	\$19.0	\$2.9	\$0.0	\$22.8	\$3.4
Middle Elevation	27.3	3.0	0.9	79.4	20.1	0.0	106.8	24.0
Low Elevation	33.1	4.1	1.3	11.6	11.6	0.0	44.7	16.9
<b>Total</b>	<b>\$64.2</b>	<b>\$7.4</b>	<b>\$2.3</b>	<b>\$110.0</b>	<b>\$34.6</b>	<b>\$0.0</b>	<b>\$174.2</b>	<b>\$44.3</b>

Note:

(1) Values may not add due to rounding.

Transmission mains CIP projects for the three service areas are provided in Table B-12 through Table B-14 of the Appendices.

Table 3.19 summarizes the eligible Water Delivery— System Development CIP costs by service area.

Table 3.19 2019 – 2028 Eligible Water Delivery – System Development CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
High Elevation	\$24.5	\$1.8	\$0.6	\$33.0	\$6.0	\$0.0	\$57.4	\$8.5
Middle Elevation	188.9	17.9	5.7	144.7	36.8	0.0	333.6	60.3
Low Elevation	262.1	23.5	7.4	51.3	40.3	0.0	313.5	71.2
<b>Total</b>	<b>\$475.5</b>	<b>\$43.2</b>	<b>\$13.7</b>	<b>\$229.0</b>	<b>\$83.1</b>	<b>\$0.0</b>	<b>\$704.5</b>	<b>\$140.0</b>

Note:

(1) Values may not add due to rounding.

### 3.5 Wastewater Treatment

The Wastewater Treatment Impact Fee includes growth-related costs associated with existing treatment infrastructure and the costs for new projects. For the Medio Creek WRC and the combined Leon Creek/Dos Rios WRCs, the portion of capacity that is required to serve new growth during the study period was estimated by using the average daily flows.

Carollo applied this portion as a percentage of total project capacity to each project's cost to determine the amount that is eligible for inclusion in the Wastewater Treatment Impact Fee calculation. The Wastewater Treatment service areas are described in each of the following sections.

#### MEDIO CREEK SERVICE AREA

The existing 2018 wastewater treatment capacity at the Medio Creek WRC is 16.0 mgd. Because the projected 2028 Wastewater Treatment capacity criteria for the Medio Creek service area is 13.0 mgd, no additional capacity is required during the study period. However, Plant I and control system upgrades are currently planned that will improve the existing capacity at Medio Creek WRC. The projects will increase the value of the available existing capacity and,

accordingly, the portions that are associated with the existing capacity that is currently unused and eligible for inclusion in the impact fee calculation. These projects are listed in Table B-15 of the Appendices.

It is assumed that growth will use available existing capacity first and future CIP capacity if the projected growth requires additional capacity beyond what is currently available at the WRC. Of the estimated 16.0 mgd capacity at the Medio Creek WRC in 2018, 10.0 mgd is needed to serve existing customers. Therefore, 6.0 mgd is available to serve new development:

$$\begin{aligned} \text{Existing Available Capacity}_{MC} &= 2018 \text{ Capacity} - 2018 \text{ ADF} \\ \text{Existing Available Capacity}_{MC} &= 16.0 \text{ mgd} - 10.0 \text{ mgd} = \mathbf{6.0 \text{ mgd}} \end{aligned}$$

The existing available 2018 capacity for Medio Creek is greater than the study period capacity requirement of approximately 3.0 mgd. Therefore, the portion of existing capacity required for expected growth during the study period is eligible to be included in the Wastewater Treatment Impact Fee. For Medio Creek, this represents 19.0 percent of the existing capacity:

$$\text{2018 to 2028 WW Treatment Allocation}_{MC} = \frac{\text{Study Period Capacity Requirement}}{2018 \text{ Capacity}} = \frac{3.0 \text{ mgd}}{16.0 \text{ mgd}} = \mathbf{19.0\%}$$

#### LEON CREEK/DOS RIOS SERVICE AREA

The existing 2018 wastewater treatment capacity is 46.0 mgd at Leon Creek WRC and 125.0 mgd at Dos Rios WRC. There are CIP projects planned that will improve the existing capacity at Dos Rios and Leon Creek WRCs. Because these projects will increase the value of the available existing capacity, the portions that are associated with the existing unused capacity are eligible for inclusion in the impact fee calculation. In addition, expansion projects at Leon Creek and Dos Rios WRCs will increase capacities to 48.0 mgd and 150.0 mgd, respectively. The CIP projects are listed in Table B-15 of the Appendices.

It is assumed that growth will use available existing capacity first and future CIP capacity if the projected growth requires additional capacity beyond what is currently available at the WRCs. Of the estimated 171.0 mgd combined capacity at Leon Creek/Dos Rios WRCs in 2018, 134.1 mgd is needed to serve existing customers. Therefore, 36.9 mgd is available to serve new development:

$$\begin{aligned} \text{Existing Available Capacity}_{LCDR} &= 2018 \text{ Capacity} - 2018 \text{ ADF} \\ \text{Existing Available Capacity}_{LCDR} &= 171.0 \text{ mgd} - 134.1 \text{ mgd} = \mathbf{36.9 \text{ mgd}} \end{aligned}$$

From the Leon Creek/Dos Rios service area Wastewater Treatment capacity criteria, the projected 2028 average daily flow is 157.4 mgd, requiring approximately 23.3 mgd of available capacity. The existing available 2018 capacity for Leon Creek/Dos Rios is greater than the study period capacity requirement. Therefore, portion of existing capacity required for expected growth during the study period is allocable to the Wastewater Treatment Impact Fee. For Leon Creek/Dos Rios, this portion represents 13.7 percent of the existing capacity:

$$\text{2018 to 2028 WW Treatment Allocation}_{LCDR} = \frac{\text{Study Period Capacity Requirement}}{2018 \text{ Capacity}} = \frac{23.3 \text{ mgd}}{171.0 \text{ mgd}} = \mathbf{13.7\%}$$

This allocation will be applied to the Leon Creek/Dos Rios Treatment equity. However, because some CIP projects are improving existing available capacity and others are adding capacity, each CIP project was considered separately. A weighted average allocation of 7.8 percent was determined for future wastewater treatment projects.

The costs of the eligible facilities for the two Wastewater Treatment service areas are summarized in Table 3.20. Growth allocations by phase for the CIP projects are provided in Table B-15 of the Appendices.

Table 3.20 2019 – 2028 Eligible Wastewater Treatment CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
Medio Creek	\$63.9	\$12.1	\$3.7	\$21.1	\$4.0	\$0.0	\$85.0	\$19.8
Leon Creek / Dos Rios	403.5	55.1	16.8	132.2	10.3	0.0	535.6	82.2
<b>Total</b>	<b>\$467.4</b>	<b>\$67.2</b>	<b>\$20.6</b>	<b>\$153.2</b>	<b>\$14.3</b>	<b>\$0.0</b>	<b>\$620.6</b>	<b>\$102.0</b>

Notes:

- (1) Values may not add up to due rounding.
- (2) Some of these CIP projected do not add capacity but increase the value of existing available capacity. They are listed in Table B-15 of the Appendices.

### 3.6 Wastewater Collection

The Wastewater Collection Impact Fee includes growth-related costs associated with the interceptors and wastewater collection mains that are 10 inches or greater in diameter; mains smaller than 10 inches are typically constructed by developers and "dedicated" or contributed to SAWS and, as such, are not included in the costs used to calculate the impact fee.

SAWS staff used the existing wastewater collection system model to estimate the 2018 and 2028 capacity requirements, based on the design peak wet weather flow and the number of EDUs contributing flow, for each collection system project in the CIP, which are listed in Table B-16 through Table B-21 of the Appendices. Using this analysis, SAWS staff estimated the portion of each project that is required to serve new growth during the study period. Carollo applied this portion as a percentage of total project capacity to each project's cost to determine the amount that is eligible for inclusion in the Wastewater Collection Impact Fee calculation. The Wastewater Collection Impact Fee service areas are described in each of the following sections.

#### MEDIO CREEK SERVICE AREA

The Medio Creek service area remains unchanged and is the same for the Wastewater Collection Impact Fee as for the Wastewater Treatment Impact Fee. Using the collection system model with planned wastewater collection CIP projects included, SAWS staff estimated the 2018 collection system capacity in the Medio Creek service area to be capable of serving 83,487 EDUs, or 54.3 mgd. The difference between the Medio Creek service area's total 2018 capacity and the previously calculated 2018 PWWF from is 21.8 mgd:

$$\text{Existing Available Capacity}_{MC} = \text{Total 2018 Capacity} - \text{2018 PWWF}$$

$$\text{Existing Available Capacity}_{MC} = 54.3 \text{ mgd} - 32.5 \text{ mgd} = \mathbf{21.8 \text{ mgd}}$$



The existing available capacity for Medio Creek is greater than the study period PWWF of 9.9 mgd. Therefore, only the portion of existing capacity required for expected growth during the study period is eligible for allocation to the Wastewater Collection impact Fee. This portion results in 18.2 percent of the equity associated with Wastewater Collection allocable to new development in the Medio Creek service area:

$$\text{Collection Allocation}_{MC} = \frac{\text{Study Period PWWF}}{\text{Total 2018 Capacity}} = \frac{9.9 \text{ mgd}}{54.3 \text{ mgd}} = \mathbf{18.2\%}$$

SAWS staff analyzed the planned collection system projects to determine the eligible portion of future CIP projects, which are provided in Table B-16 of the Appendices. The weighted average allocation of the planned projects is 32.6 percent.

## LEON CREEK/DOS RIOS SERVICE AREAS

### Upper Medina

The Upper Medina service area is unchanged from the current service area. The wastewater collected from the Upper Medina customers will flow through the Lower Medina service area to the Dos Rios WRC. Using the existing collection system model, SAWS staff estimated the 2018 collection system capacity in the Upper Medina service area to be capable of serving 72,000 EDUs, or 46.8 mgd. The difference between the Upper Medina service area's total 2018 capacity and 2018 PWWF demand is 34.8 mgd:

$$\text{Existing Available Capacity}_{UM} = 46.8 \text{ mgd} - 12.0 \text{ mgd} = \mathbf{34.8 \text{ mgd}}$$

The existing available capacity for Upper Medina is greater than the study period PWWF of 7.6 mgd. Therefore, only the portion of existing capacity required for the expected growth during the study period is eligible to be allocated to the Wastewater Collection Impact Fee.

This portion results in 16.2 percent of the equity associated with Wastewater Collection allocable to new development in the Upper Medina service area:

$$\text{Collection Allocation}_{UM} = \frac{\text{Study Period PWWF Demand}}{\text{Total 2018 Capacity}} = \frac{7.6 \text{ mgd}}{46.8 \text{ mgd}} = \mathbf{16.2\%}$$

SAWS staff analyzed the planned collection system projects to determine the eligible portion of future CIP projects, which are provided in Table B-17 of the Appendices. The weighted average allocation of the planned projects is 32.9 percent.

### Lower Medina

The Lower Medina service area is unchanged from the current service area, where wastewater will be collected and delivered to the Dos Rios WRC. Wastewater flows from the Upper Medina service area through the Lower Medina service area to the Dos Rios WRC. Therefore, collection system infrastructure in the Lower Medina service area must be sized to carry combined flow from customers in the Upper Medina and Lower Medina service areas. Using the existing collection system model, SAWS staff estimated the 2018 collection system capacity in the Lower Medina service area to be capable of serving 106,962 EDUs, or 69.5 mgd. The difference between the Lower Medina service area's total 2018 capacity and the 2018 PWWF is 52.9 mgd:

$$\text{Existing Available Capacity}_{LM} = 69.5 \text{ mgd} - 16.6 \text{ mgd} = \mathbf{52.9 \text{ mgd}}$$

The existing available capacity for Lower Medina is greater than the study period PWWF of 10.4 mgd. Therefore, only the portion of existing capacity required for the expected growth during the study period is eligible for allocation to the Wastewater Collection Impact Fee. This portion results in 15.0 percent of the equity associated with Wastewater Collection allocable to new development in the Lower Medina service area:

$$\text{2018 to 2028 WW Collection Allocation}_{LM} = \frac{\text{Study Period PWWF}}{\text{Total 2018 Capacity}} = \frac{10.4 \text{ mgd}}{69.5 \text{ mgd}} = \mathbf{15.0\%}$$

SAWS staff analyzed the planned collection system projects to determine the eligible portion of future CIP projects, which are provided in Table B-18 of the Appendices. The weighted average allocation of the planned projects is 26.5 percent.

### Upper Collection

The proposed Upper Collection service area is the same as the current Upper Collection service area. Wastewater flows from the Upper Collection service area through the Middle Collection and Lower Collection service areas to the WRCs. Using the existing collection system model, SAWS staff estimated the 2018 collection system capacity in the Upper Collection service area to be capable of serving 232,160 EDUs, or 150.9 mgd. The difference between the Upper Collection service area's total 2018 capacity and 2018 PWWF is 37.0 mgd:

$$\text{Existing Available Capacity}_{UC} = 150.9 \text{ mgd} - 113.9 \text{ mgd} = \mathbf{37.0 \text{ mgd}}$$

The existing available capacity for Upper Collection is greater than the study period PWWF of 25.6 mgd. Therefore, only the portion of existing capacity required for the expected growth during the study period is eligible to be allocated to the Wastewater Collection Impact Fee.

This portion results in 17.0 percent of the equity associated with Wastewater Collection allocable to new development in the Upper Collection service area:

$$\text{2018 to 2028 WW Collection Allocation}_{UC} = \frac{\text{Study Period PWWF}}{\text{Total 2018 Capacity}} = \frac{25.6 \text{ mgd}}{150.9 \text{ mgd}} = \mathbf{17.0\%}$$

SAWS staff analyzed the planned collection system projects to determine the eligible portion of future CIP projects, which are provided in Table B-19 of the Appendices. The weighted average allocation of the planned projects is 18.9 percent.

### Middle Collection

The proposed Middle Collection service area is unchanged from the current service area. Wastewater flows from the Upper Collection service area combine with Middle Collection service area flows and flow through the Lower Collection service area to the WRCs. Therefore, collection system infrastructure in the Middle Collection service area must be sized to carry combined flow from customers in the Upper Collection and Middle Collection service areas. Using the existing collection system model, SAWS staff estimated the 2018 collection system capacity in the Middle Collection service area to be capable of serving 536,138 EDUs, or 348.5 mgd.

The difference between the Middle Collection service area's total 2018 capacity and 2018 PWWF is 76.1 mgd:

$$\frac{\text{Existing Available Capacity}_{MC}}{\text{Total 2018 Capacity}} = 348.5 \text{ mgd} - 272.4 \text{ mgd} = \mathbf{76.1 \text{ mgd}}$$

The existing available capacity for Middle Collection is greater than the study period PWWF of 39.8 mgd. Therefore, only the portion of existing capacity required for the expected growth during the study period is eligible to be allocated to the Wastewater Collection Impact Fee. This portion results in 11.4 percent of the equity associated with Wastewater Collection allocable to new development in the Middle Collection service area:

$$\frac{\text{2018 to 2028 WW Collection Allocation}_{MC}}{\text{Total 2018 Capacity}} = \frac{\text{Study Period PWWF}}{\text{Total 2018 Capacity}} = \frac{39.8 \text{ mgd}}{348.5 \text{ mgd}} = \mathbf{11.4\%}$$

SAWS staff analyzed the planned collection system projects to determine the eligible portion of future CIP projects, which are provided in Table B-20 of the Appendices. The weighted average allocation of the planned projects is 17.8 percent.

### Lower Collection

The proposed Lower Collection service area is unchanged from the current Lower Collection service area. Wastewater flows from the Upper Collection and Middle Collection service areas through the Lower Collection service area to the WRCs. Therefore, collection system infrastructure in the Lower Collection service area must be sized to carry combined flow from customers in the Upper Collection, Middle Collection, and Lower Collection service areas. Using the existing collection system model, SAWS staff estimated the 2018 collection system capacity in the Lower Collection service area to be capable of serving 842,789 EDUs, or 547.8 mgd. The difference between the Lower Collection service area's total 2018 capacity and 2018 PWWF is 128.7 mgd:

$$\frac{\text{Existing Available Capacity}_{LC}}{\text{Total 2018 Capacity}} = 547.8 \text{ mgd} - 419.1 \text{ mgd} = \mathbf{128.7 \text{ mgd}}$$

The existing available capacity for Lower Collection is greater than the study period PWWF of 65.4 mgd. Therefore, only the portion of existing capacity required for the expected growth during the study period is eligible to be allocated to the Wastewater Collection Impact Fee. This portion results in 11.9 percent of the equity associated with Wastewater Collection allocable to new development in the Lower Collection service area:

$$\frac{\text{2018 to 2028 WW Collection Allocation}_{LC}}{\text{Total 2018 Capacity}} = \frac{\text{Study Period PWWF}}{\text{Total 2018 Capacity}} = \frac{65.4 \text{ mgd}}{547.8 \text{ mgd}} = \mathbf{11.9\%}$$

SAWS staff analyzed the planned collection system projects to determine the eligible portion of future CIP projects, which are provided in Table B-21 of Appendices. The weighted average allocation of the planned projects is 11.8 percent.

The costs of the eligible facilities for the six Wastewater Collection service areas are summarized in Table 3.21.

Table 3.21 2019 – 2028 Eligible Wastewater Collection CIP Costs

Service Area	Existing Capacity (\$ mil)			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
Medio Creek	\$31.5	\$5.7	\$1.8	\$19.1	\$6.2	\$0.0	\$50.6	\$13.7
Upper Medina	27.2	4.4	1.3	16.0	5.3	0.0	43.2	11.0
Lower Medina	40.4	6.1	1.9	4.1	1.1	0.0	44.5	9.0
Upper Collection	87.6	14.9	4.5	71.1	13.4	0.0	158.8	32.8
Middle Collection	202.4	23.1	7.1	232.5	41.5	0.0	434.9	71.6
Lower Collection	318.1	38.0	11.6	402.7	47.4	0.0	720.9	97.0
<b>Total</b>	<b>\$707.2</b>	<b>\$92.1</b>	<b>\$28.2</b>	<b>\$745.5</b>	<b>\$114.9</b>	<b>\$0.0</b>	<b>\$1,452.7</b>	<b>\$235.2</b>

Note:

(1) Values may not add due to rounding.

### 3.7 CIP Summary by System Component

Table 3.22 summarizes the total eligible CIP costs by impact fee component.

Table 3.22 Summary of 2019 – 2028 Eligible CIP Costs

Component	Existing Capacity (\$ mil) <sup>(1)</sup>			New Capacity (\$ mil)			Total Capacity (\$ mil)	
	Capacity Value	Eligible Capacity Value	Eligible Financing Costs	Capacity Value	Eligible Capacity	Eligible Financing Costs	Total Value	Total Eligible Capacity
<b>Water</b>								
Supply	\$1,135.6	\$120.5	\$32.4	\$1,130.0	\$366.1	\$0.0	\$2,265.6	\$519.0
Delivery – Flow	707.3	70.7	22.4	251.9	89.1	0.0	959.1	182.2
Delivery — SD	475.5	43.2	13.7	229.0	83.1	0.0	704.5	140.0
<b>Water Total</b>	<b>\$2,318.4</b>	<b>\$234.4</b>	<b>\$68.6</b>	<b>\$1,610.9</b>	<b>\$538.3</b>	<b>\$0.0</b>	<b>\$3,929.2</b>	<b>\$841.3</b>
<b>Wastewater</b>								
Treatment	\$467.4	\$67.2	\$20.6	\$153.2	\$14.3	\$0.0	\$620.6	\$102.0
Collection	707.2	92.1	28.2	745.5	114.9	0.0	1,452.7	235.2
<b>Wastewater Total</b>	<b>\$1,174.6</b>	<b>\$159.3</b>	<b>\$48.7</b>	<b>\$898.8</b>	<b>\$129.2</b>	<b>\$0.0</b>	<b>\$2,073.3</b>	<b>\$337.2</b>
<b>Water &amp; Wastewater Total</b>	<b>\$3,492.9</b>	<b>\$393.7</b>	<b>\$117.3</b>	<b>\$2,509.6</b>	<b>\$667.5</b>	<b>\$0.0</b>	<b>\$6,002.6</b>	<b>\$1,178.5</b>

Note:

(1) Values may not add due to rounding.

## Section 4 Maximum Impact Fee

### 4.1 Introduction

This section uses the findings in the LUAP and CIP to calculate the impact fee per EDU and then calculates the appropriate rate credit to deduct to determine the maximum allowable impact fee. Regarding water and wastewater system infrastructure, Chapter 395 of the TLGC states that an impact fee is a charge or assessment imposed upon new development in order to generate revenue for funding and recovering the costs of capital improvements or facility expansions required to serve that development. Maximum Impact Fees are defined as a charge that is calculated by subtracting statutory credits from the estimated capital costs to be included in rates that will be charged to the new EDUs over the study period from the calculated impact fee per EDU.

### 4.2 Calculated Impact Fee per EDU

The impact fee per EDU by service area is calculated by first determining the eligible capital costs for growth-related CIP, as presented in the CIP Section. Those eligible capital costs per service area are then divided by the projected number of added EDUs for that service area, as presented in the LUAP Section, to determine the calculated impact fee per EDU.

Table 4.1 summarizes the impact fees per EDU, which are calculated by dividing the eligible CIP value by the EDUs. The EDUs used in this calculation represent the incremental EDUs that will be served by the infrastructure in the respective service area, which may include EDUs from another service area that will be served by the infrastructure in the respective service area. They do not necessarily represent the incremental EDUs that will be located in the service area.

Table 4.1 Calculated Impact Fees per EDU

Impact Fee Component	Service Area	Eligible CIP Value	EDU	Calculated Impact Fee per EDU
Water Supply	All	\$519,048,777	141,770	<b>\$3,661</b>
Water Delivery - Flow	All	182,232,572	141,770	<b>1,285</b>
Water Delivery - System Development	High Elevation	8,467,874	6,845	<b>1,237</b>
	Middle Elevation	60,338,483	56,478	<b>1,068</b>
	Low Elevation	71,192,942	78,447	<b>908</b>
Wastewater Treatment	Medio Creek	19,820,413	15,168	<b>1,307</b>
	Leon Creek/Dos Rios	82,224,287	116,672	<b>705</b>
Wastewater Collection	Medio Creek	13,693,357	15,168	<b>903</b>
	Upper Medina <sup>(1)</sup>	11,011,473	11,667	<b>1,504</b>
	Lower Medina	9,011,045	16,077	<b>560</b>
	Upper Collection <sup>(2)</sup>	32,831,501	39,389	<b>2,969</b>
	Middle Collection <sup>(3)</sup>	71,615,338	61,158	<b>2,136</b>
	Lower Collection	97,029,230	100,595	<b>965</b>

Notes:

- (1) Maximum Impact Fee per EDU includes Lower Medina fee.
- (2) Maximum Impact Fee per EDU includes Middle Collection fee.
- (3) Maximum Impact Fee per EDU includes Lower Collection fee.

## 4.3 Credit Calculation

Chapter 395 of the TLGC requires utilities to calculate a credit for growth-related CIP, to be subtracted from the impact fee. The credit is based on the amount of projected future rate revenues or taxes expected to be generated by the new development and used to pay for capital improvements identified in the CIP. This credit provides an adjustment to benefit fee payers who will pay for CIP in both the impact fee and their future rates and taxes. Utilities can calculate this credit and apply it to the calculated impact fee or, alternatively, can avoid having to calculate the credit by opting to use the statutory credit equal to 50 percent of the calculated impact fee. SAWS has opted to calculate the credit.

SAWS does not receive tax revenue from the City of San Antonio. Therefore, the impact fee credit is based on the cost of growth-related CIP that is projected to be in future rates of the projected new development. Those costs include debt service payments on outstanding debt for the existing available capacity that has been included in the eligible study period capacity and projected future principal payments for future debt on eligible growth-related CIP. Interest payments on future debt are not included in the credit because they are not included in the impact fee calculation.

### 4.3.1 Credit for Existing Debt

#### WATER SUPPLY CREDIT

For the existing available capacity, it is assumed that 60 percent of the asset value was financed with debt. From discussions with SAWS staff, SAWS has historically financed approximately 60 percent of its CIP with debt and 40 percent with cash. The amount of water supply outstanding debt was provided by SAWS staff. Then the proportion of the annual debt service payments for the study period that is related to the existing available capacity for water supply was determined. The total debt service payment attributed to the eligible equity is divided by the year-end EDUs to determine the portion of the debt service payment contributed by each EDU. This payment per EDU is multiplied by the number of EDUs projected to be added in that year to determine the rate credit for that year that should be subtracted from the calculated impact fee.

These calculations are completed for each year in the study period, as shown in Table 4.2 for 2019, and then the eligible existing debt service to be recovered from new development is summed to determine the total credit for existing debt, as shown in Line 11 of Table 4.2. The Appendices detail these calculations for each year in the study period.

Table 4.2 Eligible Existing Water Supply Debt Service from New Development

Line No.	Description	Eligible CIP Value
1	2019 Existing Water Supply Debt Service	\$36,866,713
2	Eligible Existing Water Supply Capacity (Equity)	\$120,478,980
3	Debt-funded CIP ÷ Total CIP	60%
4	Total Outstanding Water Supply Debt	\$577,757,367
5	<b>2019 Existing Water Supply Debt Service</b> $(1 \times 2 \times 3) \div 4$	<b>\$4,612,660</b>
6	2019 Beginning Water Supply EDUs	774,623
7	2019 Projected New EDUs	14,209
8	<b>2019 Year-end Water Supply EDUs</b> $(6 + 7)$	<b>788,832</b>
9	<b>2019 Eligible Existing Water Supply Debt per EDU</b> $(5 \div 8)$	<b>\$5.85</b>
10	<b>2019 Eligible Existing Water Supply Debt from EDUs</b> $(7 \times 9)$	<b>\$83,086</b>
11	<b>Sum of Study Period Eligible Existing Water Supply Debt from EDUs</b>	<b>\$12,179,226</b>

### WATER DELIVERY CREDIT

The calculation of the total credit for existing debt for Water Delivery is similar to the Water Supply calculation. Table 4.3 provides the calculation for 2019, as well as the total credit for existing debt, as shown in Line 11 of Table 4.3. The Appendices detail these calculations for each year of the study period.

Table 4.3 Eligible Existing Water Delivery Debt Service from New Development

Line No.	Description	Eligible CIP Value
1	2019 Existing Total Debt Service	\$68,371,118
2	Eligible Existing Water Delivery Capacity (Equity)	\$113,912,454
3	Debt-funded CIP ÷ Total CIP	60%
4	Outstanding Water Delivery Debt	\$898,142,207
5	<b>2019 Existing Water Delivery Debt Service</b> $(1 \times 2 \times 3) \div 4$	<b>\$5,202,955</b>
6	2019 Beginning Water Delivery EDUs	774,623
7	2019 Projected New EDUs	14,209
8	<b>2019 Year-end Water Delivery EDUs</b> $(6 + 7)$	<b>788,832</b>
9	<b>2019 Eligible Existing Water Delivery Debt per EDU</b> $(5 \div 8)$	<b>\$6.60</b>
10	<b>2019 Eligible Existing Water Delivery Debt from EDUs</b> $(7 \times 9)$	<b>\$93,719</b>
11	<b>Sum of Study Period Eligible Existing Water Delivery Debt from EDUs</b>	<b>\$11,655,059</b>

This credit is allocated among the impact fees and service areas based on the proportion of eligible existing water delivery capacity value. Table 4.4 provides the water delivery credit for existing debt by impact fee and service area.

Table 4.4 Existing Water Delivery Debt Service Credit by Impact Fee Service Area

Impact Fee Component	Water Service Area	Water Infrastructure Type	Credit for Existing Debt
System Development	All	<b>Distribution Mains</b>	
		<b>\$7,236,360</b>	
	High Elevation	Well Pumps	60,995
		High Service and Booster PS	87,618
		Elevated Storage Tanks	590
		Ground Storage Tanks	1,821
		Transmission Mains	37,547
		<b>HE Subtotal</b>	<b>\$188,571</b>
	Middle Elevation	Well Pumps	503,257
		High Service and Booster PS	707,952
		Elevated Storage Tanks	300,662
		Ground Storage Tanks	15,387
		Transmission Mains	303,257
	<b>ME Subtotal</b>	<b>\$1,830,637</b>	
	Low Elevation	Well Pumps	699,016
		High Service and Booster PS	967,107
		Elevated Storage Tanks	186,108
		Ground Storage Tanks	132,825
		Transmission Mains	414,435
	<b>LE Subtotal</b>	<b>\$2,399,491</b>	
<b>Total</b>			<b>\$11,655,059</b>

### 4.3.2 Wastewater System Debt

The calculation of the total credit for existing debt for Wastewater is similar to the Water Supply calculation. Table 4.5 provides the calculation for 2019, as well as the total credit for existing debt, as shown in Line 11 of Table 4.5. The Appendices detail these calculations for each year of the study period.



Table 4.5 Eligible Existing Wastewater Debt Service from New Development

Line No.	Description	Eligible CIP Value
1	2019 Existing Wastewater Debt Service	\$75,324,312
2	Eligible Wastewater Capacity (Equity)	\$159,296,602
3	Debt-funded CIP + Total CIP	60%
4	Outstanding Wastewater Debt	\$1,053,289,203
5	<b>2019 Existing Wastewater Debt Service</b> $(1 \times 2 \times 3) \div 4$	<b>\$6,835,107</b>
6	2019 Beginning Wastewater EDUs	720,369
7	2019 Projected New EDUs	13,214
8	<b>2019 Year-end Wastewater EDUs</b> $(6 + 7)$	<b>733,583</b>
9	<b>2019 Eligible Existing Wastewater Debt per EDU</b> $(5 \div 8)$	<b>\$9.32</b>
10	<b>2019 Eligible Existing Wastewater Debt from EDUs</b> $(7 \times 9)$	<b>\$123,120</b>
11	<b>Sum of Study Period Eligible Existing Wastewater Debt from EDUs</b>	<b>\$16,459,275</b>

This credit is allocated among the impact fees and service areas based on the proportion of eligible existing wastewater capacity value. Table 4.6 summarizes the wastewater credit for existing debt by impact fee and service area.

Table 4.6 Existing Wastewater Debt Service Credit by Impact Fee Service Area

Impact Fee Component	Wastewater Service Area	Credit for Existing Debt
Treatment	Medio Creek	\$1,252,107
	Leon Creek/Dos Rios	5,688,754
	Treatment Subtotal	\$6,940,861
Collection	Medio Creek	\$591,571
	Upper Medina	455,028
	Lower Medina	627,023
	Upper Collection	1,536,221
	Middle Collection	2,385,239
	Lower Collection	3,923,332
	Collection Subtotal	\$9,518,413
<b>Total</b>		<b>\$16,459,275</b>

### 4.3.3 Credit for Future CIP

#### WATER SUPPLY PRINCIPAL

SAWS plans to fund 85 percent of the Water Supply CIP with debt, with debt service payments beginning in 2020. Annual principal payments for the eligible Water Supply CIP for each year of the study period are known and used to calculate the principal payment per EDU and the total principal to be recovered from new development.

These calculations are completed for each year in the study period, as shown in Table 4.7 for 2020, and then the water supply principal to be recovered from new development is summed to determine the credit for future CIP, as shown in Line 13 of Table 4.7.

Table 4.7 Eligible Future Water Supply Debt Service from New Development

Line No.	Description	Eligible CIP Value
1	Total Eligible Future Water Supply CIP	\$366,120,000
2	Percentage of Future Water Supply CIP to be Funded with Debt	85%
3	<b>Eligible Debt-funded Future Water Supply CIP (1 × 2)</b>	<b>\$312,278,877</b>
4	Annual Interest Rate	5.26%
5	Bond Term (years)	30
6	Issuance Costs	0.05%
7	2020 Water Supply Principal Payment	\$4,245,862
8	2019 Beginning Water Supply EDUs	774,623
9	Projected New EDUs through 2020	28,419
10	<b>2020 Year-end Water Supply EDUs (8 + 9)</b>	<b>803,042</b>
11	<b>2020 Eligible Future Water Supply Principal per EDU (7 ÷ 10)</b>	<b>\$5.29</b>
12	<b>2020 Eligible Future Water Supply Principal from EDUs (9 × 11)</b>	<b>\$150,258</b>
13	<b>Sum of Study Period Eligible Future Water Supply Principal from EDUs</b>	<b>\$35,878,985</b>

#### WATER DELIVERY PRINCIPAL

Based on discussions with SAWS staff, it is assumed that 60 percent of the Water Delivery CIP may be funded with debt and paid with rate revenues. Therefore, projected annual principal payments on 60 percent of the future Water Delivery CIP are included in the credit calculation.

For purposes of calculating the credit, equal annual funding of the Water Delivery CIP over the 10-year study period is assumed, i.e., 10 percent of the total eligible Water Delivery CIP is funded each year. Annual principal payments for the eligible Water Delivery CIP for each year of the study period are projected using a term of 30 years and an annual interest rate of 5.0 percent. Based on these assumptions, the principal payment per EDU and the total principal to be recovered from new development are calculated.

These calculations are completed for each year in the study period, as shown in Table 4.7 for 2019, and then the water delivery principal to be recovered from new development is summed to determine the credit for future Water Delivery CIP, as shown in Line 14 of Table 4.8. The Appendices provide these calculations for each year of the study period by infrastructure type and service area.

Table 4.8 Eligible Future Water Delivery Debt Service from New Development

Line No.	Description	Eligible CIP Value
1	Total Eligible Future Water Delivery CIP	\$172,163,467
2	Percentage of Future Water Delivery CIP to be Funded with Debt	60%
3	Annual Allocation of Future Water Delivery CIP	10%
4	<b>Annual Eligible Debt-funded Future Water Delivery CIP</b> $(1 \times 2 \times 3)$	<b>\$10,329,808</b>
5	Annual Interest Rate	5.00%
6	Bond Term (years)	30
7	Issuance Costs	1.50%
8	2019 Water Delivery Principal Payment	\$1,578,143
9	2019 Beginning Water Delivery EDUs	774,623
10	Projected New EDUs through 2019	14,209
11	<b>2019 Year-end Water Delivery EDUs</b> $(9 + 10)$	<b>788,832</b>
12	<b>2019 Eligible Future Water Delivery Principal per EDU</b> $(8 \div 11)$	<b>\$2.00</b>
13	<b>2019 Eligible Future Water Delivery Principal from EDUs</b> $(10 \times 12)$	<b>\$28,427</b>
14	<b>Sum of Study Period Eligible Future Water Principal from EDUs</b>	<b>\$9,559,822</b>

This credit is allocated among the impact fees and service areas based on the proportion of eligible existing water delivery capacity value. Table 4.9 summarizes the water delivery credit for existing debt by impact fee and service area.

Table 4.9 Future Water Delivery CIP Credit by Impact Fee Service Area

Impact Fee Component	Water Service Area	Water Infrastructure Type	Credit for Future Debt
<b>Flow</b>	<b>All</b>	<b>Distribution Mains</b>	<b>\$6,507,276</b>
<b>System Development</b>	<b>High Elevation</b>	Well Pumps	29,247
		High Service and Booster PS	2,606
		Elevated Storage Tanks	7,239
		Ground Storage Tanks	0
		Transmission Mains	10,425
		<b>HE Subtotal</b>	<b>\$49,517</b>
	<b>Middle Elevation</b>	Well Pumps	241,316
		High Service and Booster PS	152,913
		Elevated Storage Tanks	236,537
		Ground Storage Tanks	4,779
		Transmission Mains	585,370
	<b>ME Subtotal</b>	<b>\$1,220,915</b>	
	<b>Low Elevation</b>	Well Pumps	335,184
		High Service and Booster PS	275,448
		Elevated Storage Tanks	696,916
		Ground Storage Tanks	6,637
		Transmission Mains	467,930
	<b>LE Subtotal</b>	<b>\$1,782,115</b>	
<b>Total</b>			<b>\$9,559,822</b>

**WASTEWATER PRINCIPAL**

Based on discussions with SAWS staff, it is also assumed that 60 percent of the Wastewater CIP may be funded with debt and paid with rate revenues. Therefore, projected annual principal payments on 60 percent of the future Wastewater CIP are included in the credit calculation.

For the purposes of calculating the credit, equal annual funding of the Wastewater CIP over the 10-year study period is assumed, i.e., 10 percent of the total eligible CIP is funded each year. Annual principal payments for the eligible Wastewater CIP for each year of the study period are projected using a term of 30 years and interest rate of 5.0 percent. Based on these assumptions, the principal payment per EDU and the total principal to be recovered from new development are calculated.

These calculations are performed for each year in the study period, as shown in Table 4.10 for 2019, and then the wastewater principal to be recovered from new development is summed to determine the credit for future CIP, as shown in Line 14 of Table 4.10. The Appendices provide these calculations for each year of the study period by infrastructure type and service area.

Table 4.10 Eligible Future Wastewater Debt Service from New Development

Line No.	Description	Eligible CIP Value
1	Total Eligible Future Wastewater CIP	\$129,197,420
2	Percentage of Future Wastewater CIP to be Funded with Debt	60%
3	Annual Allocation of Future Wastewater CIP	10%
4	<b>Annual Eligible Debt-funded Future Wastewater CIP <math>(1 \times 2 \times 3)</math></b>	<b>\$7,751,845</b>
5	Annual Interest Rate	5.00%
6	Bond Term (years)	30
7	Issuance Costs	1.50%
8	2019 Wastewater Principal Payment	\$1,184,322
9	2019 Beginning Wastewater EDUs	720,369
10	Projected New EDUs through 2019	13,214
11	<b>2019 Year-end Wastewater EDUs <math>(9 + 10)</math></b>	<b>733,583</b>
12	<b>2019 Eligible Future Wastewater Principal per EDU <math>(8 \div 11)</math></b>	<b>\$1.61</b>
13	<b>2019 Eligible Future Wastewater Principal from EDUs <math>(10 \times 12)</math></b>	<b>\$21,333</b>
14	<b>Sum of Study Period Eligible Future Wastewater Principal from EDUs</b>	<b>\$4,774,059</b>

This credit is allocated among the impact fees and service areas based on the proportion of eligible existing wastewater capacity value. Table 4.11 summarizes the wastewater credit for future CIP by impact fee and service area.

Table 4.11 Future Wastewater CIP Credit by Impact Fee Service Area

Impact Fee Component	Wastewater Service Area	Credit for Future Debt
<b>Treatment</b>	Medio Creek	\$31,364
	Leon Creek/Dos Rios	620,366
	<b>Treatment Subtotal</b>	<b>\$651,730</b>
<b>Collection</b>	Medio Creek	\$48,647
	Upper Medina	32,002
	Lower Medina	9,498
	Upper Collection	272,602
	Middle Collection	1,305,914
	Lower Collection	2,453,664
	<b>Collection Subtotal</b>	<b>\$4,122,328</b>
<b>Total</b>		<b>\$4,774,059</b>

## 4.4 Maximum Impact Fees Summary

### 4.4.1 Maximum Impact Fees per EDU

The Maximum Impact Fees per EDU include both the value of existing infrastructure with capacity available to serve projected new development from 2019 to 2028 and the value of new water supply, water delivery, and wastewater capacity available to serve new development from the 2019 to 2028.

Table 4.12 summarizes the calculated impact fees, rate credits, and Maximum Impact Fees by service area, and Table 4.13 provides a comparison between the existing and proposed Maximum Impact Fees.

Table 4.12 Water and Wastewater Calculated Impact Fees

Impact Fee Component	Service Area	Calculated Impact Fee per EDU	Calculated Rate Credit per EDU	Maximum Impact Fee per EDU
Water Supply	All	\$3,661	\$339	<b>\$3,322</b>
Flow	All	1,285	97	<b>1,188</b>
System Development	High Elevation	1,237	34	<b>1,203</b>
	Middle Elevation	1,068	54	<b>1,014</b>
	Low Elevation	908	53	<b>855</b>
Treatment	Medio Creek	1,307	85	<b>1,222</b>
	Leon Creek / Dos Rios	705	54	<b>651</b>
Collection	Medio Creek	903	42	<b>861</b>
	Upper Medina	1,504	82	<b>1,422</b>
	Lower Medina	560	40	<b>520</b>
	Upper Collection	2,969	169	<b>2,800</b>
	Middle Collection	2,136	123	<b>2,013</b>
	Lower Collection	965	63	<b>902</b>

Table 4.13 Comparison of Maximum and Existing Impact Fees

Impact Fee Component	Water Service Area	Maximum Impact Fee per EDU	Existing Impact Fee per EDU	Change (\$)	Change (%)
Water Supply	All	\$3,322	\$2,796	\$526	19%
Flow	All	1,188	1,182	6	1%
System Development	High Elevation	1,203	883	320	36%
	Middle Elevation	1,014	799	215	27%
	Low Elevation	855	619	236	38%
Treatment	Medio Creek	1,222	1,429	(207)	(14%)
	Leon Creek/Dos Rios	651	786	(135)	(17%)
Collection	Medio Creek	861	838	23	3%
	Upper Medina	1,422	1,565	(143)	(9%)
	Lower Medina	520	475	45	9%
	Upper Collection	2,800	2,520	280	11%
	Middle Collection	2,013	1,469	544	37%
	Lower Collection	902	719	183	25%

**EQUIVALENT DWELLING UNITS (EDUs)**

The differentiated costs between meter sizes are allocated through the application of the equivalent meter ratios. Since the 5/8-inch water meter is the most frequently used meter by the residential customer, it is equivalent to 1.0 EDU which represents 290 gpd of water usage and 200 gpd of wastewater discharge. The Maximum Impact Fee for meter sizes larger than 5/8-inch can be obtained by multiplying the Maximum Impact Fee per EDU from Table 4.12 by the corresponding equivalent meter ratio.

Table 4.14 summarizes the Maximum Water Impact Fees for all meter sizes using the equivalent meter ratios.

Table 4.14 Maximum Water Impact Fees by Meter Size

Meter Size	Service Line Size	EDU Factor	Maximum Water Impact Fee		
			High Elevation	Middle Elevation	Low Elevation
5/8"	3/4"	1.0	\$5,713	\$5,524	\$5,365
3/4"	3/4"	1.5	8,570	8,286	8,048
1"	1"	2.0	11,426	11,048	10,730
1 1/2"	1 1/2"	5.0	28,565	27,620	26,825
2"	2"	14.0	79,982	77,336	75,110
3"	4"	30.0	171,390	165,720	160,950
4"	4"	50.0	285,650	276,200	268,250
6"	6"	105.0	599,865	580,020	563,325
8"	8"	135.0	771,255	745,740	724,275
10"	10"	190.0	1,085,470	1,049,560	1,019,350
12"	12"	360.0	2,056,680	1,988,640	1,931,400

Table 4.15 summarizes the Maximum Wastewater Impact Fee for 1 EDU by service area.

Table 4.15 Maximum Wastewater Impact Fee by Service Area

Service Area	Maximum Wastewater Impact Fee
Medio Creek	\$2,083
Upper Medina	\$2,073
Lower Medina	\$1,171
Upper Collection	\$3,451
Middle Collection	\$2,664
Lower Collection	\$1,553

## CONCLUSION

The Maximum Impact Fees per EDU calculated in this report provide SAWS with the means to collect and/or recoup sufficient funds to pay for the infrastructure required to serve new growth. Credits are deducted from the calculated impact fees so new customers do not pay for this infrastructure in both the impact fees and the rates they pay once they are connected to the water and wastewater systems.

The Capital Improvements Advisory Committee (CIAC) recommends adopting the maximum calculated impact fees for Water Delivery System Development, Water Delivery Flow, Wastewater Treatment, and Wastewater Collection and a reduced Water Supply Impact Fee of \$2,706 per EDU instead of the Maximum Water Supply Impact Fee of \$3,322. If SAWS adopts impact fees less than the Maximum Impact Fees calculated in this report, existing ratepayers will be required to pay a portion of the growth-related costs.

The Water Supply Maximum Impact Fee, as well as the other components of the impact fees, has been calculated as per the requirements of Chapter 395 of the Texas Local Government Code. The Water Supply component is unique for this round of calculations. What is different is the inclusion of only one project, Vista Ridge, and the fact that Vista Ridge will be completed within the first year of the effective date of the revised Impact Fees. The Maximum Water Supply Impact Fee of \$3,322 is calculated under the assumption that the Vista Ridge Project is a future CIP project, as is the case. Since the Vista Ridge Project will be completed within a year of adoption of the updated impact fees, an alternative Water Supply Impact Fee was calculated, which treats the Vista Ridge project as an existing project or equity which would be the requirement if the impact fees were recalculated within the next year. Water supply projects in the equity category are distributed evenly over all existing customers, leaving the same percentage of each supply available for growth. As such, when the Vista Ridge yield is added to the other water supply projects and made available to existing customers, it reduces the percentage of Vista Ridge that is available for growth and increases the percentage of the other, less expensive water supply projects available for growth. This shift causes the Water Supply Impact Fee to be reduced from \$3,322 per EDU to \$2,637 per EDU.



The CIAC recommends adopting a reduced Water Supply Impact Fee of \$2,706 per EDU which is a weighted average of the Water Supply Impact Fee based on how the Vista Ridge Project is treated throughout the study period. The calculated Maximum Water Supply Impact Fee of \$3,322 is assumed only for the first year of the study period when the Vista Ridge Project is in construction and treated as CIP. For the remaining nine years of the study period, the alternative calculated Water Supply Impact Fee of \$2,637 is assumed to represent that the Vista Ridge Project will be in operation and therefore treated as equity (rather than CIP).

SAWS and the CIAC are in agreement and will recommend to the SAWS Board of Trustees and to the San Antonio City Council to adopt the maximum calculated impact fee for Water Delivery System Development, Water Delivery Flow, Wastewater Treatment, and Wastewater Collection and a reduced Water Supply Impact Fee of \$2,706 per EDU.



# Appendix A

## EXISTING INFRASTRUCTURE



**San Antonio Water System  
Water and Wastewater Facilities Capital Improvements  
Plan and Maximum Impact Fees Report**

**Appendix A  
Table A-3**

**Table A-3: Existing Infrastructure, Water Delivery - System Development, High Service and  
Booster Pump Stations in Middle Elevation Service Area**

<b>Line No.</b>	<b>Asset Description</b>	<b>Total Existing Capacity (MGD)</b>
46	Geronimo Loop (Geronimo Forest) 1520 HSP 3	0.29
47	Inwood Booster Station Booster 1	1.00
48	Inwood Booster Station Booster 2	1.00
49	Inwood Booster Station Booster 3	2.00
50	Inwood Booster Station Booster 4	2.60
51	Inwood Booster Station Booster 5	2.90
52	Knight's Cross 1395 Booster 6	4.30
53	Knight's Cross 1395 HSP 1	2.56
54	Knight's Cross 1395 HSP 2	2.56
55	Knight's Cross 1395 HSP 3	2.56
56	Knight's Cross 1395 HSP 4	2.56
57	Knight's Cross 1395 HSP 5	5.04
58	Loop 1604 1290 HSP 1	4.03
59	Loop 1604 1290 HSP 2	4.03
60	Loop 1604 1290 HSP 3	4.03
61	Loop 1604 1290 HSP 4	4.03
62	Loop 1604 1290 HSP 5	4.03
63	Loop 1604 1290 HSP 6	4.03
64	Loop 1604 1290 HSP 7	5.04
65	Medical Booster Station Booster 1	2.00
66	Medical Booster Station Booster 2	2.00
67	Micron Pump Station HSP 1-7	10.10
68	Micron Pump Station HSP 2-7	10.10
69	Micron Pump Station HSP 3-7	10.10
70	Naco Booster Station HSP 1-SL9	10.50
71	Naco Booster Station HSP 2-SL9	10.50
72	Naco Booster Station HSP 3-SL9	10.50
73	Naco Booster Station HSP 4-SL9	5.00
74	Naco Booster Station HSP 5-SL9	5.00
75	Redland Pump Station HSP 1	2.00
76	Redland Pump Station HSP 2	4.00
77	Redland Pump Station HSP 3	2.00
78	Redland Pump Station HSP 4	4.00
79	Roft Road Booster Station Booster 1	0.10
80	Roft Road Booster Station Booster 2	2.52
81	Roft Road Booster Station Booster 3	2.52
82	Roft Road Booster Station Booster 4	2.52
83	Salado Temp Pkg Booster Station Booster 1	3.00
84	Salado Temp Pkg Booster Station Booster 2	3.00
85	Salado Temp Pkg Booster Station Booster 3	3.00
86	Salado Temp Pkg Booster Station Booster 4	3.00
87	Sasse Booster Station Booster 1	1.00
88	Sasse Booster Station Booster 2	1.00
89	Sasse Booster Station Booster 3	1.00
90	Stevens Ranch 1170 HSP 1	1.44

**San Antonio Water System  
Water and Wastewater Facilities Capital Improvements  
Plan and Maximum Impact Fees Report**

**Appendix A  
Table A-3**

**Table A-3: Existing Infrastructure, Water Delivery - System Development, High Service and  
Booster Pump Stations in Middle Elevation Service Area**

<b>Line No.</b>	<b>Asset Description</b>	<b>Total Existing Capacity (MGD)</b>
91	Stevens Ranch 1170 HSP 2	1.44
92	Stevens Ranch 1170 HSP 3	2.88
93	Stevens Ranch 1170 HSP 4	2.88
94	Sunset Booster Station Booster 1	10.10
95	Sunset Booster Station Booster 2	10.10
96	Sunset Booster Station Booster 3	10.10
97	Sunset Booster Station Booster 4	10.10
98	Texas Research Park 1170 HSP 1	0.36
99	Texas Research Park 1170 HSP 2	1.08
100	Texas Research Park 1170 HSP 3	1.80
101	Texas Research Park 1170 HSP 4	1.80
102	Tower 1096 HSP 1	0.60
103	Turtle Creek No. 2 Booster Station HSP 1	5.00
104	Turtle Creek No. 2 Booster Station HSP 2	5.00
105	Turtle Creek No. 2 Booster Station HSP 3	5.00
106	University Booster Station Booster 1	5.00
107	University Booster Station Booster 2	5.00
108	University Booster Station Booster 3	5.00
109	University Booster Station Booster 4	5.00
110	University Booster Station Booster 5	10.10
111	Wild Turkey 1520 HSP 1	0.72
112	Wild Turkey 1520 HSP 2	1.08
113	Wild Turkey 1520 HSP 3	1.44
114	Wild Turkey 1520 HSP 4	1.44
115	Wild Turkey 1520 HSP 5	2.16
116	Winchester Booster Station Booster 1	1.30
117	Winchester Booster Station Booster 2	1.30
118	Winchester Booster Station Booster 3	1.20
119	Wurzbach Booster Station HSP 1-7	15.10
120	Wurzbach Booster Station HSP 2-7	12.20
121	Wurzbach Booster Station HSP 3-7	12.10
122	Wurzbach Booster Station HSP 4-7	20.30
123	Wurzbach Booster Station HSP 5-7	15.10
<b>Total</b>		<b>596.95</b>

Note:

Firm pump station capacities are used for the impact fee calculation.

The existing firm high service and booster pump station capacity for the Middle Elevation service area is 440.1 MGD.

**San Antonio Water System  
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**Appendix A  
Table A-4**

**Table A-4: Existing Infrastructure, Water Delivery - System Development, High Service and  
Booster Pump Stations in Low Elevation Service Area**

<b>Line No.</b>	<b>Asset Description</b>	<b>Total Existing Capacity (MGD)</b>
1	34th Street Booster Station HSP 1	3.00
2	34th Street Booster Station HSP 2	6.10
3	34th Street Booster Station HSP 3	12.00
4	34th Street Booster Station HSP 4	12.00
5	34th Street Booster Station HSP 5	12.00
6	Artesia Booster Station HSP 1	6.10
7	Artesia Booster Station HSP 2	15.10
8	Artesia Booster Station HSP 3	15.10
9	Artesia Booster Station HSP 4	0.00
10	Basin Booster Station HSP 1	20.20
11	Basin Booster Station HSP 2	10.10
12	Basin Booster Station HSP 3	10.10
13	Basin Booster Station HSP 4	20.20
14	Basin Booster Station HSP 5	20.20
15	Basin Booster Station HSP 6	20.20
16	Cagnon Road 950 HSP 1	2.31
17	Cagnon Road 950 HSP 2	3.46
18	Cagnon Road 950 HSP 3	4.32
19	Far West 950 HSP 1	0.93
20	Far West 950 HSP 2	0.93
21	Far West 950 HSP 3	0.93
22	Far West 950 HSP 4	0.93
23	Golden 790 HSP 1	4.30
24	Golden 790 HSP 2	4.30
25	Golden 790 HSP 3	4.30
26	Golden 790 HSP 4	4.30
27	Golden 790 HSP 5	0.97
28	Golden 790 HSP 6	0.97
29	Golden 790 HSP 7	0.97
30	Golden 790 HSP 8	0.97
31	King PZ790 HSP 1	1.73
32	King PZ790 HSP 2	3.17
33	King PZ790 HSP 3	1.73
34	La Rosa 790 HSP 1	5.76
35	La Rosa 790 HSP 2	4.32
36	La Rosa 790 HSP 3	4.30
37	La Rosa 790 HSP 4	2.88
38	Lemonwood 1012 HSP 1	1.73
39	Lemonwood 1012 HSP 2	3.17
40	Maltsberger Booster Station HSP 1	10.10

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**Appendix A  
Table A-4**

**Table A-4: Existing Infrastructure, Water Delivery - System Development, High Service and  
Booster Pump Stations in Low Elevation Service Area**

<b>Line No.</b>	<b>Asset Description</b>	<b>Total Existing Capacity (MGD)</b>
41	Maltsberger Booster Station HSP 2	10.10
42	Maltsberger Booster Station HSP 3	10.10
43	Maltsberger Booster Station HSP 4	10.10
44	Maltsberger Booster Station HSP 5	10.10
45	Maltsberger Booster Station HSP 6	10.10
46	Maltsberger Booster Station HSP 7	6.10
47	Marbach Booster Station HSP 1	6.10
48	Marbach Booster Station HSP 2	15.10
49	Marbach Booster Station HSP 3	15.10
50	Marbach Booster Station HSP 4	15.10
51	Marbach Booster Station HSP 5	6.10
52	Marbach Rd. 999 HSP 1	0.94
53	Marbach Rd. 999 HSP 2	1.37
54	Marbach Rd. 999 HSP 3	5.48
55	Market Booster Station HSP 1	13.70
56	Market Booster Station HSP 2	13.80
57	Market Booster Station HSP 3	13.70
58	Market Booster Station HSP 4	13.70
59	Micron Pump Station PZ5 HSP 1-5	6.50
60	Micron Pump Station PZ5 HSP 2-5	8.60
61	Mission Booster Station HSP 1	12.10
62	Mission Booster Station HSP 2	12.10
63	Mission Booster Station HSP 3	12.10
64	Mission Booster Station HSP 4	9.40
65	Mission Booster Station HSP 5	12.10
66	Mission Booster Station HSP 6	12.10
67	Naco Booster Station HSP 1	10.10
68	Naco Booster Station HSP 2	10.10
69	Naco Booster Station HSP 3	10.10
70	Naco Booster Station HSP 4	10.10
71	Naco Booster Station HSP 5	5.00
72	Naco Booster Station PZ5 HSP 1	5.00
73	Naco Booster Station PZ5 HSP 2	10.10
74	Naco Booster Station PZ5 HSP 3	5.00
75	Naco Booster Station PZ5 HSP 4	10.10
76	Old Pearsall Booster Station BP 01	5.00
77	Old Pearsall Booster Station BP 02	5.00
78	Old Pearsall Booster Station BP 02	5.00
79	Pipers Meadow Booster Station HSP 1	1.40
80	Pipers Meadow Booster Station HSP 2	1.40



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**Appendix A  
Table A-4**

**Table A-4: Existing Infrastructure, Water Delivery - System Development, High Service and  
Booster Pump Stations in Low Elevation Service Area**

<b>Line No.</b>	<b>Asset Description</b>	<b>Total Existing Capacity (MGD)</b>
81	Randolph Booster Station HSP 1	6.10
82	Randolph Booster Station HSP 2	6.10
83	Randolph Booster Station HSP 3	0.00
84	Randolph Booster Station PZ4 HSP 1	12.10
85	Randolph Booster Station PZ4 HSP 2	12.10
86	Randolph Booster Station PZ4 HSP 3	0.00
87	Reyes Ln. (Mountain Laurel) 950 HSP 1	0.18
88	Reyes Ln. (Mountain Laurel) 950 HSP 2	0.18
89	Reyes Ln. (Mountain Laurel) 950 HSP 3	0.72
90	Reyes Ln. (Mountain Laurel) 950 HSP 4	0.72
91	S. Zarzamora 790 HSP 1	4.61
92	S. Zarzamora 790 HSP 2	4.61
93	S. Zarzamora 790 HSP 3	5.76
94	Seale Booster Station HSP 1	5.00
95	Seale Booster Station HSP 2	5.00
96	Seale Booster Station HSP 3	5.00
97	Silver Mountain 830 HSP 1	0.72
98	Silver Mountain 830 HSP 2	0.72
99	Silver Mountain 830 HSP 3	0.72
100	Somerset 830 HSP 1	1.80
101	Somerset 830 HSP 2	1.80
102	Somerset 830 HSP 3	1.80
103	Somerset 830 HSP 4	1.80
104	Southeast Booster StationBP 01-750	1.70
105	Southeast Booster StationBP 01-830	2.30
106	Southeast Booster StationBP 02-750	1.70
107	Southeast Booster StationBP 02-830	2.30
108	Southeast Booster StationBP 03-750	1.70
109	Southeast Booster StationBP 03-830	2.30
110	Southeast Booster StationBP 04-830	2.30
111	SW 21st St. (Edgewood) 820 HSP 1	1.44
112	SW 21st St. (Edgewood) 820 HSP 2	2.88
113	Tippecanoe 999 HSP 1	1.08
114	Tippecanoe 999 HSP 2	1.08
115	Wurzbach Booster Station PZ5 HSP 1-5	13.00
116	Wurzbach Booster Station PZ5 HSP 2-5	11.20
117	Wurzbach Booster Station PZ5 HSP 3-5	15.10
<b>Total</b>		<b>748.96</b>

**Note:**

Firm pump station capacities are used for the impact fee calculation.

The existing firm high service and booster pump station capacity for the Low Elevation service area is 533.0 MGD.

**Table A-5: Existing Infrastructure, Water Delivery - System Development, Elevated Storage Tanks in High Elevation Service Area**

<b>Line No.</b>	<b>Asset Description</b>	<b>Total Existing Capacity (MG)</b>
1	Anaqua Springs 179 HT1	0.00
2	Anaqua Springs 179 HT2	0.00
3	Crescent Park HT1	0.01
4	Crescent Park HT2	0.01
5	Cross Mountain	1.50
6	Dominion Hydropneumatic	0.01
7	Forest Crest HT1	0.01
8	Helotes Park #2** ET	0.10
9	Helotes Park #3** ET	0.27
10	Indian Hills Hydropneumatic A	0.02
11	Indian Hills Hydropneumatic B	0.02
12	Miranda Ridge 199HT1	0.00
13	Ranch Town #2 Hydropneumatic	0.02
14	Ranch Town** ET	0.98
15	Shields HT1	0.02
16	Shields HT2	0.02
17	Shields** ET	2.38
<b>Total</b>		<b>5.35</b>

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Appendix A  
 Table A-6

Table A-6: Existing Infrastructure, Water Delivery - System Development, Elevated Storage  
 Tanks in Middle Elevation Service Area

Line No.	Asset Description	Total Existing Capacity (MG)
1	Babcock	2.50
2	Braun** ET	0.72
3	Callaghan	1.00
4	Cibolo ET	2.50
5	Echo Mountain	2.50
6	Evans	1.38
7	Fleetwood Tank 068ET1	0.50
8	Geronimo Loop 123HT1 (Geronimo Forest)	0.01
9	Helotes Adobe	3.28
10	Hills** ET	1.44
11	IH 10** ET	1.45
12	Indian Springs	1.20
13	Judson N.	0.25
14	Knight's Cross 064ET1 ** ET	4.57
15	Lockhill	1.50
16	Marshall Rd.** ET	0.55
17	Medical	1.00
18	Roft ** ET	1.90
19	Roft Rd Hydropneumatic	0.02
20	Salado** ET	4.12
21	Stevens Ranch	2.50
22	Sunset** ET	3.75
23	Talley Rd 184ET1	2.00
24	West View 125HT1	0.01
<b>Total</b>		<b>40.64</b>

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**Appendix A  
Table A-7**

**Table A-7: Existing Infrastructure, Water Delivery - System Development, Elevated Storage  
Tanks in Low Elevation Service Area**

<b>Line No.</b>	<b>Asset Description</b>	<b>Total Existing Capacity (MG)</b>
1	Amhurst 027 ET1	0.75
2	Austin	1.50
3	Bitters Hydropneumatic	0.01
4	Broadview	4.50
5	Cagnon Road 041ET1	1.00
6	Dwyer	1.00
7	Far West 174HT1	0.02
8	Foster	2.00
9	Gen McMullen	2.25
10	Gillette (Rhoda)014SP1	3.00
11	Hickory Hollow 074ET1	0.50
12	Highlands	1.50
13	Hildebrand	2.00
14	Hutchins 012HT1	0.50
15	Inspiration	2.20
16	Lions	1.50
17	Marbach 030HT1	0.01
18	Menger	1.50
19	New World 038 ET1	1.00
20	New World 038 ET2	3.50
21	Northridge	1.50
22	Palo Alto 045ET1	0.50
23	Redland ET	1.48
24	Sasse** ET	1.18
25	Schertz Parkway HT1	0.05
26	Sea World Tank 034ET1	2.00
27	South Foster	2.00
28	Tinker	0.75
29	Vestal 013ET1	1.50
30	Waterwood 072ET1	0.50
31	Watson	1.00
32	Wayland	5.00
33	West Ave. 028ET1	0.50
<b>Total</b>		<b>48.20</b>

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Appendix A  
 Table A-8

Table A-8: Existing Infrastructure, Water Delivery - System Development, Ground Storage  
 Tanks in High Elevation Service Area

Line No.	Asset Description	Total Existing Capacity (MGD)
1	179GT1 (Anaqua Springs)	0.06
2	179GT2 (Anaqua Springs)	0.06
3	179GT3 (Anaqua Springs)	0.10
4	179GT4 (Anaqua Springs)	0.10
5	Dominion	0.05
6	Helotes Adobe FT1	1.72
7	Hills	1.56
8	IH 10** GT	1.55
9	Miranda Ridge 199GT1	0.00
10	Ranch Town #2	0.02
11	Salado** GT	0.88
12	Shields** GT	2.62
13	Walden Heights	0.05
14	Winwood GT1	2.00
<b>Total</b>		<b>10.77</b>

San Antonio Water System  
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Appendix A  
Table A-9

Table A-9: Existing Infrastructure, Water Delivery - System Development, Ground Storage  
Tanks in Middle Elevation Service Area

Line No.	Asset Description	Total Existing Capacity (MGD)
1	1604 063GT1	2.00
2	1604 063GT2	2.00
3	Anderson A	10.64
4	Anderson B	4.36
5	Bitters	5.00
6	Blanco 206GT1	3.00
7	Borgfeld GT1	0.05
8	Culebra	0.75
9	Encino	0.50
10	Evans A	1.81
11	Evans B	1.81
12	Geronimo Loop GT1 (Geronimo Forest)	0.05
13	Geronimo Loop GT2 (Geronimo Forest)	0.05
14	Indian Springs SP1	1.80
15	Inwood	1.20
16	Knights Cross 064SP1	1.43
17	Marshall** GTS	0.00
18	Micron B	3.31
19	Naco B	1.10
20	Oliver Ranch GT1	3.00
21	Redland GT	1.02
22	Roft Road FT1	0.10
23	Sasse** GT	0.82
24	Stevens Ranch GT	1.00
25	Sunset** GT	1.25
26	Texas Research Park GT1	0.25
27	Texas Research Park GT2	1.00
28	Tower A	0.13
29	Turtle Creek No.2 N	0.50
30	Turtle Creek No.3 N	0.50
31	University	5.00
32	Westview GT	0.17
33	Wild Turkey GT2	2.00
34	Wurzbach B	9.94
<b>Total</b>		<b>67.52</b>

**San Antonio Water System  
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**Appendix A  
Table A-10**

**Table A-10: Existing Infrastructure, Water Delivery - System Development, Ground Storage  
Tanks in Low Elevation Service Area**

<b>Line No.</b>	<b>Asset Description</b>	<b>Total Existing Capacity (MGD)</b>
1	34th Street A	2.08
2	34th Street B	2.92
3	Artesia	5.00
4	Basin	5.00
5	Cagnon Road	1.00
6	Far West	0.50
7	Golden	12.50
8	Grissom Rd. ET1	2.50
9	King	0.50
10	La Rosa	3.00
11	Lemonwood 023GT1	1.00
12	Maltsberger	7.50
13	Marbach	5.00
14	Marbach Rd.	0.28
15	Market	0.88
16	Medina GT1	1.00
17	Micron A	1.69
18	Mission	5.00
19	Naco A	1.59
20	Naco C	4.81
21	Old Pearsall GT1	7.50
22	Pipers Meadow	0.05
23	Pipestone	3.00
24	Randolph A	4.17
25	Randolph B	0.83
26	Schertz Parkway GT1	2.00
27	Seale Road (2 tanks)	6.00
28	Silver Mountain	0.06
29	Somerset	1.50
30	Southeast Booster GT*** A GT	2.27
31	Southeast Booster GT*** B GT	1.23
32	SW 21st St.	1.00
33	Wurzbach A	5.06
34	Zarzamora	2.20
<b>Total</b>		<b>100.62</b>





## Appendix B

# FUTURE CAPITAL IMPROVEMENT PROJECTS



Table B-1: Water Supply CIP

Project		Project Cost	Added Total
No.	Project Title	Estimate (\$ 2018)	Capacity (AF)
1	Vista Ridge Integration	\$1,130,000,000	50,000
2	Vista Ridge 142 mile Pipeline/Wellfield	\$0	0
<b>Total</b>		<b>\$1,130,000,000</b>	<b>50,000</b>

**San Antonio Water System  
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**Appendix B  
Table B-2**

**Table B-2: Water Delivery - Flow CIP**

<b>Project</b>		<b>Project Cost</b>
<b>No.</b>	<b>Project Title</b>	<b>Estimate (\$ 2018)</b>
1	Hardy Oak Blvd 30-inch WL	\$3,714,500
2	PZ 6 to PZ 905E Pressure Reducing Valve	\$162,500
3	FM 1604 20-inch WL	\$4,003,200
4	Eddie Road 16-inch WL	\$1,560,900
5	Pressure Zones 823 and 828 Integration	\$3,427,000
6	North Foster 20-inch WL	\$2,717,700
7	Highway 281 16-inch WL	\$483,900
8	12-inch WL, Loop 1604 16-inch WL	\$3,111,900
9	16-inch PZ 1080, PZ 994-North to PZ 999 Connections	\$6,661,900
10	SW Loop 410 20-inch WL	\$2,013,400
11	Former PZ 1380 to PZ 1400-East Connections	\$1,786,600
12	Helotes Park No 2 PRV to PZ 1201 from PZ 1400	\$145,000
13	US Hwy 281 12-inch WL	\$3,391,900
14	Montgomery Drive 16-inch WL	\$773,200
15	Montgomery Road 16-inch WL	\$216,500
16	SH-16 12-inch WL	\$1,724,100
17	Zigmont Rd 12-inch WL	\$3,127,400
18	Post Oak to Oaks Dr loop, Autumn Ln loop	\$3,052,600
19	Borgfeld Dr 20-inch WL	\$7,472,200
20	16-inch and 20-inch WL along Talley Rd and	\$5,450,400
21	Talley Rd 16-inch WL and 12-inch PZ 1044 PRV	\$4,196,200
22	20-inch WL along Huebner Rd and West	\$2,390,700
23	16-inch Ladera WLS	\$10,117,200
24	PZ 1080 16-inch WLS, Lambda and Texas	\$3,050,400
25	Judson Rd 20-inch WL	\$1,426,500
26	Starcrest Dr 12-inch WL	\$1,621,300
27	Blanco Rd 20-inch WL, Borgfeld Dr 12-inch and 20-inch WLS	\$10,551,800
28	Rolling Oaks Estates 12-inch and 16-inch WLS, Potranco Rd 20-inch WL	\$11,285,200
29	Culebra Rd 16-inch WL	\$2,658,000
30	PZ 1125 12-inch, 16-inch, 20-inch WL	\$3,196,400
31	Blanco Rd 12-inch WLS	\$1,742,800
32	Jungman Rd 12-inch WLS and PZ 930 16-inch WL	\$25,429,400
33	FM 143 16-inch WL, West Montgomery 16-inch WL	\$5,192,800
34	Sage Run 16-inch WL	\$1,473,500
35	Palo Alto Rd 16-inch and Noyes Rd - Senior Rd 12-inch WLS	\$6,381,200
36	SH-16 16-inch WL	\$3,596,700
37	Pleasanton Road 12-inch WL	\$3,284,400
38	Roosevelt Avenue 12-inch WL	\$3,667,600
39	Applewhite 12-inch WL	\$2,345,400
40	Hunters Pond 12-inch WL	\$1,112,000

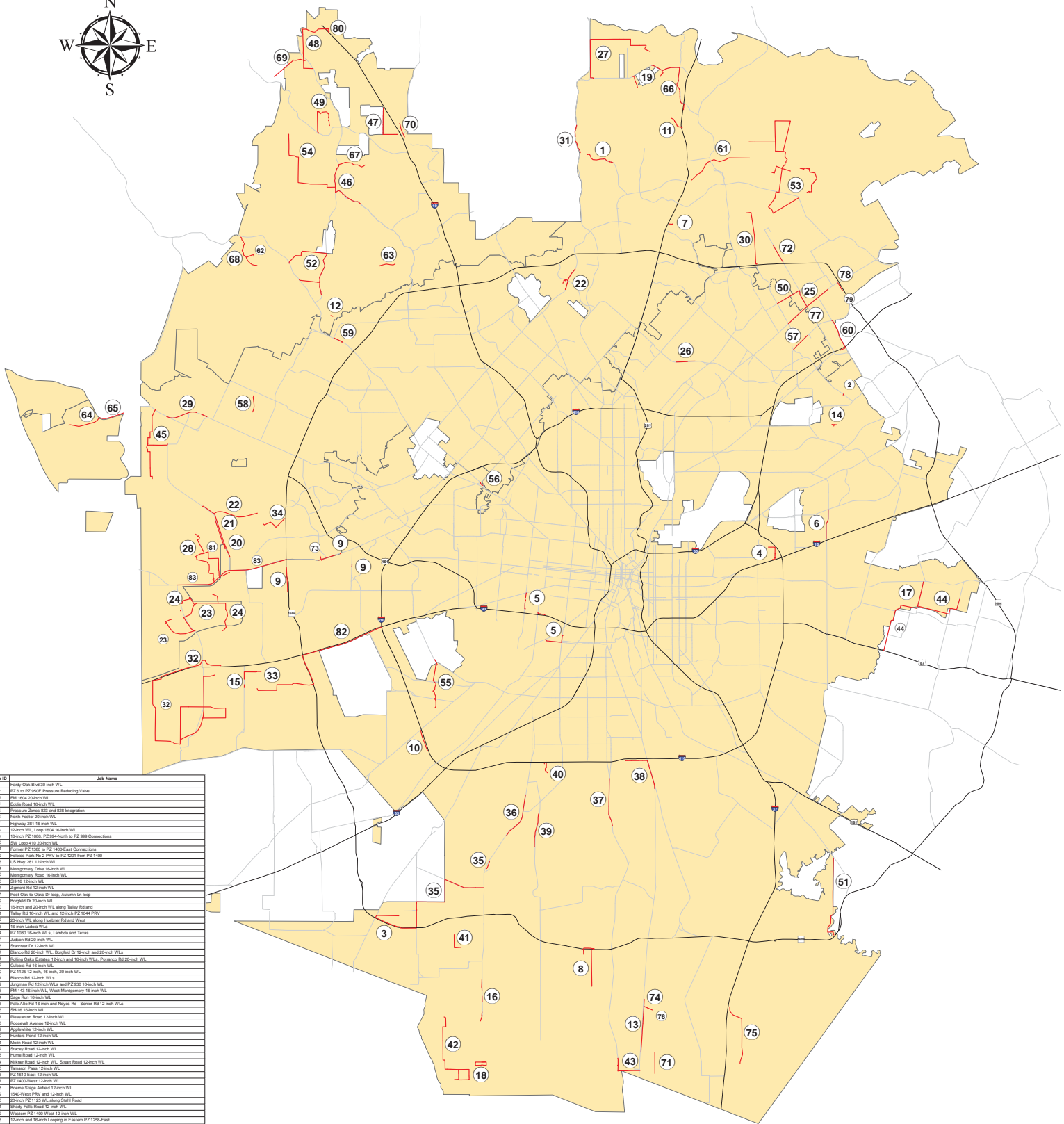
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**Appendix B  
Table B-2**

**Table B-2: Water Delivery - Flow CIP**

<b>Project</b>		<b>Project Cost</b>
<b>No.</b>	<b>Project Title</b>	<b>Estimate (\$ 2018)</b>
41	Morin Road 12-inch WL	\$1,273,000
42	Stacey Road 12-inch WL	\$3,635,500
43	Hume Road 12-inch WL	\$2,759,800
44	Kirkner Road 12-inch WL, Stuart Road 12-inch WL	\$5,449,000
45	Tamaron Pass 12-inch WL	\$4,863,200
46	PZ 1610-East 12-inch WL	\$4,401,000
47	PZ 1400-West 12-inch WL (1)	\$1,915,600
48	Boerne Stage Airfield 12-inch WL	\$3,162,500
49	1540-West PRV and 12-inch WL	\$3,077,100
50	20-inch PZ 1125 WL along Stahl Road	\$2,060,500
51	Shady Falls Road 12-inch WL	\$4,797,700
52	Western PZ 1400-West 12-inch WL	\$6,909,100
53	12-inch and 16-inch Looping in Eastern PZ 1258-East	\$14,615,600
54	PZ 1610-East 12-inch WL (1)	\$5,010,300
55	PZ4-PZ4-05 12-inch WL along Five Palms, Quintana Road and PLs heading north to Farr Drive	\$200,000
56	PZ5-PZ5-02 16-inch WL along Evers from Callaghan Road to Wildflower	\$177,022
57	PZ6-PZ6-06 12-inch WL along Lookout Road from O'Connor to Lookout Way	\$463,316
58	PZ8-PZ8-06 12-inch WL along PLs from Silver Pointe to Galm Road	\$493,913
59	PZ8 16-inch WL along Cedar Trail across Bandera Road	\$36,060
60	PZ9-PZ9-01 12-inch WL along Toepperwein Road from Rain Tree Path to Mia Way	\$626,133
61	PZ10-PZ10-01 12-inch Along Stone Oak Parkway from Ruby Run to Cibolo Canyon	\$1,372,465
62	PZ11-PZ11-03 16-inch Along PLs and W Apache Blf from State Hwy 16 to Ranch Town Tank	\$1,077,429
63	PZ 1400-West 12-inch WL	\$962,500
64	PZ10B-PZ10B-02 16-inch WL along CR 371 from Hwy 1283 to CR 278	\$2,225,885
65	PZ10B 16-inch WL along FM 1283 from FM 471 to CR 371	\$952,858
66	PZ11A-PZ11A-01 16-inch WL along existing pipe near Borgfeld Tank	\$1,695,912
67	Babcock Road to Cross Mountain Trail	\$1,057,760
68	PZ12West-PZ12A-03 16-inch WL along SH 16 N from Shadow Canyon Road to Private Road	\$3,010,463
69	PZ14-PZ14-02 16-inch WL along Bridlewood Trail from Boerne Stage Road to Bridle Path	\$500,469
70	16-inch WL along Old Fredericksburg Road from Lost Creek Gap to Fahrenthold	\$850,000
71	Whispering Wind Drive - Mogford to Riptide WL	\$450,000
72	New Northeast Service Center 16-inch WL along	\$587,400
73	Potranco Road PZ Interconnection	\$200,000
74	SEP-7 "Black Willow/281 to Wild Root"	\$150,000
75	10 "Hunters Forest"	\$2,200,000
76	Hickory Hollow PL	\$750,000
77	Along Nacogdoches from O'Conner to Judson to 20-inch WL near Kings Mountain	\$3,500,000
78	Fair View Acres Tract	\$240,000
79	Northpoint Offices	\$500,000
80	Dietz Elkhorn 16-inch WL	\$200,000
81	Living Faith Church 16-inch WL	\$145,600
82	Westlakes Tract 1604	\$2,566,720
83	to HWY 211 from 2 lanes to 5 lanes with associated drainage improvements.	\$1,020,232
<b>Total</b>		<b>\$251,858,336</b>

# Impact Fee Water Delivery Flow CIP



Map ID	Job Name
1	Branch Oak Blvd 16-inch WL
2	PZ 18 PZ 2000 Pressure Reducing Valve
3	PM 1004 20-inch WL
4	Edgar Road 16-inch WL
5	Pressure Zone R23 and R28 Integration
6	North Pointe 20-inch WL
7	Highway 201 16-inch WL
8	12-inch WL Loop SR94 16-inch WL
9	Branch PZ 1000 PZ 2000 to PZ 2000 Connections
10	SR Loop 410 20-inch WL
11	Former PZ 1000 PZ 2000 Connections
12	Steeles Park No 2 PZ 1200 to PZ 1200
13	SR Loop 410 20-inch WL
14	Montgomery Drive 16-inch WL
15	Montgomery Road 16-inch WL
16	SR 12 12-inch WL
17	Agnes Rd 12-inch WL
18	Map Oak on Oak Dr Loop, Auburn Ln loop
19	Boysland Dr 20-inch WL
20	16-inch and 20-inch WL along Safety Rd and
21	West Rd 16-inch WL and 20-inch PZ 1000 PZ 2000
22	20-inch WL along Hamner Rd and West
23	Branch Lakeside WVA
24	PZ 1000 16-inch WVA, Lambda and Texas
25	Adams Rd 20-inch WL
26	Steeles Dr 12-inch WL
27	Steeles Rd 20-inch WL, Douglas Dr 12-inch and 20-inch WVA
28	Highway Oaks Estates 12-inch and 16-inch WVA, Potomac Rd 20-inch WL
29	Lusk Rd 16-inch WL
30	PZ 1200 16-inch, 18-inch, 20-inch WL
31	Steeles Rd 12-inch WVA
32	Langford Rd 12-inch WL and PZ 2000 16-inch WL
33	PM 143 16-inch WL, West Montgomery 16-inch WL
34	Steeles Rd 16-inch WL
35	PM 143 16-inch WL, West Montgomery 16-inch WL
36	Steeles Rd 16-inch WL
37	PM 143 16-inch WL, West Montgomery 16-inch WL
38	SR 16 16-inch WL
39	PM 143 16-inch WL, West Montgomery 16-inch WL
40	PM 143 16-inch WL, West Montgomery 16-inch WL
41	PM 143 16-inch WL, West Montgomery 16-inch WL
42	PM 143 16-inch WL, West Montgomery 16-inch WL
43	PM 143 16-inch WL, West Montgomery 16-inch WL
44	PM 143 16-inch WL, West Montgomery 16-inch WL
45	PM 143 16-inch WL, West Montgomery 16-inch WL
46	PM 143 16-inch WL, West Montgomery 16-inch WL
47	PM 143 16-inch WL, West Montgomery 16-inch WL
48	PM 143 16-inch WL, West Montgomery 16-inch WL
49	PM 143 16-inch WL, West Montgomery 16-inch WL
50	PM 143 16-inch WL, West Montgomery 16-inch WL
51	PM 143 16-inch WL, West Montgomery 16-inch WL
52	PM 143 16-inch WL, West Montgomery 16-inch WL
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63	PM 143 16-inch WL, West Montgomery 16-inch WL
64	PM 143 16-inch WL, West Montgomery 16-inch WL
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66	PM 143 16-inch WL, West Montgomery 16-inch WL
67	PM 143 16-inch WL, West Montgomery 16-inch WL
68	PM 143 16-inch WL, West Montgomery 16-inch WL
69	PM 143 16-inch WL, West Montgomery 16-inch WL
70	PM 143 16-inch WL, West Montgomery 16-inch WL
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77	PM 143 16-inch WL, West Montgomery 16-inch WL
78	PM 143 16-inch WL, West Montgomery 16-inch WL
79	PM 143 16-inch WL, West Montgomery 16-inch WL
80	PM 143 16-inch WL, West Montgomery 16-inch WL
81	PM 143 16-inch WL, West Montgomery 16-inch WL
82	PM 143 16-inch WL, West Montgomery 16-inch WL
83	PM 143 16-inch WL, West Montgomery 16-inch WL
84	PM 143 16-inch WL, West Montgomery 16-inch WL
85	PM 143 16-inch WL, West Montgomery 16-inch WL

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Table B-3: Water Delivery - System Development, Well Pumps

Project			Project Cost	Added Total
No.	Project Title	Facility Name	Estimate (\$ 2018)	Capacity (MGD)
28	Artesia Pump 1- PZ 3	Artesia	\$4,950,000	10.00
28	Artesia Pump 2- PZ 4	Artesia	\$4,950,000	10.00
9	Meadow Springs Pump 1 (1)	Meadow Springs	\$1,080,000	0.00
9	Meadow Springs Pump 2 (1)	Meadow Springs	\$1,080,000	2.00
--	Micron Additional Well	Micron	\$3,803,600	10.00
8	Turtle Creek Pump 1- PZ 8	Turtle Creek	\$2,500,000	7.56
8	Turtle Creek Pump 2- PZ 8	Turtle Creek	\$2,500,000	10.00
<b>Total</b>			<b>\$20,863,600</b>	<b>49.56</b>

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Table B-4: Water Delivery - System Development, High Service and Booster Pump Stations in High Elevation Service Area

Project			Project Cost	Added Total
No.	Project Title	Facility Name	Estimate (\$ 2018)	Capacity (MGD)
13	Blackbuck Pump 1	Blackbuck	\$2,047,150	0.00
13	Blackbuck Pump 2	Blackbuck	\$2,047,150	2.75
29	Ranch Town Pump 1	Ranch Town	\$368,740	1.40
<b>Total</b>			<b>\$4,463,040</b>	<b>4.15</b>



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Table B-5: Water Delivery - System Development, High Service and Booster Pump Stations in Middle Elevation Service Area

Project		Facility Name	Project Cost	Added Total
No.	Project Title		Estimate (\$ 2018)	Capacity (MGD)
8	Turtle Creek PZ 8 Pump 1	Turtle Creek No 2	\$2,250,000	0.00
8	Turtle Creek PZ 8 Pump 2	Turtle Creek No 2	\$2,250,000	5.00
8	Turtle Creek PZ 8 Pump 3	Turtle Creek No 2	\$2,250,000	5.00
8	Turtle Creek PZ 8 Pump 4	Turtle Creek No 2	\$2,250,000	5.00
12	Green Mountain Pump 1	Green Mountain	\$1,000,000	0.00
12	Green Mountain Pump 2	Green Mountain	\$1,000,000	2.00
12	Green Mountain Pump 3	Green Mountain	\$1,000,000	2.00
12	Green Mountain Pump 4	Green Mountain	\$1,000,000	2.00
6	Ladera Pump 1	Ladera	\$3,875,000	0.00
6	Ladera Pump 2	Ladera	\$3,875,000	4.00
<b>Total</b>			<b>\$20,750,000</b>	<b>25.00</b>

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Table B-6: Water Delivery - System Development, High Service and Booster Pump Stations in Low Elevation Service Area

Project			Project Cost	Added Total
No.	Project Title	Facility Name	Estimate (\$ 2018)	Capacity (MGD)
9	Meadow Springs Pump 1	Meadow Springs	\$3,405,000	0.00
9	Meadow Springs Pump 2	Meadow Springs	\$3,405,000	3.50
<b>Total</b>			<b>\$6,810,000</b>	<b>3.50</b>

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Table B-7: Water Delivery - System Development, Elevated Storage Tanks in High Elevation Service Area

Project			Project Cost	Added Total
No.	Project Title	Facility Name	Estimate (\$ 2018)	Capacity (MG)
7	Indian Hills EST	Indian Hills	\$8,479,570	2.50
<b>Total</b>			<b>\$8,479,570</b>	<b>2.50</b>

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Table B-8: Water Delivery - System Development, Elevated Storage Tanks in Middle Elevation Service Area

Project			Project Cost	Added Total
No.	Project Title	Facility Name	Estimate (\$ 2018)	Capacity (MG)
3	Terra Bella	Terra Bella	\$5,590,625	2.50
4	DeZavala-PZ 7	DeZavala	\$5,774,500	2.00
6	Ladera PS, EST, and Transmission Main	Ladera	\$3,250,000	1.00
<b>Total</b>			<b>\$14,615,125</b>	<b>5.50</b>

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Table B-9: Water Delivery - System Development, Elevated Storage Tanks in Low Elevation Service Area

Project			Project Cost	Added Total
No.	Project Title	Facility Name	Estimate (\$ 2018)	Capacity (MG)
1	SS-AK - G - Verano Development - Design and build a 1.5 MG elevated storage tank.	Verano	\$6,530,590	1.50
2	Dietrich Rd	Dietrich Rd	\$5,500,000	2.00
5	Replace Loma Linda Tank with Hunt Lane Tank	Loma Linda/Hunt Lane	\$6,256,600	1.00
<b>Total</b>			<b>\$18,287,190</b>	<b>4.50</b>

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Table B-10: Water Delivery - System Development, Ground Storage Tanks in Middle Elevation Service Area

Project			Project Cost	Added Total
No.	Project Title	Facility Name	Estimate (\$ 2018)	Capacity (MG)
12	Green Mountain Elevated Storage	Green Mountain	\$6,093,600	2.50
8	Turtle Creek 3 (Reservoir)	Turtle Creek	\$5,500,000	5.00
11	University PS 5 MG GST	University	\$9,900,000	5.00
<b>Total</b>			<b>\$21,493,600</b>	<b>12.50</b>

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Table B-11: Water Delivery - System Development, Ground Storage Tanks in Low Elevation Service Area

Project			Project Cost	Added Total
No.	Project Title	Facility Name	Estimate (\$ 2018)	Capacity (MG)
9	Meadow Springs Well Field, HSPS, and GST	Meadow Springs	\$3,250,000	1.00
<b>Total</b>			<b>\$3,250,000</b>	<b>1.00</b>

Table B-12: Water Delivery - System Development, Transmission Mains in High Elevation

Project		Project Cost
No.	Project Title	Estimate (\$ 2018)
24	Project 3 - IH-10 36" Waterline	\$19,000,000
<b>Total</b>		<b>\$19,000,000</b>



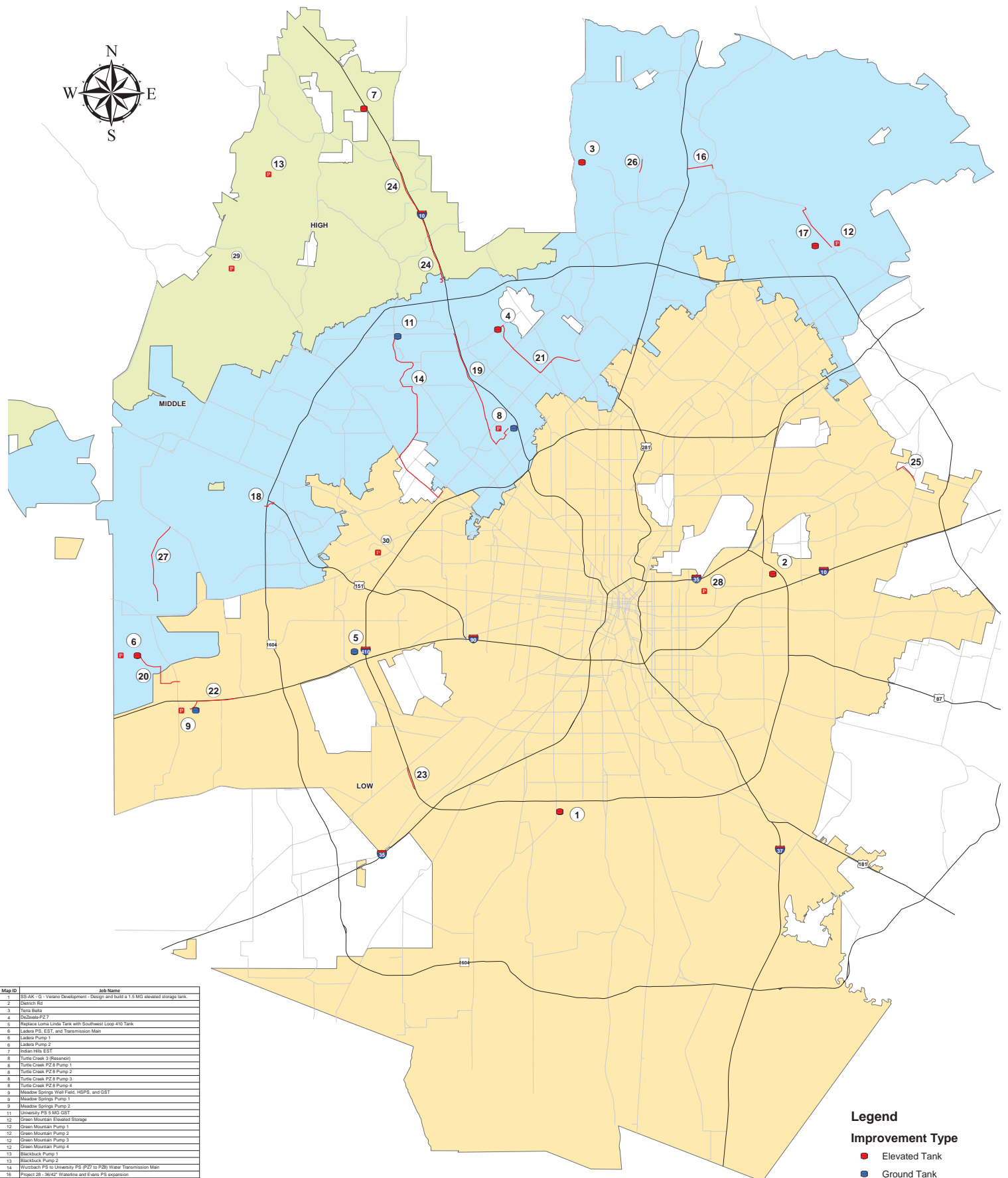
Table B-13: Water Delivery - System Development, Transmission Mains in Middle Elevation

Project		Project Cost
No.	Project Title	Estimate (\$ 2018)
14	Wurzbach PS to University PS (PZ7 to PZ8) Water Transmission Main	\$18,828,700
16	Project 28 - 36/42" Waterline and Evans PS expansion	\$9,490,690
17	Project 52. Green Mountain PS to Evans PS (PZ10 to PZ11A): 30" pipeline	\$6,078,600
18	Micron 48-inch Water Main Extension to Anderson Tank project Phase 2	\$2,974,000
19	Turtle Creek #3 to Medical Center Transmission Main	\$15,525,000
20	Ladera 24-inch Transmission Main	\$2,210,900
21	Project 5. 30" water line along Lockhill Selma to DeZavala EST	\$13,933,040
26	Canyon Golf and Wilderness Oak	\$1,350,000
27	Project 35 - 24" DSP PZ 1170 (TRP & StevensRanch) and SAWS PZ 1170 interconnect	\$9,035,290
<b>Total</b>		<b>\$79,426,220</b>

**Table B-14: Water Delivery - System Development, Transmission Mains in Low Elevation**

<b>Project</b>		<b>Project Cost</b>
<b>No.</b>	<b>Project Title</b>	<b>Estimate (\$ 2018)</b>
1	SS-AK - G - Verano Development - Design and build 5,000 LF of 20-inch distribution main	\$2,200,000
22	Proj 41: Highway 90: Cagnon Rd. to Luckey Ranch Main (C10-M22)	\$5,184,300
23	Project 27. PZ4-02 Old Pearsall to Cagnon	\$2,214,740
25	Project 29 - Seguin Rd 24" Waterline	\$1,965,260
<b>Total</b>		<b>\$11,564,300</b>

# Impact Fee System Development CIP



Map ID	Job Name
1	SS-AK - G - Various Development - Design and build a 1.5 MG elevated storage tank.
2	Detrich Rd
3	Town Well
4	DeZavala PZ 7
5	Replace Loma Linda Tank with Southwest Loop 410 Tank
6	Ladles PS, EST, and Transmission Main
6	Ladles Pump 1
6	Ladles Pump 2
7	Indian Hills EST
8	Turtle Creek 3 (Rosencr)
8	Turtle Creek PZ 8 Pump 1
8	Turtle Creek PZ 8 Pump 2
8	Turtle Creek PZ 8 Pump 3
8	Turtle Creek PZ 8 Pump 4
9	Meadow Springs Well Field, HBPS, and GST
9	Meadow Springs Pump 1
9	Meadow Springs Pump 2
11	University PS 5 MG GST
13	Green Mountain Elevated Storage
12	Green Mountain Pump 1
12	Green Mountain Pump 2
12	Green Mountain Pump 3
12	Green Mountain Pump 4
13	Blackback Pump 1
13	Blackback Pump 2
14	Worlock PS to University PS (PZ to PZ) Water Transmission Main
16	Project 26 - 36" 42' Waterline and Evans PS separation
17	Project 26 - Green Mountain PS to Evans PS (PZ to PZ) (PZ 1A) 30' pipeline
18	Minor 48-inch Water Main Extension to Anderson Tank project Phase 2
19	Turtle Creek #3 to Medical Center Transmission Main
20	Ladles 36-inch Transmission Main
21	Project 5 - 30" water line along Lockhart Salina to DeZavala EST
22	Plot 41 - Highway 90 - Canyon Rd to Luckey Ranch Main (E10M22)
23	Project 27 - PZ 42 Old Parcel to Canyon
24	Project 3 - 94-10 36" Waterline
25	Project 29 - Logan Rd 24" Waterline
26	Common Golf and Winnebago Oak
27	Project 35 - 24" DWP PZ 1170 (TRP & StevensRanch) and SAWS PZ 1170 interconnect
28	Archie Pump 1 - PZ 3
28	Archie Pump 2 - PZ 4
29	Ranch Town Pump 1
30	Minor Additional Well

**Legend**

**Improvement Type**

- Elevated Tank
- Ground Tank
- Pumps

**Water Impact Fees Zones**

- LOW
- MIDDLE
- HIGH



Table B-15: Wastewater Treatment

Project No.	Project Title	Project Cost Estimate (\$ 2018)	Allocated to Existing Customer Demand (%)	Allocated to Existing Customer Demand (\$)	Allocated to Study Period Growth (%)	Allocated to Study Period Growth (\$)	Allocated to Post-Study Period Growth (%)	Allocated to Post-Study Period Growth (\$)	Total Future Capacity (MGD)
1	Dos Rios WRC High Rate Primary Clarifier	\$11,000,000	0.0%	\$0	0.0%	\$0	100.0%	\$11,000,000	150.00
2	Dos Rios WRC Thermal Hydrolysis Project	22,000,000	0.0%	0	0.0%	0	100.0%	22,000,000	150.00
3	Dos Rios WRC Electrical System Improvements - Phase 1	10,182,700	67.7%	6,894,716	11.8%	1,200,036	20.5%	2,087,947	150.00
4	Dos Rios WRC Electrical System Improvements - Phase 2	18,000,000	67.7%	12,187,818	11.8%	2,121,309	20.5%	3,690,873	150.00
5	Dos Rios WRC Electrical System Improvements - Phase 3	16,600,000	67.7%	11,239,877	11.8%	1,956,318	20.5%	3,403,805	150.00
6	Dos Rios WRC Electrical System Improvements - Phase 4	11,750,000	67.7%	7,955,937	11.8%	1,384,743	20.5%	2,409,320	150.00
7	Dos Rios WRC Tertiary Filter Expansion Project (Dos Rios)	8,580,000	0.0%	0	0.0%	0	100.0%	8,580,000	156.00
8	Dos Rios WRC Tertiary Filter Expansion Project (Leon)	2,750,000	0.0%	0	0.0%	0	100.0%	2,750,000	48.00
9	Leon Creek WRC Control System Upgrade / Replacement	4,500,000	80.0%	3,600,000	0.0%	0	20.0%	900,000	58.00
10	Dos Rios WRC Digester Mixing Improvements	17,880,785	78.4%	14,018,745	13.6%	2,439,985	8.0%	1,422,056	125.00
11	Dos Rios WRC Headworks Enhancements	3,500,000	78.4%	2,744,041	13.6%	477,605	8.0%	278,354	125.00
12	Dos Rios WRC Thickening Facility Expansion	4,000,000	78.4%	3,136,047	13.6%	545,834	8.0%	318,119	125.00
13	Dos Rios WRC Control System Upgrade	1,426,658	78.4%	1,118,517	13.6%	194,680	8.0%	113,462	125.00
14	Medio Creek WRC Plant 1 Improvements	18,819,917	62.5%	11,771,623	19.0%	3,568,256	18.5%	3,480,038	16.00
15	Medio Creek WRC Control System Upgrade / Replacement (combine into 2020)	2,246,723	62.5%	1,405,297	19.0%	425,979	18.5%	415,447	16.00
	<b>Total</b>	<b>\$153,236,783</b>	<b>49.6%</b>	<b>\$76,072,617</b>	<b>9.3%</b>	<b>\$14,314,745</b>	<b>41.0%</b>	<b>\$62,849,421</b>	

Table B-16: Wastewater Collection - Medio Creek Service Area

Project No.	Project Title	Project Cost Estimate (\$ 2018)	Allocated to Existing Customer Demand (%)	Allocated to Existing Customer Demand (\$)	Allocated to Study Period Growth (%)	Allocated to Study Period Growth (\$)	Allocated to Post-Study Period Growth (%)	Allocated to Post-Study Period Growth (\$)	Total Future Capacity (MGD)
1	Medio M03c Ph II	\$2,256,000	0.0%	\$0.00	19.2%	\$432,967	80.8%	\$1,823,033	11.60
2	Medio M04	\$3,257,000	0.0%	\$0.00	19.2%	\$625,077	80.8%	\$2,631,923	11.60
3	Medio M17	\$437,000	0.0%	\$0.00	100.0%	\$437,000	0.0%	\$0	1.60
4	Medio M18	\$2,219,000	0.0%	\$0.00	32.7%	\$726,478	67.3%	\$1,492,522	6.80
5	Medio M19	\$4,720,000	0.0%	\$0.00	53.0%	\$2,501,881	47.0%	\$2,218,119	4.20
6	Medio M20	\$801,000	0.0%	\$0.00	29.1%	\$233,479	70.9%	\$567,521	3.20
7	Schuchart	\$5,400,000	0.0%	\$0.00	23.3%	\$1,259,232	76.7%	\$4,140,768	3.20
<b>Total</b>		<b>\$19,090,000</b>	<b>0.0%</b>	<b>\$0</b>	<b>32.6%</b>	<b>\$6,216,114</b>	<b>67.4%</b>	<b>\$12,873,886</b>	

Table B-17: Wastewater Collection - Upper Medina Service Area

Project No.	Project Title	Project Cost Estimate (\$ 2018)	Allocated to Existing Customer Demand (%)	Allocated to Existing Customer Demand (\$)	Allocated to Study Period Growth (%)	Allocated to Study Period Growth (\$)	Allocated to Post-Study Period Growth (%)	Allocated to Post-Study Period Growth (\$)	Total Future Capacity (MGD)
1	Texas Research Park	\$13,410,000	0.0%	\$0.00	32.9%	\$4,415,676	67.1%	\$8,994,324	6.80
2	Garcia	\$2,565,000	0.0%	\$0.00	32.9%	\$844,413	67.1%	\$1,720,587	6.80
<b>Total</b>		<b>\$15,975,000</b>	<b>0.0%</b>	<b>\$0</b>	<b>32.9%</b>	<b>\$5,260,089</b>	<b>67.1%</b>	<b>\$10,714,911</b>	

Table B-18: Wastewater Collection - Lower Medina Service Area

Project No.	Project Title	Project Cost Estimate (\$ 2018)	Allocated to Existing Customer Demand (%)	Allocated to Existing Customer Demand (\$)	Allocated to Study Period Growth (%)	Allocated to Study Period Growth (\$)	Allocated to Post-Study Period Growth (%)	Allocated to Post-Study Period Growth (\$)	Total Future Capacity (MGD)
1	Palo Alto	\$4,100,000	0.0%	\$0.00	26.5%	\$1,085,701	73.5%	\$3,014,299	5.40
<b>Total</b>		<b>\$4,100,000</b>	<b>0.0%</b>	<b>\$0</b>	<b>26.5%</b>	<b>\$1,085,701</b>	<b>73.5%</b>	<b>\$3,014,299</b>	



Table B-19: Wastewater Collection - Upper Collection Service Area

Project No.	Project Title	Project Cost Estimate (\$ 2018)	Allocated to Existing Customer Demand (%)	Allocated to Existing Customer Demand (\$)	Allocated to Study Period Growth (%)	Allocated to Study Period Growth (\$)	Allocated to Post-Study Period Growth (%)	Allocated to Post-Study Period Growth (\$)	Total Future Capacity (MGD)
1	E-54 Phase II	\$7,100,250	52.5%	\$3,727,631.24	20.0%	\$1,420,050	27.5%	\$1,952,569	23.40
2	E-4 Bulverde: Evans to Redland	\$5,500,000	13.7%	\$754,285.72	20.9%	\$1,148,184	65.4%	\$3,597,531	17.50
3	Steubing Tract	\$2,924,705	46.0%	\$1,344,459.14	17.0%	\$497,200	37.0%	\$1,083,046	14.56
4	Gombert Tract	\$409,500	50.0%	\$204,750.00	20.0%	\$81,900	30.0%	\$122,850	3.20
5	Yates Property Bulverde	\$6,840,000	0.0%	\$0.00	14.6%	\$995,227	85.4%	\$5,844,773	4.20
6	Fischer Tract (Revised)	\$324,000	41.7%	\$135,000.00	14.6%	\$47,174	43.8%	\$141,826	2.40
7	Helotes Creek Gravity Main and Lift Station								
7	No. 246 Elimination Project	\$18,830,670	45.0%	\$8,473,801.50	12.0%	\$2,259,680	43.0%	\$8,097,188	2.50
8	E-54	\$20,481,381	62.1%	\$12,710,504.06	26.5%	\$5,421,638	11.5%	\$2,349,239	6.80
9	W-31	\$8,709,110	0.0%	\$0.00	17.7%	\$1,543,180	82.3%	\$7,165,930	15.00
	<b>Total</b>	<b>\$71,119,616</b>	<b>38.5%</b>	<b>\$27,350,432</b>	<b>18.9%</b>	<b>\$13,414,234</b>	<b>42.7%</b>	<b>\$30,354,951</b>	

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Table B-20: Wastewater Collection - Middle Collection Service Area

Project No.	Project Title	Project Cost Estimate (\$ 2018)	Allocated to Existing Customer Demand (%)	Allocated to Existing Customer Demand (\$)	Allocated to Study Period Growth (%)	Allocated to Study Period Growth (\$)	Allocated to Post-Study Period Growth (%)	Allocated to Post-Study Period Growth (\$)	Total Future Capacity (MGD)
1	C07-01	\$37,004	0.0%	\$0.00	3.3%	\$1,203	96.8%	\$35,802	1.60
2	C63-04	\$1,166,326	31.2%	\$364,476.83	9.0%	\$104,969	59.8%	\$696,880	3.20
3	E-16 Wurzbach: Blanco to Nakoma	\$15,752,422	10.4%	\$1,632,688.65	12.0%	\$1,890,291	77.6%	\$12,229,443	52.10
4	W-1 Leon Creek: Hwy 151 to Hwy 90 W-2 Huebner Creek: Eckhert to Shadow	\$30,400,000	33.6%	\$10,211,132.42	25.5%	\$7,763,336	40.9%	\$12,425,531	52.10
5	Mist (Phase 1)	\$13,110,548	22.1%	\$2,894,809.01	7.9%	\$1,031,895	70.0%	\$9,183,844	17.50
6	C-12 Donaldson Terrace C-3 SA Airport: McCullough and Wetmore	\$2,179,991	35.3%	\$769,408.59	8.0%	\$174,399	56.7%	\$1,236,183	6.80
7	to Basse	\$8,899,046	55.5%	\$4,935,618.94	4.4%	\$395,922	40.1%	\$3,567,505	46.20
8	E_7_Beitel Creek_Wurzbach Pkwy to Austin Hwy	\$2,033,829	66.3%	\$1,348,138.08	3.9%	\$80,063	29.8%	\$605,628	17.50
9	C_22_Balcones Heights_Oaksdale to Babcock	\$6,612,771	23.0%	\$1,520,937.33	9.0%	\$595,149	68.0%	\$4,496,684	11.20
10	C_36_Jackson Keller to Montview	\$4,443,857	26.0%	\$1,155,402.82	13.0%	\$577,701	61.0%	\$2,710,753	7.60
11	E-19 Segment 2	\$30,651,913	36.2%	\$11,103,014.92	13.1%	\$4,008,929	50.7%	\$15,539,969	64.60
12	W-52	\$15,424,946	49.7%	\$7,668,401.74	25.0%	\$3,856,237	25.3%	\$3,900,308	17.50
13	W-9	\$63,600,000	61.8%	\$39,309,007.64	20.0%	\$12,720,000	18.2%	\$11,570,992	39.30
14	E-20 Segment 1	\$38,205,224	39.1%	\$14,921,905.63	21.6%	\$8,266,695	39.3%	\$15,016,624	29.70
<b>Total</b>		<b>\$232,517,877</b>	<b>42.1%</b>	<b>\$97,834,943</b>	<b>17.8%</b>	<b>\$41,466,788</b>	<b>40.1%</b>	<b>\$93,216,147</b>	

San Antonio Water System  
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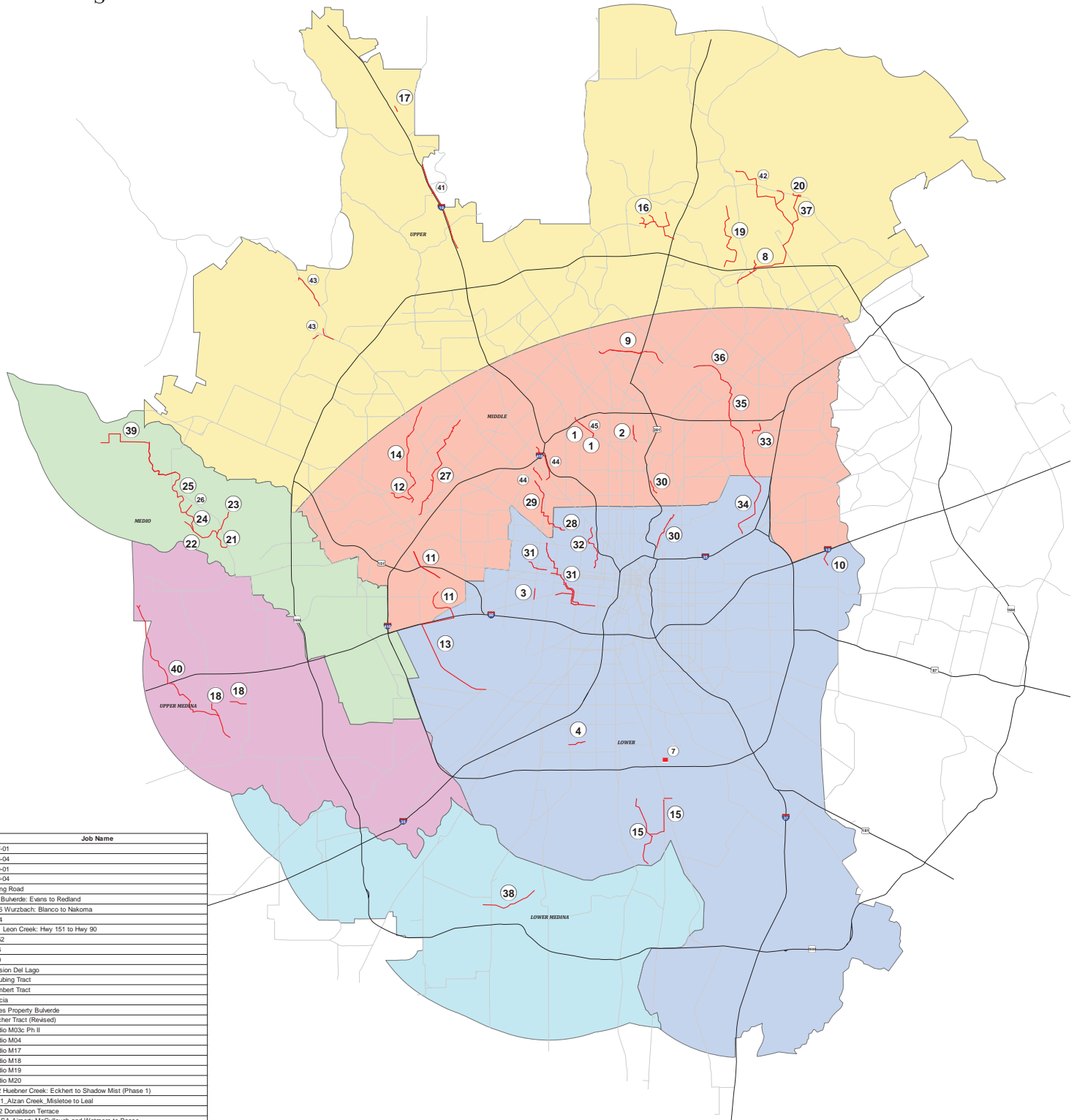
Appendix B  
 Table B-21

Table B-21: Wastewater Collection - Lower Collection Service Area

Project No.	Project Title	Project Cost Estimate (\$ 2018)	Allocated to Existing Customer Demand (%)	Allocated to Existing Customer Demand (\$)	Allocated to Study Period Growth (%)	Allocated to Study Period Growth (\$)	Allocated to Post-Study Period Growth (%)	Allocated to Post-Study Period Growth (\$)	Total Future Capacity (MGD)
1	C69-01	\$2,715,935	41.7%	\$1,131,639.55	7.8%	\$211,843	50.5%	\$1,372,453	2.40
2	C69-04	\$1,452,586	14.7%	\$213,615.56	3.6%	\$51,791	81.7%	\$1,187,179	6.80
3	Rilling Road	\$100,177,880	0.0%	\$0.00	12.0%	\$12,021,346	88.0%	\$88,156,534	15.00
4	E-74	\$6,392,332	13.7%	\$878,335.69	2.5%	\$158,808	83.8%	\$5,355,188	39.30
5	Mission Del Lago	\$3,600,000	9.4%	\$339,266.68	11.2%	\$402,079	79.4%	\$2,858,654	5.40
6	C_11_Alzan Creek_Misletoe to Leal C-5 - Culebra/Castroville to Laredo & C-28- Zarzamora Creek/San Gabriel to NW 23rd	\$1,845,078	79.4%	\$1,465,209.25	5.5%	\$102,293	15.0%	\$277,576	6.80
7	Street Projects (Package I)	\$16,400,000	66.3%	\$10,870,857.12	5.2%	\$860,110	28.5%	\$4,669,033	17.50
8	Martinez Creek	\$23,126,283	39.1%	\$9,032,487.61	4.0%	\$915,489	57.0%	\$13,178,306	29.70
9	W-6	\$218,000,000	59.8%	\$130,467,598.52	14.0%	\$30,520,000	26.2%	\$57,012,401	78.70
10	E-19 Segment 1	\$29,022,288	36.2%	\$10,512,717.32	7.6%	\$2,195,990	56.2%	\$16,313,581	64.60
<b>Total</b>		<b>\$402,732,382</b>	<b>40.9%</b>	<b>\$164,911,727</b>	<b>11.8%</b>	<b>\$47,439,750</b>	<b>47.3%</b>	<b>\$190,380,905</b>	



# Impact Fee Collection CIP



Map ID	Job Name
1	C07-01
2	C63-04
3	C69-01
4	C69-04
7	Rilling Road
8	E-4 Bulverde, Evans to Ridland
9	E-19 Wurzbach, Blanco to Nakoma
10	E-74
11	W-1 Leon Creek, Hwy 151 to Hwy 90
12	W-52
13	W-6
14	W-9
15	Mission Del Lago
16	Strasburg Tract
17	Gombert Tract
18	Garcia
19	Yates Property Bulverde
20	Fischer Tract (Revised)
21	Medio M03c Ph II
22	Medio M04
23	Medio M17
24	Medio M18
25	Medio M19
26	Medio M20
27	W-2 Huebner Creek, Eckhart to Shadow Mist (Phase 1)
28	C_11 Alzain Creek, Mistletoe to Leal
29	C-12 Donaldson Terrace
30	C-3 SA Airport, McCullough and Wetmore to Basse
31	C-5 - Culebra/Castroville to Laredo & C-28- Zarzamora Creek (Package I)
32	Martinez Creek
33	E_7_Baltes Creek, Wurzbach Pkwy to Austin Hwy
34	E-19 Segment 1
35	E-19 Segment 2
36	E-20 Segment 1
37	E-54
38	Palo Alto
39	Schuchart
40	Texas Research Park
41	W-31
42	E-54 Phase II
43	Helotes Creek Gravity Main and Lift Station No. 246 Elimination Project
44	C_22_Balcones Heights, Oskdale to Babcock
45	C_36_Jackson Keller to Montview



Appendix C  
FINANCING COSTS FOR AVAILABLE EXISTING  
CAPACITY





Calculation of Financing Cost for Existing Available Facilities

Line No.	Description	Current 2018	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Total Outstanding Debt	\$2,625,840,000										
2	Water Supply Outstanding Debt	\$577,757,367										
3	Water Delivery Outstanding Debt	\$898,142,207										
4	Total Water Delivery Interest Payment - Revenue Bonds		\$38,694,631	\$37,465,167	\$35,889,355	\$34,182,127	\$32,588,444	\$30,771,787	\$28,839,225	\$26,848,715	\$24,867,762	\$22,995,449
5	Total Water Delivery Interest Payment - Commercial		\$3,737,608	\$4,449,533	\$4,894,486	\$4,894,486	\$4,894,486	\$4,894,486	\$4,894,486	\$4,894,486	\$4,894,486	\$4,894,486
6	Eligible Water Delivery Interest Payment		\$2,944,612	\$2,851,051	\$2,731,134	\$2,601,216	\$2,479,939	\$2,341,694	\$2,194,628	\$2,043,153	\$1,892,405	\$1,749,924
7	Water Delivery Financing Charge	\$36,155,949										
8	Wastewater Outstanding Debt	\$1,053,289,203										
9	Total Sewer Delivery Interest Payment - Revenue Bonds		\$42,137,116	\$40,833,287	\$39,308,833	\$37,928,220	\$36,391,999	\$34,622,503	\$32,762,357	\$30,810,866	\$28,550,713	\$26,127,500
10	Total Sewer Delivery Interest Payment - Commercial		\$3,050,954	\$5,132,088	\$5,645,296	\$5,645,296	\$5,645,296	\$5,645,296	\$5,645,296	\$5,645,296	\$5,645,296	\$5,645,296
11	Eligible Sewer Service Interest Payment		\$3,823,622	\$3,705,309	\$3,566,977	\$3,441,697	\$3,302,296	\$3,141,728	\$2,972,934	\$2,795,851	\$2,590,759	\$2,370,871
12	Sewer Service Financing Charge	\$48,742,622										

Calculation of Financing Cost for Existing Available Facilities

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Total Outstanding Debt										
2	Water Supply Outstanding Debt										
3	Water Delivery Outstanding Debt										
4	Total Water Delivery Interest Payment - Revenue Bonds	\$21,359,131	\$19,905,673	\$18,423,747	\$16,857,854	\$15,187,185	\$13,149,196	\$11,221,289	\$9,721,029	\$8,269,725	\$6,863,041
5	Total Water Delivery Interest Payment - Commercial	\$4,894,486	\$4,894,486	\$4,894,486	\$4,894,486	\$4,894,486	\$4,894,486	\$4,894,486	\$4,894,486	\$0	\$0
6	Eligible Water Delivery Interest Payment	\$1,625,403	\$1,514,796	\$1,402,024	\$1,282,861	\$1,155,725	\$1,000,637	\$853,926	\$739,758	\$629,316	\$522,269
7	Water Delivery Financing Charge										
8	Wastewater Outstanding Debt										
9	Total Sewer Delivery Interest Payment - Revenue Bonds	\$24,239,103	\$22,831,116	\$21,417,470	\$19,962,234	\$18,424,852	\$16,471,198	\$14,333,183	\$12,339,563	\$10,335,929	\$8,326,450
10	Total Sewer Delivery Interest Payment - Commercial	\$5,645,296	\$5,645,296	\$5,645,296	\$5,645,296	\$5,645,296	\$5,645,296	\$5,645,296	\$5,645,296	\$0	\$0
11	Eligible Sewer Service Interest Payment	\$2,199,514	\$2,071,750	\$1,943,472	\$1,811,420	\$1,671,915	\$1,494,636	\$1,300,627	\$1,119,721	\$937,907	\$755,562
12	Sewer Service Financing Charge										

Calculation of Financing Cost for Existing Available Facilities

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Total Outstanding Debt										
2	Water Supply Outstanding Debt										
3	Water Delivery Outstanding Debt										
4	Total Water Delivery Interest Payment - Revenue Bonds	\$5,408,721	\$4,113,170	\$3,255,986	\$2,643,485	\$2,112,190	\$1,623,407	\$1,145,311	\$716,213	\$0	\$0
5	Total Water Delivery Interest Payment - Commercial	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	Eligible Water Delivery Interest Payment	\$411,597	\$313,007	\$247,776	\$201,166	\$160,735	\$123,539	\$87,157	\$54,503	\$0	\$0
7	Water Delivery Financing Charge										
8	Wastewater Outstanding Debt										
9	Total Sewer Delivery Interest Payment - Revenue Bonds	\$6,257,327	\$4,392,269	\$3,111,649	\$2,228,988	\$1,470,911	\$904,323	\$485,143	\$148,832	\$0	\$0
10	Total Sewer Delivery Interest Payment - Commercial	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
11	Eligible Sewer Service Interest Payment	\$567,805	\$398,565	\$282,358	\$202,264	\$133,474	\$82,060	\$44,023	\$13,505	\$0	\$0
12	Sewer Service Financing Charge										



Appendix D  
CREDIT FOR OUTSTANDING DEBT ON  
AVAILABLE EXISTING CAPACITY



San Antonio Water System  
 Water and Wastewater Facilities Capital Improvements  
 Plan and Maximum Impact Fees Report

Appendix D

Calculation of Credit for Outstanding Debt on Existing Available CIP

Line No.	Description	Current 2018	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Total Water Supply Debt Service Payment - Revenue Bonds		\$36,866,713	\$36,977,747	\$37,453,221	\$37,474,233	\$38,062,584	\$38,164,946	\$38,164,712	\$38,642,131	\$38,107,726	\$38,439,056
2	Water Supply Service Unit Equivalents (Year-end)	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
3	Water Supply Debt Service for Fee Eligible Projects per Service Unit Equivalent		\$5.85	\$5.76	\$5.73	\$5.64	\$5.63	\$5.55	\$5.46	\$5.44	\$5.28	\$5.25
4	Water Supply Cumulative Growth in Service Unit Equivalents		14,209	28,419	42,588	56,757	70,926	85,094	99,263	113,432	127,601	141,770
5	Water Supply Debt Service for Fee-Eligible Projects to be Recovered from New Connections		\$83,086	\$163,730	\$244,208	\$320,088	\$399,468	\$472,634	\$542,390	\$617,552	\$674,326	\$744,033
6	Water Supply Credit Amount	\$12,179,226										
7	Water Supply Growth Rate	1.69%										
8	Total Water Delivery Debt Service Payment - Revenue Bonds		\$4,612,660	\$4,626,552	\$4,686,042	\$4,688,671	\$4,762,284	\$4,775,091	\$4,775,062	\$4,834,796	\$4,767,932	\$4,809,387
9	Water Delivery Service Unit Equivalents (Year-end)	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
10	Water Delivery Debt Service for Fee Eligible Projects per Service Unit Equivalent		\$6.60	\$6.81	\$6.72	\$6.66	\$6.34	\$6.33	\$6.23	\$5.98	\$5.64	\$5.44
11	Water Delivery Cumulative Growth in Service Unit Equivalents		14,209	28,419	42,588	56,757	70,926	85,094	99,263	113,432	127,601	141,770
12	Water Delivery Debt Service for Fee-Eligible Projects to be Recovered from New Connections		\$93,719	\$193,532	\$286,141	\$378,134	\$449,322	\$538,370	\$617,961	\$677,891	\$719,297	\$771,180
13	Water Delivery Credit Amount	\$11,655,059										
14	Water Delivery Growth Rate	1.69%										
15	Total Sewer Delivery Debt Service Payment - Revenue Bonds		\$75,324,312	\$77,046,142	\$77,192,424	\$77,507,355	\$75,593,119	\$76,542,259	\$75,639,493	\$76,046,017	\$83,349,287	\$82,602,063
16	Sewer Service Unit Equivalents	720,369	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033	852,209
17	Sewer Debt Service for Fee Eligible Projects per Service Unit Equivalent		\$9.32	\$9.36	\$9.22	\$9.10	\$8.72	\$8.69	\$8.45	\$8.36	\$9.01	\$8.80
18	Sewer Cumulative Growth in Service Unit Equivalents		13,214	26,429	39,605	52,782	65,958	79,135	92,311	105,487	118,664	131,840
19	Sewer Debt Service for Fee-Eligible Projects to be Recovered from New Connections		\$123,120	\$247,422	\$365,036	\$480,147	\$575,383	\$687,479	\$779,637	\$881,417	\$1,069,675	\$1,159,584
20	Sewer Credit Amount	\$16,459,275										
21	Sewer Growth Rate	1.69%										

Calculation of Credit for Outstanding Debt on Existing Available CIP

Line No.	Description	11	12	13	14	15	16	17	18	19	20
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Total Water Supply Debt Service Payment - Revenue Bonds	\$39,981,922	\$37,718,364	\$39,276,941	\$37,897,032	\$34,271,634	\$32,895,981	\$33,724,752	\$33,741,745	\$33,760,685	\$32,768,626
2	Water Supply Service Unit Equivalents (Year-end)	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
3	Water Supply Debt Service for Fee Eligible Projects per Service Unit Equivalent	\$5.37	\$4.98	\$5.10	\$4.84	\$4.30	\$4.06	\$4.09	\$4.03	\$3.96	\$3.78
4	Water Supply Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
5	Water Supply Debt Service for Fee-Eligible Projects to be Recovered from New Connections	\$760,999	\$705,950	\$722,869	\$685,849	\$609,900	\$575,662	\$580,329	\$570,945	\$561,744	\$536,150
6	Water Supply Credit Amount										
7	Water Supply Growth Rate										
8	Total Water Delivery Debt Service Payment - Revenue Bonds	\$5,002,426	\$4,719,216	\$4,914,221	\$4,741,571	\$4,287,971	\$4,115,853	\$4,219,547	\$4,221,673	\$4,224,043	\$4,099,919
9	Water Delivery Service Unit Equivalents (Year-end)	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
10	Water Delivery Debt Service for Fee Eligible Projects per Service Unit Equivalent	\$4.53	\$4.38	\$4.17	\$4.10	\$4.14	\$4.97	\$3.48	\$3.17	\$3.11	\$2.68
11	Water Delivery Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
12	Water Delivery Debt Service for Fee-Eligible Projects to be Recovered from New Connections	\$641,911	\$620,303	\$590,879	\$580,816	\$587,565	\$704,577	\$493,919	\$449,037	\$441,454	\$380,567
13	Water Delivery Credit Amount										
14	Water Delivery Growth Rate										
15	Total Sewer Delivery Debt Service Payment - Revenue Bonds	\$57,028,349	\$56,529,901	\$57,055,877	\$57,085,433	\$58,236,088	\$73,932,823	\$61,818,502	\$61,842,532	\$61,861,985	\$58,454,595
16	Sewer Service Unit Equivalents	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375	1,008,178
17	Sewer Debt Service for Fee Eligible Projects per Service Unit Equivalent	\$5.97	\$5.82	\$5.78	\$5.68	\$5.70	\$7.12	\$5.85	\$5.76	\$5.66	\$5.26
18	Sewer Cumulative Growth in Service Unit Equivalents	131,840	131,840	131,840	131,840	131,840	131,840	131,840	131,840	131,840	131,840
19	Sewer Debt Service for Fee-Eligible Projects to be Recovered from New Connections	\$787,232	\$767,346	\$761,578	\$749,273	\$751,636	\$938,326	\$771,500	\$758,937	\$746,523	\$693,647
20	Sewer Credit Amount										
21	Sewer Growth Rate										



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Appendix D

Calculation of Credit for Outstanding Debt on Existing Available CIP

Line No.	Description	21	22	23	24	25	26	27	28	29	30
		2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
1	Total Water Supply Debt Service Payment - Revenue Bonds	\$32,783,711	\$28,365,424	\$11,644,364	\$10,913,765	\$9,985,963	\$5,812,211	\$3,216,372	\$0	\$0	\$0
2	Water Supply Service Unit Equivalents (Year-end)	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
3	Water Supply Debt Service for Fee Eligible Projects per Service Unit Equivalent	\$3.72	\$3.17	\$1.28	\$1.18	\$1.06	\$0.61	\$0.33	\$0.00	\$0.00	\$0.00
4	Water Supply Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
5	Water Supply Debt Service for Fee-Eligible Projects to be Recovered from New Connections	\$527,457	\$448,765	\$181,153	\$166,958	\$150,218	\$85,976	\$46,784	\$0	\$0	\$0
6	Water Supply Credit Amount										
7	Water Supply Growth Rate										
8	Total Water Delivery Debt Service Payment - Revenue Bonds	\$4,101,806	\$3,549,003	\$1,456,910	\$1,365,500	\$1,249,416	\$727,208	\$402,424	\$0	\$0	\$0
9	Water Delivery Service Unit Equivalents (Year-end)	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
10	Water Delivery Debt Service for Fee Eligible Projects per Service Unit Equivalent	\$2.64	\$2.02	\$1.28	\$1.15	\$0.89	\$0.88	\$0.70	\$0.58	\$0.00	\$0.00
11	Water Delivery Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
12	Water Delivery Debt Service for Fee-Eligible Projects to be Recovered from New Connections	\$374,114	\$286,504	\$181,766	\$163,504	\$126,803	\$124,683	\$99,583	\$81,525	\$0	\$0
13	Water Delivery Credit Amount										
14	Water Delivery Growth Rate										
15	Total Sewer Delivery Debt Service Payment - Revenue Bonds	\$55,577,455	\$47,288,574	\$29,753,433	\$27,446,522	\$21,211,626	\$13,142,257	\$8,835,882	\$6,498,832	\$0	\$0
16	Sewer Service Unit Equivalents	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814	1,192,692
17	Sewer Debt Service for Fee Eligible Projects per Service Unit Equivalent	\$4.92	\$4.12	\$2.55	\$2.31	\$1.76	\$1.07	\$0.71	\$0.51	\$0.00	\$0.00
18	Sewer Cumulative Growth in Service Unit Equivalents	131,840	131,840	131,840	131,840	131,840	131,840	131,840	131,840	131,840	131,840
19	Sewer Debt Service for Fee-Eligible Projects to be Recovered from New Connections	\$648,514	\$542,598	\$335,707	\$304,517	\$231,419	\$140,992	\$93,213	\$67,416	\$0	\$0
20	Sewer Credit Amount										
21	Sewer Growth Rate										



Appendix E

CREDIT FOR PROJECTED PRINCIPAL PAYMENTS  
ON ELIGIBLE FUTURE CIP



San Antonio Water System  
 Water and Wastewater Facilities Capital Improvements  
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Appendix E  
 Table E-1

All Service Areas

Table E-1: Calculation of Credit for Projected Principal Payments on Eligible Future Water Supply

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Principal Payment	\$0	\$4,245,862	\$4,469,200	\$4,704,285	\$4,951,737	\$5,212,204	\$5,486,373	\$5,774,963	\$6,078,733	\$6,398,482
5	Principal Payment per EDU	\$0.00	\$5.29	\$5.47	\$5.66	\$5.86	\$6.06	\$6.28	\$6.50	\$6.74	\$6.98
6	Water Supply Cumulative Growth in Service Unit Equivalents	14,209	28,419	42,588	56,757	70,926	85,094	99,263	113,432	127,601	141,770
7	Water Supply DS Payment for Fee-Eligible Projects to be Recovered from New Connections	\$0	\$150,258	\$232,907	\$321,154	\$415,360	\$515,899	\$623,186	\$737,641	\$859,712	\$989,873
8	<b>Water Supply Credit Amount</b>	<b>\$35,878,985</b>									
9	Study Period Incremental EDUs	141,770									
10	<b>Water Supply Credit for Future Principal per EDU</b>	<b>\$253</b>									

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Appendix E  
 Table E-1

All Service Areas

Table E-1: Calculation of Credit for Projected Principal Payments on Eligible Future Water Supply

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Principal Payment	\$11,245,526	\$11,837,055	\$12,459,699	\$13,115,095	\$13,804,966	\$14,531,124	\$15,295,480	\$16,100,042	\$16,946,924	\$17,838,354
5	Principal Payment per EDU	\$10.20	\$10.56	\$10.93	\$11.31	\$11.71	\$12.12	\$12.54	\$12.98	\$13.44	\$13.91
6	Water Supply Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
7	Water Supply DS Payment for Fee-Eligible Projects to be Recovered from New Connections	\$1,446,078	\$1,496,775	\$1,549,249	\$1,603,563	\$1,659,781	\$1,717,970	\$1,778,199	\$1,840,539	\$1,905,065	\$1,971,853
8	<b>Water Supply Credit Amount</b>										
9	Study Period Incremental EDUs										
10	<b>Water Supply Credit for Future Principal per EDU</b>										

San Antonio Water System  
 Water and Wastewater Facilities Capital Improvements  
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Appendix E  
 Table E-1

All Service Areas

Table E-1: Calculation of Credit for Projected Principal Payments on Eligible Future Water Supply

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Principal Payment	\$18,776,674	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	Principal Payment per EDU	\$14.40	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
6	Water Supply Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
7	Water Supply DS Payment for Fee-Eligible Projects to be Recovered from New Connections	\$2,040,983	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
8	<b>Water Supply Credit Amount</b>										
9	Study Period Incremental EDUs										
10	<b>Water Supply Credit for Future Principal per EDU</b>										

Table E-2: Calculation of Credit for Projected Principal Payments on Eligible Future Distribution Mains

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$81,654	\$167,391	\$257,414	\$351,939	\$451,190	\$555,404	\$664,828	\$779,723	\$900,363	\$1,027,036
5	Debt Service Payment per EDU	\$0.1035	\$0.2084	\$0.3150	\$0.4233	\$0.5336	\$0.6460	\$0.7608	\$0.8780	\$0.9979	\$1.1207
6	Water Delivery Cumulative Growth in Service Unit Equivalents	14,209	28,419	42,588	56,757	70,926	85,094	99,263	113,432	127,601	141,770
7	Water Delivery Debt Service for Fee-Eligible Flow Projects to be Recovered from New Connections	\$1,471	\$5,924	\$13,415	\$24,026	\$37,847	\$54,973	\$75,516	\$99,595	\$127,338	\$158,887
8	<b>Water Delivery - Flow Credit Amount for Distribution Mains</b>	<b>\$6,507,276</b>									
9	Study Period Incremental EDUs	141,770									
10	<b>Water Delivery - Flow Credit for Future Principal per EDU for Distribution Mains</b>	<b>\$46</b>									



Table E-2: Calculation of Credit for Projected Principal Payments on Eligible Future Distribution Mains

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$1,078,387	\$1,132,307	\$1,188,922	\$1,248,368	\$1,310,787	\$1,376,326	\$1,445,142	\$1,517,399	\$1,593,269	\$1,672,933
5	Debt Service Payment per EDU	\$1.1572	\$1.1948	\$1.2336	\$1.2737	\$1.3151	\$1.3578	\$1.4020	\$1.4475	\$1.4946	\$1.5431
6	Water Delivery Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
7	Water Delivery Debt Service for Fee-Eligible Flow Projects to be Recovered from New Connections	\$164,051	\$169,382	\$174,887	\$180,571	\$186,440	\$192,499	\$198,756	\$205,215	\$211,885	\$218,771
8	<b>Water Delivery - Flow Credit Amount for Distribution Mains</b>										
9	Study Period Incremental EDUs										
10	<b>Water Delivery - Flow Credit for Future Principal per EDU for Distribution Mains</b>										

Table E-2: Calculation of Credit for Projected Principal Payments on Eligible Future Distribution Mains

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$1,756,580	\$1,844,409	\$1,936,629	\$2,033,460	\$2,135,133	\$2,241,890	\$2,353,985	\$2,471,684	\$2,595,268	\$2,725,031
5	Debt Service Payment per EDU	\$1.5933	\$1.6451	\$1.6985	\$1.7537	\$1.8107	\$1.8696	\$1.9304	\$1.9931	\$2.0579	\$2.1247
6	Water Delivery Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
7	Water Delivery Debt Service for Fee-Eligible Flow Projects to be Recovered from New Connections	\$225,881	\$233,222	\$240,802	\$248,628	\$256,709	\$265,052	\$273,666	\$282,560	\$291,743	\$301,225
8	<b>Water Delivery - Flow Credit Amount for Distribution Mains</b>										
9	Study Period Incremental EDUs										
10	<b>Water Delivery - Flow Credit for Future Principal per EDU for Distribution Mains</b>										

Table E-2: Calculation of Credit for Projected Principal Payments on Eligible Future Distribution Mains

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$2,508,379	\$2,280,894	\$2,042,035	\$1,791,232	\$1,527,890	\$1,251,380	\$961,045	\$656,193	\$336,099	\$0
5	Debt Service Payment per EDU	\$1.9232	\$1.7197	\$1.5139	\$1.3058	\$1.0953	\$0.8821	\$0.6662	\$0.4473	\$0.2253	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
7	Water Delivery Debt Service for Fee-Eligible Flow Projects to be Recovered from New Connections	\$272,655	\$243,796	\$214,628	\$185,129	\$155,280	\$125,059	\$94,443	\$63,410	\$31,937	\$0
8	<b>Water Delivery - Flow Credit Amount for Distribution Mains</b>										
9	Study Period Incremental EDUs										
10	<b>Water Delivery - Flow Credit for Future Principal per EDU for Distribution Mains</b>										

Table E-3: Calculation of Credit for Projected Principal Payments on Eligible Future Well Pumps

Line No.	Description	1	2	3	4	5	6	7	8	9	10
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$7,601	\$15,582	\$23,962	\$32,761	\$42,000	\$51,701	\$61,887	\$72,583	\$83,813	\$95,604
5	Debt Service Payment per EDU	\$0.0096	\$0.0194	\$0.0293	\$0.0394	\$0.0497	\$0.0601	\$0.0708	\$0.0817	\$0.0929	\$0.1043
6	Water Delivery Cumulative Growth in Service Unit Equivalents	14,209	28,419	42,588	56,757	70,926	85,094	99,263	113,432	127,601	141,770
7	Water Delivery Debt Service for Fee-Eligible Well Pumps Projects to be Recovered from New Connections	\$137	\$551	\$1,249	\$2,237	\$3,523	\$5,117	\$7,030	\$9,271	\$11,854	\$14,790
8	<b>Water Delivery - System Development Credit Amount for Well Pumps</b>	<b>\$605,746</b>									
9	Study Period Incremental EDUs	141,770									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Well Pumps</b>	<b>\$4</b>									

Table E-3: Calculation of Credit for Projected Principal Payments on Eligible Future Well Pumps

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$100,384	\$105,404	\$110,674	\$116,208	\$122,018	\$128,119	\$134,525	\$141,251	\$148,314	\$155,729
5	Debt Service Payment per EDU	\$0.1077	\$0.1112	\$0.1148	\$0.1186	\$0.1224	\$0.1264	\$0.1305	\$0.1347	\$0.1391	\$0.1436
6	Water Delivery Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
7	Water Delivery Debt Service for Fee-Eligible Well Pumps Projects to be Recovered from New Connections	\$15,271	\$15,767	\$16,280	\$16,809	\$17,355	\$17,919	\$18,502	\$19,103	\$19,724	\$20,365
8	<b>Water Delivery - System Development Credit Amount for Well Pumps</b>										
9	Study Period Incremental EDUs										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Well Pumps</b>										

Table E-3: Calculation of Credit for Projected Principal Payments on Eligible Future Well Pumps

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$163,516	\$171,691	\$180,276	\$189,290	\$198,754	\$208,692	\$219,127	\$230,083	\$241,587	\$253,667
5	Debt Service Payment per EDU	\$0.1483	\$0.1531	\$0.1581	\$0.1633	\$0.1686	\$0.1740	\$0.1797	\$0.1855	\$0.1916	\$0.1978
6	Water Delivery Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
7	Water Delivery Debt Service for Fee-Eligible Well Pumps Projects to be Recovered from New Connections	\$21,027	\$21,710	\$22,416	\$23,144	\$23,896	\$24,673	\$25,475	\$26,303	\$27,158	\$28,040
8	<b>Water Delivery - System Development Credit Amount for Well Pumps</b>										
9	Study Period Incremental EDUs										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Well Pumps</b>										

Table E-3: Calculation of Credit for Projected Principal Payments on Eligible Future Well Pumps

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$233,499	\$212,323	\$190,088	\$166,741	\$142,228	\$116,488	\$89,461	\$61,083	\$31,287	\$0
5	Debt Service Payment per EDU	\$0.1790	\$0.1601	\$0.1409	\$0.1216	\$0.1020	\$0.0821	\$0.0620	\$0.0416	\$0.0210	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770	141,770
7	Water Delivery Debt Service for Fee-Eligible Well Pumps Projects to be Recovered from New Connections	\$25,381	\$22,694	\$19,979	\$17,233	\$14,455	\$11,641	\$8,791	\$5,903	\$2,973	\$0
8	<b>Water Delivery - System Development Credit Amount for Well Pumps</b>										
9	Study Period Incremental EDUs										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Well Pumps</b>										

Table E-4: Calculation of Credit for Projected Principal Payments on Eligible Future High Service and Booster Pump Stations in High Elevation Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$677	\$1,388	\$2,135	\$2,919	\$3,743	\$4,607	\$5,515	\$6,468	\$7,468	\$8,519
5	Debt Service Payment per EDU	\$0.0009	\$0.0017	\$0.0026	\$0.0035	\$0.0044	\$0.0054	\$0.0063	\$0.0073	\$0.0083	\$0.0093
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	686	1,372	2,056	2,740	3,424	4,109	4,793	5,477	6,161	6,845
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$1	\$2	\$5	\$10	\$15	\$22	\$30	\$40	\$51	\$64
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in High Elevation Service Area</b>	<b>\$2,606</b>									
9	Study Period Incremental EDUs in High Elevation Service Area	6,845									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in High Elevation Service Area</b>	<b>\$0</b>									



Table E-4: Calculation of Credit for Projected Principal Payments on Eligible Future High Service  
 and Booster Pump Stations in High Elevation Service Area

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$8,945	\$9,392	\$9,862	\$10,355	\$10,873	\$11,417	\$11,987	\$12,587	\$13,216	\$13,877
5	Debt Service Payment per EDU	\$0.0096	\$0.0099	\$0.0102	\$0.0106	\$0.0109	\$0.0113	\$0.0116	\$0.0120	\$0.0124	\$0.0128
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$66	\$68	\$70	\$72	\$75	\$77	\$80	\$82	\$85	\$88
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in High Elevation Service Area</b>										
9	Study Period Incremental EDUs in High Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in High Elevation Service Area</b>										

Table E-4: Calculation of Credit for Projected Principal Payments on Eligible Future High Service  
 and Booster Pump Stations in High Elevation Service Area

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$14,571	\$15,299	\$16,064	\$16,867	\$17,711	\$18,596	\$19,526	\$20,502	\$21,528	\$22,604
5	Debt Service Payment per EDU	\$0.0132	\$0.0136	\$0.0141	\$0.0145	\$0.0150	\$0.0155	\$0.0160	\$0.0165	\$0.0171	\$0.0176
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$90	\$93	\$96	\$100	\$103	\$106	\$110	\$113	\$117	\$121
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in High Elevation Service Area</b>										
9	Study Period Incremental EDUs in High Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in High Elevation Service Area</b>										

Table E-4: Calculation of Credit for Projected Principal Payments on Eligible Future High Service and Booster Pump Stations in High Elevation Service Area

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$20,807	\$18,920	\$16,939	\$14,858	\$12,674	\$10,380	\$7,972	\$5,443	\$2,788	\$0
5	Debt Service Payment per EDU	\$0.0160	\$0.0143	\$0.0126	\$0.0108	\$0.0091	\$0.0073	\$0.0055	\$0.0037	\$0.0019	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$109	\$98	\$86	\$74	\$62	\$50	\$38	\$25	\$13	\$0
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in High Elevation Service Area</b>										
9	Study Period Incremental EDUs in High Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in High Elevation Service Area</b>										

Table E-5: Calculation of Credit for Projected Principal Payments on Eligible Future High Service  
 and Booster Pump Stations in Middle Elevation Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$4,816	\$9,874	\$15,184	\$20,760	\$26,614	\$32,761	\$39,216	\$45,993	\$53,109	\$60,581
5	Debt Service Payment per EDU	\$0.0061	\$0.0123	\$0.0186	\$0.0250	\$0.0315	\$0.0381	\$0.0449	\$0.0518	\$0.0589	\$0.0661
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	5,661	11,321	16,966	22,611	28,255	33,900	39,544	45,189	50,833	56,478
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$35	\$139	\$315	\$565	\$889	\$1,292	\$1,775	\$2,340	\$2,992	\$3,734
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in Middle Elevation Service Area</b>	<b>\$152,913</b>									
9	Study Period Incremental EDUs in Middle Elevation Service Area	56,478									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in Middle Elevation Service Area</b>	<b>\$3</b>									

Table E-5: Calculation of Credit for Projected Principal Payments on Eligible Future High Service and Booster Pump Stations in Middle Elevation Service Area

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$63,610	\$66,790	\$70,130	\$73,636	\$77,318	\$81,184	\$85,243	\$89,506	\$93,981	\$98,680
5	Debt Service Payment per EDU	\$0.0683	\$0.0705	\$0.0728	\$0.0751	\$0.0776	\$0.0801	\$0.0827	\$0.0854	\$0.0882	\$0.0910
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$3,855	\$3,980	\$4,110	\$4,243	\$4,381	\$4,523	\$4,671	\$4,822	\$4,979	\$5,141
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in Middle Elevation Service Area</b>										

Table E-5: Calculation of Credit for Projected Principal Payments on Eligible Future High Service  
 and Booster Pump Stations in Middle Elevation Service Area

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$103,614	\$108,795	\$114,234	\$119,946	\$125,943	\$132,241	\$138,853	\$145,795	\$153,085	\$160,739
5	Debt Service Payment per EDU	\$0.0940	\$0.0970	\$0.1002	\$0.1034	\$0.1068	\$0.1103	\$0.1139	\$0.1176	\$0.1214	\$0.1253
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$5,308	\$5,480	\$5,659	\$5,842	\$6,032	\$6,228	\$6,431	\$6,640	\$6,856	\$7,078
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in Middle Elevation Service Area</b>										

Table E-5: Calculation of Credit for Projected Principal Payments on Eligible Future High Service  
 and Booster Pump Stations in Middle Elevation Service Area

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$147,960	\$134,541	\$120,452	\$105,658	\$90,124	\$73,814	\$56,688	\$38,706	\$19,825	\$0
5	Debt Service Payment per EDU	\$0.1134	\$0.1014	\$0.0893	\$0.0770	\$0.0646	\$0.0520	\$0.0393	\$0.0264	\$0.0133	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$6,407	\$5,729	\$5,043	\$4,350	\$3,649	\$2,939	\$2,219	\$1,490	\$750	\$0
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in Middle Elevation Service Area</b>										

Table E-6: Calculation of Credit for Projected Principal Payments on Eligible Future High Service  
 and Booster Pump Stations in Low Elevation Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$6,246	\$12,805	\$19,692	\$26,923	\$34,515	\$42,487	\$50,858	\$59,647	\$68,876	\$78,566
5	Debt Service Payment per EDU	\$0.0079	\$0.0159	\$0.0241	\$0.0324	\$0.0408	\$0.0494	\$0.0582	\$0.0672	\$0.0763	\$0.0857
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	7,862	15,725	23,566	31,406	39,246	47,086	54,926	62,766	70,607	78,447
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$62	\$251	\$568	\$1,017	\$1,602	\$2,327	\$3,197	\$4,216	\$5,390	\$6,726
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in Low Elevation Service Area</b>	<b>\$275,448</b>									
9	Study Period Incremental EDUs in Low Elevation Service Area	78,447									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in Low Elevation Service Area</b>	<b>\$4</b>									



Table E-6: Calculation of Credit for Projected Principal Payments on Eligible Future High Service and Booster Pump Stations in Low Elevation Service Area

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$82,494	\$86,619	\$90,950	\$95,497	\$100,272	\$105,286	\$110,550	\$116,078	\$121,881	\$127,976
5	Debt Service Payment per EDU	\$0.0885	\$0.0914	\$0.0944	\$0.0974	\$0.1006	\$0.1039	\$0.1072	\$0.1107	\$0.1143	\$0.1180
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$6,944	\$7,170	\$7,403	\$7,643	\$7,892	\$8,148	\$8,413	\$8,687	\$8,969	\$9,260
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in Low Elevation Service Area</b>										

**Table E-6: Calculation of Credit for Projected Principal Payments on Eligible Future High Service and Booster Pump Stations in Low Elevation Service Area**

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$134,374	\$141,093	\$148,148	\$155,555	\$163,333	\$171,499	\$180,074	\$189,078	\$198,532	\$208,459
5	Debt Service Payment per EDU	\$0.1219	\$0.1258	\$0.1299	\$0.1342	\$0.1385	\$0.1430	\$0.1477	\$0.1525	\$0.1574	\$0.1625
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$9,561	\$9,872	\$10,193	\$10,524	\$10,866	\$11,219	\$11,584	\$11,961	\$12,349	\$12,751
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in Low Elevation Service Area</b>										

Table E-6: Calculation of Credit for Projected Principal Payments on Eligible Future High Service  
 and Booster Pump Stations in Low Elevation Service Area

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$191,885	\$174,483	\$156,211	\$137,025	\$116,880	\$95,728	\$73,518	\$50,197	\$25,711	\$0
5	Debt Service Payment per EDU	\$0.1471	\$0.1315	\$0.1158	\$0.0999	\$0.0838	\$0.0675	\$0.0510	\$0.0342	\$0.0172	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible High Service and Booster Pump Stations Projects to be Recovered from New Connections	\$11,541	\$10,320	\$9,085	\$7,836	\$6,573	\$5,294	\$3,998	\$2,684	\$1,352	\$0
8	<b>Water Delivery - System Development Credit Amount for High Service and Booster Pump Stations in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for High Service and Booster Pump Stations in Low Elevation Service Area</b>										

Table E-7: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in High Elevation Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$1,881	\$3,857	\$5,931	\$8,109	\$10,396	\$12,797	\$15,319	\$17,966	\$20,746	\$23,664
5	Debt Service Payment per EDU	\$0.0024	\$0.0048	\$0.0073	\$0.0098	\$0.0123	\$0.0149	\$0.0175	\$0.0202	\$0.0230	\$0.0258
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	686	1,372	2,056	2,740	3,424	4,109	4,793	5,477	6,161	6,845
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$2	\$7	\$15	\$27	\$42	\$61	\$84	\$111	\$142	\$177
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in High Elevation Service Area</b>	<b>\$7,239</b>									
9	Study Period Incremental EDUs in High Elevation Service Area	6,845									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in High Elevation Service Area</b>	<b>\$1</b>									

Table E-7: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in High Elevation Service Area

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$24,848	\$26,090	\$27,395	\$28,764	\$30,202	\$31,713	\$33,298	\$34,963	\$36,711	\$38,547
5	Debt Service Payment per EDU	\$0.0267	\$0.0275	\$0.0284	\$0.0293	\$0.0303	\$0.0313	\$0.0323	\$0.0334	\$0.0344	\$0.0356
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$183	\$188	\$195	\$201	\$207	\$214	\$221	\$228	\$236	\$243
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in High Elevation Service Area</b>										
9	Study Period Incremental EDUs in High Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in High Elevation Service Area</b>										

Table E-7: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in High Elevation Service Area

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$40,474	\$42,498	\$44,623	\$46,854	\$49,197	\$51,656	\$54,239	\$56,951	\$59,799	\$62,789
5	Debt Service Payment per EDU	\$0.0367	\$0.0379	\$0.0391	\$0.0404	\$0.0417	\$0.0431	\$0.0445	\$0.0459	\$0.0474	\$0.0490
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$251	\$259	\$268	\$277	\$286	\$295	\$304	\$314	\$325	\$335
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in High Elevation Service Area</b>										
9	Study Period Incremental EDUs in High Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in High Elevation Service Area</b>										

**Table E-7: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in High Elevation Service Area**

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$57,797	\$52,555	\$47,051	\$41,273	\$35,205	\$28,834	\$22,144	\$15,120	\$7,744	\$0
5	Debt Service Payment per EDU	\$0.0443	\$0.0396	\$0.0349	\$0.0301	\$0.0252	\$0.0203	\$0.0153	\$0.0103	\$0.0052	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$303	\$271	\$239	\$206	\$173	\$139	\$105	\$71	\$36	\$0
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in High Elevation Service Area</b>										
9	Study Period Incremental EDUs in High Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in High Elevation Service Area</b>										

**Table E-8: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in Middle Elevation Service Area**

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$7,450	\$15,273	\$23,488	\$32,112	\$41,168	\$50,677	\$60,662	\$71,145	\$82,153	\$93,711
5	Debt Service Payment per EDU	\$0.0094	\$0.0190	\$0.0287	\$0.0386	\$0.0487	\$0.0589	\$0.0694	\$0.0801	\$0.0911	\$0.1023
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	5,661	11,321	16,966	22,611	28,255	33,900	39,544	45,189	50,833	56,478
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$53	\$215	\$488	\$873	\$1,376	\$1,998	\$2,745	\$3,620	\$4,629	\$5,775
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in Middle Elevation Service Area</b>	<b>\$236,537</b>									
9	Study Period Incremental EDUs in Middle Elevation Service Area	56,478									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in Middle Elevation Service Area</b>	<b>\$4</b>									



Table E-8: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in Middle Elevation Service Area

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$98,397	\$103,316	\$108,482	\$113,906	\$119,602	\$125,582	\$131,861	\$138,454	\$145,377	\$152,645
5	Debt Service Payment per EDU	\$0.1056	\$0.1090	\$0.1126	\$0.1162	\$0.1200	\$0.1239	\$0.1279	\$0.1321	\$0.1364	\$0.1408
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$5,963	\$6,157	\$6,357	\$6,564	\$6,777	\$6,997	\$7,225	\$7,460	\$7,702	\$7,952
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in Middle Elevation Service Area</b>										

Table E-8: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in Middle Elevation Service Area

Line No.	Description	21	22	23	24	25	26	27	28	29	30
		2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$160,278	\$168,292	\$176,706	\$185,542	\$194,819	\$204,560	\$214,788	\$225,527	\$236,803	\$248,643
5	Debt Service Payment per EDU	\$0.1454	\$0.1501	\$0.1550	\$0.1600	\$0.1652	\$0.1706	\$0.1761	\$0.1819	\$0.1878	\$0.1939
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$8,211	\$8,478	\$8,753	\$9,038	\$9,331	\$9,635	\$9,948	\$10,271	\$10,605	\$10,949
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in Middle Elevation Service Area</b>										

**Table E-8: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in Middle Elevation Service Area**

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$228,875	\$208,118	\$186,324	\$163,440	\$139,411	\$114,181	\$87,690	\$59,874	\$30,667	\$0
5	Debt Service Payment per EDU	\$0.1755	\$0.1569	\$0.1381	\$0.1192	\$0.0999	\$0.0805	\$0.0608	\$0.0408	\$0.0206	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$9,911	\$8,862	\$7,802	\$6,729	\$5,644	\$4,546	\$3,433	\$2,305	\$1,161	\$0
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in Middle Elevation Service Area</b>										

Table E-9: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in Low Elevation Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$15,804	\$32,398	\$49,822	\$68,117	\$87,327	\$107,497	\$128,676	\$150,914	\$174,264	\$198,781
5	Debt Service Payment per EDU	\$0.0200	\$0.0403	\$0.0610	\$0.0819	\$0.1033	\$0.1250	\$0.1472	\$0.1699	\$0.1931	\$0.2169
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	7,862	15,725	23,566	31,406	39,246	47,086	54,926	62,766	70,607	78,447
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$158	\$634	\$1,437	\$2,573	\$4,053	\$5,888	\$8,088	\$10,666	\$13,638	\$17,016
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in Low Elevation Service Area</b>	<b>\$696,916</b>									
9	Study Period Incremental EDUs in Low Elevation Service Area	78,447									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in Low Elevation Service Area</b>	<b>\$9</b>									

**Table E-9: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in Low Elevation Service Area**

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$208,720	\$219,156	\$230,114	\$241,620	\$253,701	\$266,386	\$279,705	\$293,690	\$308,375	\$323,793
5	Debt Service Payment per EDU	\$0.2240	\$0.2312	\$0.2388	\$0.2465	\$0.2545	\$0.2628	\$0.2713	\$0.2802	\$0.2893	\$0.2987
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$17,570	\$18,141	\$18,730	\$19,339	\$19,967	\$20,616	\$21,286	\$21,978	\$22,692	\$23,430
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in Low Elevation Service Area</b>										

Table E-9: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in Low Elevation Service Area

Line No.	Description	21	22	23	24	25	26	27	28	29	30
		2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$339,983	\$356,982	\$374,831	\$393,573	\$413,252	\$433,914	\$455,610	\$478,390	\$502,310	\$527,425
5	Debt Service Payment per EDU	\$0.3084	\$0.3184	\$0.3287	\$0.3394	\$0.3505	\$0.3619	\$0.3736	\$0.3858	\$0.3983	\$0.4112
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$24,191	\$24,978	\$25,789	\$26,628	\$27,493	\$28,387	\$29,309	\$30,262	\$31,245	\$32,261
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in Low Elevation Service Area</b>										

**Table E-9: Calculation of Credit for Projected Principal Payments on Eligible Future Elevated Storage Tanks in Low Elevation Service Area**

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$485,493	\$441,463	\$395,232	\$346,690	\$295,721	\$242,203	\$186,009	\$127,005	\$65,051	\$0
5	Debt Service Payment per EDU	\$0.3722	\$0.3328	\$0.2930	\$0.2527	\$0.2120	\$0.1707	\$0.1289	\$0.0866	\$0.0436	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible Elevated Storage Tanks Projects to be Recovered from New Connections	\$29,201	\$26,110	\$22,986	\$19,827	\$16,630	\$13,394	\$10,115	\$6,791	\$3,420	\$0
8	<b>Water Delivery - System Development Credit Amount for Elevated Storage Tanks in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Elevated Storage Tanks in Low Elevation Service Area</b>										

**Table E-10: Calculation of Credit for Projected Principal Payments on Eligible Future Ground Storage Tanks in Middle Elevation Service Area**

Line No.	Description	1	2	3	4	5	6	7	8	9	10
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$151	\$309	\$474	\$649	\$832	\$1,024	\$1,225	\$1,437	\$1,660	\$1,893
5	Debt Service Payment per EDU	\$0.0002	\$0.0004	\$0.0006	\$0.0008	\$0.0010	\$0.0012	\$0.0014	\$0.0016	\$0.0018	\$0.0021
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	5,661	11,321	16,966	22,611	28,255	33,900	39,544	45,189	50,833	56,478
7	Water Delivery Debt Service for Fee-Eligible Ground Storage Tanks Projects to be Recovered from New Connections	\$1	\$4	\$10	\$18	\$28	\$40	\$55	\$73	\$94	\$117
8	<b>Water Delivery - System Development Credit Amount for Ground Storage Tanks in Middle Elevation Service Area</b>	<b>\$4,779</b>									
9	Study Period Incremental EDUs in Middle Elevation Service Area	56,478									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Ground Storage Tanks in Middle Elevation Service Area</b>	<b>\$0</b>									



**Table E-10: Calculation of Credit for Projected Principal Payments on Eligible Future Ground Storage Tanks in Middle Elevation Service Area**

Line No.	Description	11	12	13	14	15	16	17	18	19	20
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$1,988	\$2,087	\$2,192	\$2,301	\$2,416	\$2,537	\$2,664	\$2,797	\$2,937	\$3,084
5	Debt Service Payment per EDU	\$0.0021	\$0.0022	\$0.0023	\$0.0023	\$0.0024	\$0.0025	\$0.0026	\$0.0027	\$0.0028	\$0.0028
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible Ground Storage Tanks Projects to be Recovered from New Connections	\$120	\$124	\$128	\$133	\$137	\$141	\$146	\$151	\$156	\$161
8	<b>Water Delivery - System Development Credit Amount for Ground Storage Tanks in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Ground Storage Tanks in Middle Elevation Service Area</b>										

**Table E-10: Calculation of Credit for Projected Principal Payments on Eligible Future Ground Storage Tanks in Middle Elevation Service Area**

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$3,238	\$3,400	\$3,570	\$3,748	\$3,936	\$4,133	\$4,339	\$4,556	\$4,784	\$5,023
5	Debt Service Payment per EDU	\$0.0029	\$0.0030	\$0.0031	\$0.0032	\$0.0033	\$0.0034	\$0.0036	\$0.0037	\$0.0038	\$0.0039
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible Ground Storage Tanks Projects to be Recovered from New Connections	\$166	\$171	\$177	\$183	\$189	\$195	\$201	\$207	\$214	\$221
8	<b>Water Delivery - System Development Credit Amount for Ground Storage Tanks in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Ground Storage Tanks in Middle Elevation Service Area</b>										

**Table E-10: Calculation of Credit for Projected Principal Payments on Eligible Future Ground Storage Tanks in Middle Elevation Service Area**

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$4,624	\$4,204	\$3,764	\$3,302	\$2,816	\$2,307	\$1,772	\$1,210	\$620	\$0
5	Debt Service Payment per EDU	\$0.0035	\$0.0032	\$0.0028	\$0.0024	\$0.0020	\$0.0016	\$0.0012	\$0.0008	\$0.0004	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible Ground Storage Tanks Projects to be Recovered from New Connections	\$200	\$179	\$158	\$136	\$114	\$92	\$69	\$47	\$23	\$0
8	<b>Water Delivery - System Development Credit Amount for Ground Storage Tanks in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Ground Storage Tanks in Middle Elevation Service Area</b>										

Table E-10: Calculation of Credit for Projected Principal Payments on Eligible Future Ground Storage Tanks in Low Elevation Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$151	\$309	\$474	\$649	\$832	\$1,024	\$1,225	\$1,437	\$1,660	\$1,893
5	Debt Service Payment per EDU	\$0.0002	\$0.0004	\$0.0006	\$0.0008	\$0.0010	\$0.0012	\$0.0014	\$0.0016	\$0.0018	\$0.0021
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	7,862	15,725	23,566	31,406	39,246	47,086	54,926	62,766	70,607	78,447
7	Water Delivery Debt Service for Fee-Eligible Ground Storage Tanks Projects to be Recovered from New Connections	\$2	\$6	\$14	\$25	\$39	\$56	\$77	\$102	\$130	\$162
8	<b>Water Delivery - System Development Credit Amount for Ground Storage Tanks in Low Elevation Service Area</b>	<b>\$6,637</b>									
9	Study Period Incremental EDUs in Low Elevation Service Area	78,447									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Ground Storage Tanks in Low Elevation Service Area</b>	<b>\$0</b>									

**Table E-10: Calculation of Credit for Projected Principal Payments on Eligible Future Ground Storage Tanks in Middle Elevation Service Area**

Line No.	Description	11	12	13	14	15	16	17	18	19	20
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$1,988	\$2,087	\$2,192	\$2,301	\$2,416	\$2,537	\$2,664	\$2,797	\$2,937	\$3,084
5	Debt Service Payment per EDU	\$0.0021	\$0.0022	\$0.0023	\$0.0023	\$0.0024	\$0.0025	\$0.0026	\$0.0027	\$0.0028	\$0.0028
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible Ground Storage Tanks Projects to be Recovered from New Connections	\$167	\$173	\$178	\$184	\$190	\$196	\$203	\$209	\$216	\$223
8	<b>Water Delivery - System Development Credit Amount for Ground Storage Tanks in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Ground Storage Tanks in Low Elevation Service Area</b>										

Table E-10: Calculation of Credit for Projected Principal Payments on Eligible Future Ground  
 Storage Tanks in Middle Elevation Service Area

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$3,238	\$3,400	\$3,570	\$3,748	\$3,936	\$4,133	\$4,339	\$4,556	\$4,784	\$5,023
5	Debt Service Payment per EDU	\$0.0029	\$0.0030	\$0.0031	\$0.0032	\$0.0033	\$0.0034	\$0.0036	\$0.0037	\$0.0038	\$0.0039
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible Ground Storage Tanks Projects to be Recovered from New Connections	\$230	\$238	\$246	\$254	\$262	\$270	\$279	\$288	\$298	\$307
8	<b>Water Delivery - System Development Credit Amount for Ground Storage Tanks in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Ground Storage Tanks in Low Elevation Service Area</b>										

**Table E-10: Calculation of Credit for Projected Principal Payments on Eligible Future Ground Storage Tanks in Middle Elevation Service Area**

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$4,624	\$4,204	\$3,764	\$3,302	\$2,816	\$2,307	\$1,772	\$1,210	\$620	\$0
5	Debt Service Payment per EDU	\$0.0035	\$0.0032	\$0.0028	\$0.0024	\$0.0020	\$0.0016	\$0.0012	\$0.0008	\$0.0004	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible Ground Storage Tanks Projects to be Recovered from New Connections	\$278	\$249	\$219	\$189	\$158	\$128	\$96	\$65	\$33	\$0
8	<b>Water Delivery - System Development Credit Amount for Ground Storage Tanks in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Ground Storage Tanks in Low Elevation Service Area</b>										

Table E-11: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in High Elevation Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$2,709	\$5,554	\$8,541	\$11,677	\$14,970	\$18,428	\$22,059	\$25,871	\$29,874	\$34,077
5	Debt Service Payment per EDU	\$0.0034	\$0.0069	\$0.0105	\$0.0140	\$0.0177	\$0.0214	\$0.0252	\$0.0291	\$0.0331	\$0.0372
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	686	1,372	2,056	2,740	3,424	4,109	4,793	5,477	6,161	6,845
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$2	\$9	\$21	\$38	\$61	\$88	\$121	\$160	\$204	\$255
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in High Elevation Service Area</b>	<b>\$10,425</b>									
9	Study Period Incremental EDUs in High Elevation Service Area	6,845									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in High Elevation Service Area</b>	<b>\$2</b>									



Table E-11: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in High Elevation Service Area

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$35,781	\$37,570	\$39,448	\$41,421	\$43,492	\$45,666	\$47,949	\$50,347	\$52,864	\$55,507
5	Debt Service Payment per EDU	\$0.0384	\$0.0396	\$0.0409	\$0.0423	\$0.0436	\$0.0451	\$0.0465	\$0.0480	\$0.0496	\$0.0512
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$263	\$271	\$280	\$289	\$299	\$308	\$318	\$329	\$339	\$350
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in High Elevation Service Area</b>										
9	Study Period Incremental EDUs in High Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in High Elevation Service Area</b>										

Table E-11: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in High Elevation Service Area

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$58,283	\$61,197	\$64,257	\$67,470	\$70,843	\$74,385	\$78,105	\$82,010	\$86,110	\$90,416
5	Debt Service Payment per EDU	\$0.0529	\$0.0546	\$0.0564	\$0.0582	\$0.0601	\$0.0620	\$0.0640	\$0.0661	\$0.0683	\$0.0705
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$362	\$374	\$386	\$398	\$411	\$425	\$438	\$453	\$467	\$483
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in High Elevation Service Area</b>										
9	Study Period Incremental EDUs in High Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in High Elevation Service Area</b>										

Table E-11: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in High Elevation Service Area

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$83,227	\$75,679	\$67,754	\$59,433	\$50,695	\$41,520	\$31,887	\$21,772	\$11,152	\$0
5	Debt Service Payment per EDU	\$0.0638	\$0.0571	\$0.0502	\$0.0433	\$0.0363	\$0.0293	\$0.0221	\$0.0148	\$0.0075	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents - High Elevation	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845	6,845
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$437	\$391	\$344	\$297	\$249	\$200	\$151	\$102	\$51	\$0
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in High Elevation Service Area</b>										
9	Study Period Incremental EDUs in High Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in High Elevation Service Area</b>										

Table E-12: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in Middle Elevation Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$18,438	\$37,798	\$58,126	\$79,470	\$101,882	\$125,414	\$150,122	\$176,067	\$203,308	\$231,911
5	Debt Service Payment per EDU	\$0.0234	\$0.0471	\$0.0711	\$0.0956	\$0.1205	\$0.1459	\$0.1718	\$0.1983	\$0.2253	\$0.2531
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	5,661	11,321	16,966	22,611	28,255	33,900	39,544	45,189	50,833	56,478
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$132	\$533	\$1,207	\$2,161	\$3,404	\$4,945	\$6,793	\$8,959	\$11,455	\$14,293
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in Middle Elevation Service Area</b>	<b>\$585,370</b>									
9	Study Period Incremental EDUs in Middle Elevation Service Area	56,478									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in Middle Elevation Service Area</b>	<b>\$10</b>									

Table E-12: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in Middle Elevation Service Area

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$243,507	\$255,682	\$268,466	\$281,890	\$295,984	\$310,783	\$326,322	\$342,639	\$359,771	\$377,759
5	Debt Service Payment per EDU	\$0.2613	\$0.2698	\$0.2786	\$0.2876	\$0.2970	\$0.3066	\$0.3166	\$0.3269	\$0.3375	\$0.3485
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$14,757	\$15,237	\$15,732	\$16,244	\$16,771	\$17,317	\$17,879	\$18,460	\$19,060	\$19,680
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in Middle Elevation Service Area</b>										

Table E-12: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in Middle Elevation Service Area

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$396,647	\$416,479	\$437,303	\$459,168	\$482,127	\$506,233	\$531,545	\$558,122	\$586,028	\$615,330
5	Debt Service Payment per EDU	\$0.3598	\$0.3715	\$0.3835	\$0.3960	\$0.4089	\$0.4222	\$0.4359	\$0.4501	\$0.4647	\$0.4798
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$20,319	\$20,980	\$21,662	\$22,366	\$23,093	\$23,843	\$24,618	\$25,418	\$26,244	\$27,097
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in Middle Elevation Service Area</b>										

Table E-12: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in Middle Elevation Service Area

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$566,408	\$515,041	\$461,105	\$404,472	\$345,007	\$282,570	\$217,010	\$148,173	\$75,893	\$0
5	Debt Service Payment per EDU	\$0.4343	\$0.3883	\$0.3419	\$0.2949	\$0.2473	\$0.1992	\$0.1504	\$0.1010	\$0.0509	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Middle Elevation	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478	56,478
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$24,527	\$21,931	\$19,307	\$16,654	\$13,968	\$11,250	\$8,496	\$5,704	\$2,873	\$0
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in Middle Elevation Service Area</b>										
9	Study Period Incremental EDUs in Middle Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in Middle Elevation Service Area</b>										

Table E-13: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in Low Elevation Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	774,623	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224
2	Incremental EDUs	14,209	14,210	14,169	14,169	14,169	14,168	14,169	14,169	14,169	14,169
3	Total EDUs	788,832	803,042	817,211	831,380	845,549	859,717	873,886	888,055	902,224	916,393
4	Annual Debt Service Payment	\$10,611	\$21,753	\$33,452	\$45,736	\$58,634	\$72,177	\$86,397	\$101,328	\$117,006	\$133,467
5	Debt Service Payment per EDU	\$0.0135	\$0.0271	\$0.0409	\$0.0550	\$0.0693	\$0.0840	\$0.0989	\$0.1141	\$0.1297	\$0.1456
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	7,862	15,725	23,566	31,406	39,246	47,086	54,926	62,766	70,607	78,447
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$106	\$426	\$965	\$1,728	\$2,721	\$3,953	\$5,430	\$7,162	\$9,157	\$11,425
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in Low Elevation Service Area</b>	<b>\$467,930</b>									
9	Study Period Incremental EDUs in Low Elevation Service Area	78,447									
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in Low Elevation Service Area</b>	<b>\$6</b>									



Table E-13: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in Low Elevation Service Area

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	916,393	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041
2	Incremental EDUs	15,532	15,795	16,063	16,335	16,612	16,893	17,180	17,471	17,767	18,068
3	Total EDUs	931,925	947,720	963,783	980,118	996,730	1,013,623	1,030,803	1,048,274	1,066,041	1,084,109
4	Annual Debt Service Payment	\$140,141	\$147,148	\$154,505	\$162,230	\$170,342	\$178,859	\$187,802	\$197,192	\$207,052	\$217,404
5	Debt Service Payment per EDU	\$0.1504	\$0.1553	\$0.1603	\$0.1655	\$0.1709	\$0.1765	\$0.1822	\$0.1881	\$0.1942	\$0.2005
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$11,797	\$12,180	\$12,576	\$12,985	\$13,407	\$13,842	\$14,292	\$14,757	\$15,236	\$15,732
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in Low Elevation Service Area</b>										

Table E-13: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in Low Elevation Service Area

Line No.	Description	21	22	23	24	25	26	27	28	29	30
		2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
1	Beginning of Year EDUs	1,084,109	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146
2	Incremental EDUs	18,374	18,686	19,003	19,325	19,652	19,985	20,324	20,669	21,019	21,375
3	Total EDUs	1,102,484	1,121,170	1,140,172	1,159,497	1,179,149	1,199,135	1,219,459	1,240,127	1,261,146	1,282,521
4	Annual Debt Service Payment	\$228,274	\$239,688	\$251,673	\$264,256	\$277,469	\$291,342	\$305,910	\$321,205	\$337,265	\$354,129
5	Debt Service Payment per EDU	\$0.2071	\$0.2138	\$0.2207	\$0.2279	\$0.2353	\$0.2430	\$0.2509	\$0.2590	\$0.2674	\$0.2761
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$16,243	\$16,771	\$17,316	\$17,879	\$18,460	\$19,060	\$19,679	\$20,319	\$20,979	\$21,661
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in Low Elevation Service Area</b>										

Table E-13: Calculation of Credit for Projected Principal Payments on Eligible Future Transmission  
 Mains in Low Elevation Service Area

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,282,521	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959
2	Incremental EDUs	21,737	22,106	22,480	22,861	23,249	23,643	24,044	24,451	24,866	25,287
3	Total EDUs	1,304,258	1,326,364	1,348,845	1,371,706	1,394,955	1,418,598	1,442,642	1,467,093	1,491,959	1,517,246
4	Annual Debt Service Payment	\$325,974	\$296,411	\$265,370	\$232,778	\$198,555	\$162,622	\$124,892	\$85,275	\$43,677	\$0
5	Debt Service Payment per EDU	\$0.2499	\$0.2235	\$0.1967	\$0.1697	\$0.1423	\$0.1146	\$0.0866	\$0.0581	\$0.0293	\$0.0000
6	Water Delivery Cumulative Growth in Service Unit Equivalents - Low Elevation	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447	78,447
7	Water Delivery Debt Service for Fee-Eligible Transmission Mains Projects to be Recovered from New Connections	\$19,606	\$17,531	\$15,434	\$13,312	\$11,166	\$8,993	\$6,791	\$4,560	\$2,297	\$0
8	<b>Water Delivery - System Development Credit Amount for Transmission Mains in Low Elevation Service Area</b>										
9	Study Period Incremental EDUs in Low Elevation Service Area										
10	<b>Water Delivery - System Development Credit for Future Principal per EDU for Transmission Mains in Low Elevation Service Area</b>										

Table E-14: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Treatment Facilities in Medio Creek Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	720,369	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033
2	Incremental EDUs	13,214	13,215	13,176	13,177	13,176	13,177	13,176	13,176	13,177	13,176
3	Total EDUs	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033	852,209
4	Annual Debt Service Payment	\$3,688	\$7,560	\$11,625	\$15,894	\$20,376	\$26,206	\$31,751	\$37,026	\$42,565	\$48,381
5	Debt Service Payment per EDU	\$0.0050	\$0.01	\$0.02	\$0.02	\$0.03	\$0.03	\$0.04	\$0.04	\$0.05	\$0.06
6	Wastewater Cumulative Growth in Service Unit Equivalents - Medio Creek	1,520	3,041	4,556	6,072	7,588	9,104	10,620	12,136	13,652	15,168
7	Wastewater Debt Service for Fee-Eligible Treatment Projects to be Recovered from New Connections	\$8	\$31	\$70	\$125	\$197	\$298	\$415	\$544	\$693	\$861
8	<b>Wastewater Treatment Credit Amount for Medio Creek Service Area</b>	<b>\$31,364</b>									
9	Study Period Incremental EDUs in Medio Creek Service Area	15,168									
10	<b>Wastewater Treatment Credit for Future Principal per EDU for Medio Creek Service Area</b>	<b>\$2</b>									

Table E-14: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Treatment Facilities in Leon Creek / Dos Rios Service Area

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	852,209	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375
2	Incremental EDUs	14,444	14,689	14,938	15,191	15,448	15,710	15,976	16,247	16,523	16,803
3	Total EDUs	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375	1,008,178
4	Annual Debt Service Payment	\$49,817	\$51,350	\$52,987	\$54,734	\$56,599	\$57,466	\$58,986	\$61,164	\$63,488	\$65,967
5	Debt Service Payment per EDU	\$0.06	\$0.06	\$0.06	\$0.06	\$0.06	\$0.06	\$0.06	\$0.06	\$0.06	\$0.07
6	Wastewater Cumulative Growth in Service Unit Equivalents - Medio Creek	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168
7	Wastewater Debt Service for Fee-Eligible Treatment Projects to be Recovered from New Connections	\$872	\$884	\$897	\$911	\$926	\$925	\$933	\$952	\$971	\$992
8	<b>Wastewater Treatment Credit Amount for Medio Creek Service Area</b>										
9	Study Period Incremental EDUs in Medio Creek Service Area										
10	<b>Wastewater Treatment Credit for Future Principal per EDU for Medio Creek Service Area</b>										

**Table E-14: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Treatment Facilities in Leon Creek / Dos Rios Service Area**

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,008,178	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814
2	Incremental EDUs	17,087	17,377	17,672	17,971	18,276	18,585	18,900	19,221	19,547	19,878
3	Total EDUs	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814	1,192,692
4	Annual Debt Service Payment	\$69,596	\$73,423	\$77,462	\$81,722	\$86,217	\$90,959	\$95,961	\$101,239	\$106,807	\$112,682
5	Debt Service Payment per EDU	\$0.07	\$0.07	\$0.07	\$0.08	\$0.08	\$0.08	\$0.08	\$0.09	\$0.09	\$0.09
6	Wastewater Cumulative Growth in Service Unit Equivalents - Medio Creek	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168
7	Wastewater Debt Service for Fee-Eligible Treatment Projects to be Recovered from New Connections	\$1,030	\$1,068	\$1,108	\$1,150	\$1,193	\$1,237	\$1,283	\$1,332	\$1,381	\$1,433
8	<b>Wastewater Treatment Credit Amount for Medio Creek Service Area</b>										
9	Study Period Incremental EDUs in Medio Creek Service Area										
10	<b>Wastewater Treatment Credit for Future Principal per EDU for Medio Creek Service Area</b>										

**Table E-14: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Treatment Facilities in Leon Creek / Dos Rios Service Area**

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,192,692	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459
2	Incremental EDUs	20,215	20,557	20,906	21,260	21,620	21,987	22,360	22,739	23,124	23,516
3	Total EDUs	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459	1,410,975
4	Annual Debt Service Payment	\$103,930	\$94,697	\$84,956	\$74,679	\$63,837	\$52,399	\$40,332	\$27,601	\$14,170	\$0
5	Debt Service Payment per EDU	\$0.09	\$0.08	\$0.07	\$0.06	\$0.05	\$0.04	\$0.03	\$0.02	\$0.01	\$0.00
6	Wastewater Cumulative Growth in Service Unit Equivalents - Medio Creek	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168
7	Wastewater Debt Service for Fee-Eligible Treatment Projects to be Recovered from New Connections	\$1,300	\$1,164	\$1,027	\$888	\$746	\$602	\$456	\$307	\$155	\$0
8	<b>Wastewater Treatment Credit Amount for Medio Creek Service Area</b>										
9	Study Period Incremental EDUs in Medio Creek Service Area										
10	<b>Wastewater Treatment Credit for Future Principal per EDU for Medio Creek Service Area</b>										

Table E-15: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Treatment Facilities in Leon Creek / Dos Rios Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	720,369	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033
2	Incremental EDUs	13,214	13,215	13,176	13,177	13,176	13,177	13,176	13,176	13,177	13,176
3	Total EDUs	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033	852,209
4	Annual Debt Service Payment	\$9,482	\$19,439	\$29,893	\$40,870	\$52,396	\$67,387	\$81,645	\$95,209	\$109,452	\$124,407
5	Debt Service Payment per EDU	\$0.0129	\$0.03	\$0.04	\$0.05	\$0.07	\$0.08	\$0.10	\$0.12	\$0.13	\$0.15
6	Wastewater Cumulative Growth in Service Unit Equivalents - Leon Creek / Dos Rios	11,694	23,388	35,049	46,710	58,370	70,031	81,691	93,351	105,012	116,672
7	Wastewater Debt Service for Fee-Eligible Treatment Projects to be Recovered from New Connections	\$151	\$609	\$1,379	\$2,469	\$3,889	\$5,903	\$8,207	\$10,762	\$13,699	\$17,032
8	<b>Wastewater Treatment Credit Amount for Leon Creek / Dos Rios Service Area</b>	<b>\$620,366</b>									
9	Study Period Incremental EDUs in Leon Creek / Dos Rios Service Area	116,672									
10	<b>Wastewater Treatment Credit for Future Principal per EDU for Leon Creek / Dos Rios Service Area</b>	<b>\$5</b>									



**Table E-15: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Treatment Facilities in Leon Creek / Dos Rios Service Area**

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	852,209	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375
2	Incremental EDUs	14,444	14,689	14,938	15,191	15,448	15,710	15,976	16,247	16,523	16,803
3	Total EDUs	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375	1,008,178
4	Annual Debt Service Payment	\$128,100	\$132,043	\$136,252	\$140,745	\$145,541	\$147,770	\$151,677	\$157,278	\$163,254	\$169,630
5	Debt Service Payment per EDU	\$0.15	\$0.15	\$0.15	\$0.15	\$0.16	\$0.16	\$0.16	\$0.16	\$0.16	\$0.17
6	Wastewater Cumulative Growth in Service Unit Equivalents - Leon Creek / Dos Rios	116,672	116,672	116,672	116,672	116,672	116,672	116,672	116,672	116,672	116,672
7	Wastewater Debt Service for Fee-Eligible Treatment Projects to be Recovered from New Connections	\$17,245	\$17,480	\$17,736	\$18,016	\$18,319	\$18,290	\$18,461	\$18,823	\$19,213	\$19,631
8	<b>Wastewater Treatment Credit Amount for Leon Creek / Dos Rios Service Area</b>										
9	Study Period Incremental EDUs in Leon Creek / Dos Rios Service Area										
10	<b>Wastewater Treatment Credit for Future Principal per EDU for Leon Creek / Dos Rios Service Area</b>										

**Table E-15: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Treatment Facilities in Leon Creek / Dos Rios Service Area**

Line No.	Description	21	22	23	24	25	26	27	28	29	30
		2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
1	Beginning of Year EDUs	1,008,178	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814
2	Incremental EDUs	17,087	17,377	17,672	17,971	18,276	18,585	18,900	19,221	19,547	19,878
3	Total EDUs	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814	1,192,692
4	Annual Debt Service Payment	\$178,960	\$188,803	\$199,187	\$210,142	\$221,700	\$233,893	\$246,758	\$260,329	\$274,647	\$289,753
5	Debt Service Payment per EDU	\$0.17	\$0.18	\$0.19	\$0.19	\$0.20	\$0.21	\$0.22	\$0.23	\$0.23	\$0.24
6	Wastewater Cumulative Growth in Service Unit Equivalents - Leon Creek / Dos Rios	116,672	116,672	116,672	116,672	116,672	116,672	116,672	116,672	116,672	116,672
7	Wastewater Debt Service for Fee-Eligible Treatment Projects to be Recovered from New Connections	\$20,365	\$21,127	\$21,918	\$22,738	\$23,588	\$24,471	\$25,387	\$26,337	\$27,322	\$28,344
8	<b>Wastewater Treatment Credit Amount for Leon Creek / Dos Rios Service Area</b>										
9	Study Period Incremental EDUs in Leon Creek / Dos Rios Service Area										
10	<b>Wastewater Treatment Credit for Future Principal per EDU for Leon Creek / Dos Rios Service Area</b>										

**Table E-15: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Treatment Facilities in Leon Creek / Dos Rios Service Area**

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,192,692	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459
2	Incremental EDUs	20,215	20,557	20,906	21,260	21,620	21,987	22,360	22,739	23,124	23,516
3	Total EDUs	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459	1,410,975
4	Annual Debt Service Payment	\$267,249	\$243,506	\$218,458	\$192,033	\$164,154	\$134,741	\$103,711	\$70,974	\$36,437	\$0
5	Debt Service Payment per EDU	\$0.22	\$0.20	\$0.17	\$0.15	\$0.13	\$0.10	\$0.08	\$0.05	\$0.03	\$0.00
6	Wastewater Cumulative Growth in Service Unit Equivalents - Leon Creek / Dos Rios	116,672	116,672	116,672	116,672	116,672	116,672	116,672	116,672	116,672	116,672
7	Wastewater Debt Service for Fee-Eligible Treatment Projects to be Recovered from New Connections	\$25,707	\$23,033	\$20,319	\$17,564	\$14,764	\$11,916	\$9,019	\$6,069	\$3,064	\$0
8	<b>Wastewater Treatment Credit Amount for Leon Creek / Dos Rios Service Area</b>										
9	Study Period Incremental EDUs in Leon Creek / Dos Rios Service Area										
10	<b>Wastewater Treatment Credit for Future Principal per EDU for Leon Creek / Dos Rios Service Area</b>										

**Table E-16: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater  
 Collection Facilities in Medio Creek Service Area**

Line No.	Description	1	2	3	4	5	6	7	8	9	10
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
1	Beginning of Year EDUs	720,369	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033
2	Incremental EDUs	13,214	13,215	13,176	13,177	13,176	13,177	13,176	13,176	13,177	13,176
3	Total EDUs	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033	852,209
4	Annual Debt Service Payment	\$5,720	\$11,725	\$18,031	\$24,652	\$31,604	\$40,646	\$49,246	\$57,428	\$66,019	\$75,039
5	Debt Service Payment per EDU	\$0.0078	\$0.02	\$0.02	\$0.03	\$0.04	\$0.05	\$0.06	\$0.07	\$0.08	\$0.09
6	Wastewater Cumulative Growth in Service Unit Equivalents - Medio Creek	1,520	3,041	4,556	6,072	7,588	9,104	10,620	12,136	13,652	15,168
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$12	\$48	\$108	\$194	\$305	\$463	\$644	\$844	\$1,074	\$1,336
8	<b>Wastewater Collection Credit Amount for Medio Creek Service Area</b>	<b>\$48,647</b>									
9	Study Period Incremental EDUs in Medio Creek Service Area	15,168									
10	<b>Wastewater Collection Credit for Future Principal per EDU for Medio Creek Service Area</b>	<b>\$3</b>									

Table E-16: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater  
 Collection Facilities in Medio Creek Service Area

Line No.	Description	11 2029	12 2030	13 2031	14 2032	15 2033	16 2034	17 2035	18 2036	19 2037	20 2038
1	Beginning of Year EDUs	852,209	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375
2	Incremental EDUs	14,444	14,689	14,938	15,191	15,448	15,710	15,976	16,247	16,523	16,803
3	Total EDUs	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375	1,008,178
4	Annual Debt Service Payment	\$77,266	\$79,645	\$82,184	\$84,894	\$87,787	\$89,131	\$91,488	\$94,866	\$98,471	\$102,317
5	Debt Service Payment per EDU	\$0.09	\$0.09	\$0.09	\$0.09	\$0.09	\$0.09	\$0.10	\$0.10	\$0.10	\$0.10
6	Wastewater Cumulative Growth in Service Unit Equivalents - Medio Creek	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$1,352	\$1,371	\$1,391	\$1,413	\$1,437	\$1,434	\$1,448	\$1,476	\$1,507	\$1,539
8	<b>Wastewater Collection Credit Amount for Medio Creek Service Area</b>										
9	Study Period Incremental EDUs in Medio Creek Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Medio Creek Service Area</b>										

**Table E-16: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Medio Creek Service Area**

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,008,178	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814
2	Incremental EDUs	17,087	17,377	17,672	17,971	18,276	18,585	18,900	19,221	19,547	19,878
3	Total EDUs	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814	1,192,692
4	Annual Debt Service Payment	\$107,944	\$113,881	\$120,144	\$126,752	\$133,724	\$141,079	\$148,838	\$157,024	\$165,660	\$174,772
5	Debt Service Payment per EDU	\$0.11	\$0.11	\$0.11	\$0.12	\$0.12	\$0.13	\$0.13	\$0.14	\$0.14	\$0.15
6	Wastewater Cumulative Growth in Service Unit Equivalents - Medio Creek	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$1,597	\$1,657	\$1,719	\$1,783	\$1,850	\$1,919	\$1,991	\$2,065	\$2,142	\$2,223
8	<b>Wastewater Collection Credit Amount for Medio Creek Service Area</b>										
9	Study Period Incremental EDUs in Medio Creek Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Medio Creek Service Area</b>										

**Table E-16: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Medio Creek Service Area**

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,192,692	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459
2	Incremental EDUs	20,215	20,557	20,906	21,260	21,620	21,987	22,360	22,739	23,124	23,516
3	Total EDUs	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459	1,410,975
4	Annual Debt Service Payment	\$161,198	\$146,877	\$131,769	\$115,829	\$99,013	\$81,272	\$62,556	\$42,810	\$21,978	\$0
5	Debt Service Payment per EDU	\$0.13	\$0.12	\$0.11	\$0.09	\$0.08	\$0.06	\$0.05	\$0.03	\$0.02	\$0.00
6	Wastewater Cumulative Growth in Service Unit Equivalents - Medio Creek	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168	15,168
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$2,016	\$1,806	\$1,593	\$1,377	\$1,158	\$934	\$707	\$476	\$240	\$0
8	<b>Wastewater Collection Credit Amount for Medio Creek Service Area</b>										
9	Study Period Incremental EDUs in Medio Creek Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Medio Creek Service Area</b>										

Table E-17: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater  
 Collection Facilities in Upper Medina Service Area

Line No.	Description	1	2	3	4	5	6	7	8	9	10
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
1	Beginning of Year EDUs	720,369	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033
2	Incremental EDUs	13,214	13,215	13,176	13,177	13,176	13,177	13,176	13,176	13,177	13,176
3	Total EDUs	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033	852,209
4	Annual Debt Service Payment	\$4,892	\$10,028	\$15,421	\$21,084	\$27,030	\$34,763	\$42,118	\$49,116	\$56,463	\$64,178
5	Debt Service Payment per EDU	\$0.0067	\$0.01	\$0.02	\$0.03	\$0.03	\$0.04	\$0.05	\$0.06	\$0.07	\$0.08
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper Medina	1,169	2,339	3,505	4,671	5,837	7,003	8,169	9,335	10,501	11,667
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$8	\$31	\$71	\$127	\$201	\$304	\$423	\$555	\$707	\$879
8	<b>Wastewater Collection Credit Amount for Upper Medina Service Area</b>	<b>\$32,002</b>									
9	Study Period Incremental EDUs in Upper Medina Service Area	11,667									
10	<b>Wastewater Collection Credit for Future Principal per EDU for Upper Medina Service Area</b>	<b>\$3</b>									



**Table E-17: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Upper Medina Service Area**

Line No.	Description	11	12	13	14	15	16	17	18	19	20
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Beginning of Year EDUs	852,209	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375
2	Incremental EDUs	14,444	14,689	14,938	15,191	15,448	15,710	15,976	16,247	16,523	16,803
3	Total EDUs	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375	1,008,178
4	Annual Debt Service Payment	\$66,083	\$68,117	\$70,289	\$72,607	\$75,081	\$76,230	\$78,246	\$81,135	\$84,218	\$87,508
5	Debt Service Payment per EDU	\$0.08	\$0.08	\$0.08	\$0.08	\$0.08	\$0.08	\$0.08	\$0.08	\$0.08	\$0.09
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper Medina	11,667	11,667	11,667	11,667	11,667	11,667	11,667	11,667	11,667	11,667
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$890	\$902	\$915	\$929	\$945	\$944	\$952	\$971	\$991	\$1,013
8	<b>Wastewater Collection Credit Amount for Upper Medina Service Area</b>										
9	Study Period Incremental EDUs in Upper Medina Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Upper Medina Service Area</b>										

Table E-17: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Upper Medina Service Area

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,008,178	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814
2	Incremental EDUs	17,087	17,377	17,672	17,971	18,276	18,585	18,900	19,221	19,547	19,878
3	Total EDUs	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814	1,192,692
4	Annual Debt Service Payment	\$92,321	\$97,398	\$102,755	\$108,407	\$114,369	\$120,659	\$127,296	\$134,297	\$141,683	\$149,476
5	Debt Service Payment per EDU	\$0.09	\$0.09	\$0.10	\$0.10	\$0.10	\$0.11	\$0.11	\$0.12	\$0.12	\$0.13
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper Medina	11,667	11,667	11,667	11,667	11,667	11,667	11,667	11,667	11,667	11,667
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$1,051	\$1,090	\$1,131	\$1,173	\$1,217	\$1,262	\$1,310	\$1,359	\$1,409	\$1,462
8	<b>Wastewater Collection Credit Amount for Upper Medina Service Area</b>										
9	Study Period Incremental EDUs in Upper Medina Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Upper Medina Service Area</b>										

**Table E-17: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Upper Medina Service Area**

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,192,692	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459
2	Incremental EDUs	20,215	20,557	20,906	21,260	21,620	21,987	22,360	22,739	23,124	23,516
3	Total EDUs	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459	1,410,975
4	Annual Debt Service Payment	\$137,866	\$125,618	\$112,697	\$99,064	\$84,682	\$69,509	\$53,502	\$36,614	\$18,797	\$0
5	Debt Service Payment per EDU	\$0.11	\$0.10	\$0.09	\$0.08	\$0.07	\$0.05	\$0.04	\$0.03	\$0.01	\$0.00
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper Medina	11,667	11,667	11,667	11,667	11,667	11,667	11,667	11,667	11,667	11,667
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$1,326	\$1,188	\$1,048	\$906	\$762	\$615	\$465	\$313	\$158	\$0
8	<b>Wastewater Collection Credit Amount for Upper Medina Service Area</b>										
9	Study Period Incremental EDUs in Upper Medina Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Upper Medina Service Area</b>										

Table E-18: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater  
Collection Facilities in Lower Medina Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	720,369	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033
2	Incremental EDUs	13,214	13,215	13,176	13,177	13,176	13,177	13,176	13,176	13,177	13,176
3	Total EDUs	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033	852,209
4	Annual Debt Service Payment	\$1,054	\$2,160	\$3,321	\$4,541	\$5,822	\$7,487	\$9,072	\$10,579	\$12,161	\$13,823
5	Debt Service Payment per EDU	\$0.0014	\$0.00	\$0.00	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.01	\$0.02
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Lower Medina	1,611	3,223	4,830	6,436	8,043	9,650	11,257	12,863	14,470	16,077
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$2	\$9	\$21	\$38	\$60	\$90	\$126	\$165	\$210	\$261
8	<b>Wastewater Collection Credit Amount for Lower Medina Service Area</b>	<b>\$9,498</b>									
9	Study Period Incremental EDUs in Upper/Lower Medina Service Area	16,077									
10	<b>Wastewater Collection Credit for Future Principal per EDU for Lower Medina Service Area</b>	<b>\$1</b>									

Table E-18: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater  
 Collection Facilities in Lower Medina Service Area

Line No.	Description	11	12	13	14	15	16	17	18	19	20
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Beginning of Year EDUs	852,209	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375
2	Incremental EDUs	14,444	14,689	14,938	15,191	15,448	15,710	15,976	16,247	16,523	16,803
3	Total EDUs	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375	1,008,178
4	Annual Debt Service Payment	\$14,233	\$14,671	\$15,139	\$15,638	\$16,171	\$16,419	\$16,853	\$17,475	\$18,139	\$18,848
5	Debt Service Payment per EDU	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Lower Medina	16,077	16,077	16,077	16,077	16,077	16,077	16,077	16,077	16,077	16,077
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$264	\$268	\$272	\$276	\$280	\$280	\$283	\$288	\$294	\$301
8	<b>Wastewater Collection Credit Amount for Lower Medina Service Area</b>										
9	Study Period Incremental EDUs in Upper/Lower Medina Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Lower Medina Service Area</b>										

**Table E-18: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Lower Medina Service Area**

Line No.	Description	21	22	23	24	25	26	27	28	29	30
		2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
1	Beginning of Year EDUs	1,008,178	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814
2	Incremental EDUs	17,087	17,377	17,672	17,971	18,276	18,585	18,900	19,221	19,547	19,878
3	Total EDUs	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814	1,192,692
4	Annual Debt Service Payment	\$19,884	\$20,978	\$22,132	\$23,349	\$24,633	\$25,988	\$27,418	\$28,925	\$30,516	\$32,195
5	Debt Service Payment per EDU	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.02	\$0.03	\$0.03	\$0.03
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Lower Medina	16,077	16,077	16,077	16,077	16,077	16,077	16,077	16,077	16,077	16,077
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$312	\$323	\$336	\$348	\$361	\$375	\$389	\$403	\$418	\$434
8	<b>Wastewater Collection Credit Amount for Lower Medina Service Area</b>										
9	Study Period Incremental EDUs in Upper/Lower Medina Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Lower Medina Service Area</b>										

**Table E-18: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Lower Medina Service Area**

Line No.	Description	31	32	33	34	35	36	37	38	39	40
		2049	2050	2051	2052	2053	2054	2055	2056	2057	2058
1	Beginning of Year EDUs	1,192,692	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459
2	Incremental EDUs	20,215	20,557	20,906	21,260	21,620	21,987	22,360	22,739	23,124	23,516
3	Total EDUs	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459	1,410,975
4	Annual Debt Service Payment	\$29,694	\$27,056	\$24,273	\$21,337	\$18,239	\$14,971	\$11,523	\$7,886	\$4,049	\$0
5	Debt Service Payment per EDU	\$0.02	\$0.02	\$0.02	\$0.02	\$0.01	\$0.01	\$0.01	\$0.01	\$0.00	\$0.00
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Lower Medina	16,077	16,077	16,077	16,077	16,077	16,077	16,077	16,077	16,077	16,077
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$394	\$353	\$311	\$269	\$226	\$182	\$138	\$93	\$47	\$0
8	<b>Wastewater Collection Credit Amount for Lower Medina Service Area</b>										
9	Study Period Incremental EDUs in Upper/Lower Medina Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Lower Medina Service Area</b>										

Table E-19: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater  
 Collection Facilities in Upper Collection Service Area

Line No.	Description	1	2	3	4	5	6	7	8	9	10
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
1	Beginning of Year EDUs	720,369	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033
2	Incremental EDUs	13,214	13,215	13,176	13,177	13,176	13,177	13,176	13,176	13,177	13,176
3	Total EDUs	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033	852,209
4	Annual Debt Service Payment	\$12,342	\$25,301	\$38,909	\$53,196	\$68,198	\$87,709	\$106,268	\$123,923	\$142,462	\$161,927
5	Debt Service Payment per EDU	\$0.0168	\$0.03	\$0.05	\$0.07	\$0.09	\$0.11	\$0.13	\$0.15	\$0.17	\$0.19
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper Collection	3,948	7,896	11,833	15,769	19,706	23,643	27,579	31,516	35,452	39,389
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$66	\$268	\$606	\$1,085	\$1,709	\$2,594	\$3,606	\$4,729	\$6,019	\$7,484
8	<b>Wastewater Collection Credit Amount for Upper Collection Service Area</b>	<b>\$272,602</b>									
9	Study Period Incremental EDUs in Upper Collection Service Area	39,389									
10	<b>Wastewater Collection Credit for Future Principal per EDU for Upper Collection Service Area</b>	<b>\$7</b>									



**Table E-19: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Upper Collection Service Area**

Line No.	Description	11	12	13	14	15	16	17	18	19	20
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Beginning of Year EDUs	852,209	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375
2	Incremental EDUs	14,444	14,689	14,938	15,191	15,448	15,710	15,976	16,247	16,523	16,803
3	Total EDUs	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375	1,008,178
4	Annual Debt Service Payment	\$166,733	\$171,865	\$177,344	\$183,193	\$189,434	\$192,335	\$197,421	\$204,711	\$212,489	\$220,789
5	Debt Service Payment per EDU	\$0.19	\$0.20	\$0.20	\$0.20	\$0.20	\$0.20	\$0.21	\$0.21	\$0.21	\$0.22
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper Collection	39,389	39,389	39,389	39,389	39,389	39,389	39,389	39,389	39,389	39,389
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$7,578	\$7,681	\$7,794	\$7,917	\$8,050	\$8,037	\$8,112	\$8,271	\$8,443	\$8,626
8	<b>Wastewater Collection Credit Amount for Upper Collection Service Area</b>										
9	Study Period Incremental EDUs in Upper Collection Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Upper Collection Service Area</b>										

**Table E-19: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater  
 Collection Facilities in Upper Collection Service Area**

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,008,178	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814
2	Incremental EDUs	17,087	17,377	17,672	17,971	18,276	18,585	18,900	19,221	19,547	19,878
3	Total EDUs	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814	1,192,692
4	Annual Debt Service Payment	\$232,932	\$245,743	\$259,259	\$273,518	\$288,562	\$304,433	\$321,177	\$338,841	\$357,478	\$377,139
5	Debt Service Payment per EDU	\$0.23	\$0.24	\$0.24	\$0.25	\$0.26	\$0.27	\$0.28	\$0.29	\$0.30	\$0.32
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper Collection	39,389	39,389	39,389	39,389	39,389	39,389	39,389	39,389	39,389	39,389
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$8,949	\$9,284	\$9,631	\$9,991	\$10,365	\$10,753	\$11,155	\$11,573	\$12,006	\$12,455
8	<b>Wastewater Collection Credit Amount for Upper Collection Service Area</b>										
9	Study Period Incremental EDUs in Upper Collection Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Upper Collection Service Area</b>										

**Table E-19: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Upper Collection Service Area**

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,192,692	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459
2	Incremental EDUs	20,215	20,557	20,906	21,260	21,620	21,987	22,360	22,739	23,124	23,516
3	Total EDUs	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459	1,410,975
4	Annual Debt Service Payment	\$347,847	\$316,945	\$284,343	\$249,947	\$213,660	\$175,377	\$134,989	\$92,379	\$47,426	\$0
5	Debt Service Payment per EDU	\$0.29	\$0.26	\$0.23	\$0.20	\$0.16	\$0.13	\$0.10	\$0.07	\$0.03	\$0.00
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper Collection	39,389	39,389	39,389	39,389	39,389	39,389	39,389	39,389	39,389	39,389
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$11,296	\$10,121	\$8,929	\$7,718	\$6,487	\$5,236	\$3,963	\$2,667	\$1,346	\$0
8	<b>Wastewater Collection Credit Amount for Upper Collection Service Area</b>										
9	Study Period Incremental EDUs in Upper Collection Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Upper Collection Service Area</b>										

Table E-20: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater  
 Collection Facilities in Middle Collection Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	720,369	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033
2	Incremental EDUs	13,214	13,215	13,176	13,177	13,176	13,177	13,176	13,176	13,177	13,176
3	Total EDUs	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033	852,209
4	Annual Debt Service Payment	\$38,080	\$78,064	\$120,048	\$164,130	\$210,417	\$270,616	\$327,875	\$382,349	\$439,546	\$499,604
5	Debt Service Payment per EDU	\$0.0519	\$0.10	\$0.16	\$0.21	\$0.27	\$0.34	\$0.40	\$0.46	\$0.52	\$0.59
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Middle Collection	6,130	12,260	18,372	24,485	30,597	36,709	42,821	48,933	55,046	61,158
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$318	\$1,282	\$2,902	\$5,198	\$8,188	\$12,425	\$17,276	\$22,655	\$28,837	\$35,854
8	<b>Wastewater Collection Credit Amount for Middle Collection Service Area</b>	<b>\$1,305,914</b>									
9	Study Period Incremental EDUs in Upper/Middle Collection Service Area	61,158									
10	<b>Wastewater Collection Credit for Future Principal per EDU for Middle Collection Service Area</b>	<b>\$21</b>									

**Table E-20: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Middle Collection Service Area**

Line No.	Description	11	12	13	14	15	16	17	18	19	20
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Beginning of Year EDUs	852,209	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375
2	Incremental EDUs	14,444	14,689	14,938	15,191	15,448	15,710	15,976	16,247	16,523	16,803
3	Total EDUs	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375	1,008,178
4	Annual Debt Service Payment	\$514,432	\$530,266	\$547,171	\$565,216	\$584,473	\$593,424	\$609,117	\$631,607	\$655,608	\$681,214
5	Debt Service Payment per EDU	\$0.59	\$0.60	\$0.61	\$0.62	\$0.63	\$0.63	\$0.64	\$0.65	\$0.66	\$0.68
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Middle Collection	61,158	61,158	61,158	61,158	61,158	61,158	61,158	61,158	61,158	61,158
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$36,302	\$36,796	\$37,336	\$37,925	\$38,563	\$38,501	\$38,861	\$39,624	\$40,444	\$41,324
8	<b>Wastewater Collection Credit Amount for Middle Collection Service Area</b>										
9	Study Period Incremental EDUs in Upper/Middle Collection Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Middle Collection Service Area</b>										

**Table E-20: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Middle Collection Service Area**

Line No.	Description	21 2039	22 2040	23 2041	24 2042	25 2043	26 2044	27 2045	28 2046	29 2047	30 2048
1	Beginning of Year EDUs	1,008,178	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814
2	Incremental EDUs	17,087	17,377	17,672	17,971	18,276	18,585	18,900	19,221	19,547	19,878
3	Total EDUs	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814	1,192,692
4	Annual Debt Service Payment	\$718,680	\$758,208	\$799,909	\$843,904	\$890,319	\$939,287	\$990,947	\$1,045,449	\$1,102,949	\$1,163,611
5	Debt Service Payment per EDU	\$0.70	\$0.73	\$0.75	\$0.78	\$0.81	\$0.84	\$0.87	\$0.91	\$0.94	\$0.98
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Middle Collection	61,158	61,158	61,158	61,158	61,158	61,158	61,158	61,158	61,158	61,158
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$42,870	\$44,474	\$46,138	\$47,864	\$49,655	\$51,513	\$53,441	\$55,440	\$57,515	\$59,667
8	<b>Wastewater Collection Credit Amount for Middle Collection Service Area</b>										
9	Study Period Incremental EDUs in Upper/Middle Collection Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Middle Collection Service Area</b>										

**Table E-20: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Middle Collection Service Area**

Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,192,692	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459
2	Incremental EDUs	20,215	20,557	20,906	21,260	21,620	21,987	22,360	22,739	23,124	23,516
3	Total EDUs	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459	1,410,975
4	Annual Debt Service Payment	\$1,073,236	\$977,891	\$877,301	\$771,179	\$659,220	\$541,103	\$416,490	\$285,023	\$146,326	\$0
5	Debt Service Payment per EDU	\$0.88	\$0.79	\$0.70	\$0.60	\$0.51	\$0.41	\$0.31	\$0.21	\$0.11	\$0.00
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Middle Collection	61,158	61,158	61,158	61,158	61,158	61,158	61,158	61,158	61,158	61,158
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$54,115	\$48,486	\$42,774	\$36,973	\$31,078	\$25,085	\$18,986	\$12,777	\$6,450	\$0
8	<b>Wastewater Collection Credit Amount for Middle Collection Service Area</b>										
9	Study Period Incremental EDUs in Upper/Middle Collection Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Middle Collection Service Area</b>										

Table E-21: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater  
 Collection Facilities in Lower Collection Service Area

Line No.	Description	1 2019	2 2020	3 2021	4 2022	5 2023	6 2024	7 2025	8 2026	9 2027	10 2028
1	Beginning of Year EDUs	720,369	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033
2	Incremental EDUs	13,214	13,215	13,176	13,177	13,176	13,177	13,176	13,176	13,177	13,176
3	Total EDUs	733,583	746,798	759,974	773,151	786,327	799,504	812,680	825,856	839,033	852,209
4	Annual Debt Service Payment	\$43,499	\$89,172	\$137,129	\$187,485	\$240,357	\$309,122	\$374,529	\$436,754	\$502,091	\$570,694
5	Debt Service Payment per EDU	\$0.0593	\$0.12	\$0.18	\$0.24	\$0.31	\$0.39	\$0.46	\$0.53	\$0.60	\$0.67
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Middle/Lower Collection	10,082	20,166	30,219	40,273	50,326	60,381	70,434	80,487	90,542	100,595
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$598	\$2,408	\$5,453	\$9,766	\$15,383	\$23,346	\$32,460	\$42,566	\$54,182	\$67,365
8	<b>Wastewater Collection Credit Amount for Lower Collection Service Area</b>	<b>\$2,453,664</b>									
9	Study Period Incremental EDUs in Upper/Middle/Lower Collection Service Area	100,595									
10	<b>Wastewater Collection Credit for Future Principal per EDU for Lower Collection Service Area</b>	<b>\$24</b>									



**Table E-21: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater Collection Facilities in Lower Collection Service Area**

Line No.	Description	11	12	13	14	15	16	17	18	19	20
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
1	Beginning of Year EDUs	852,209	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375
2	Incremental EDUs	14,444	14,689	14,938	15,191	15,448	15,710	15,976	16,247	16,523	16,803
3	Total EDUs	866,653	881,342	896,279	911,470	926,919	942,629	958,605	974,853	991,375	1,008,178
4	Annual Debt Service Payment	\$587,632	\$605,719	\$625,030	\$645,642	\$667,640	\$677,863	\$695,789	\$721,480	\$748,896	\$778,145
5	Debt Service Payment per EDU	\$0.68	\$0.69	\$0.70	\$0.71	\$0.72	\$0.72	\$0.73	\$0.74	\$0.76	\$0.77
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Middle/Lower Collection	100,595	100,595	100,595	100,595	100,595	100,595	100,595	100,595	100,595	100,595
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$68,208	\$69,136	\$70,151	\$71,257	\$72,456	\$72,340	\$73,015	\$74,450	\$75,991	\$77,643
8	<b>Wastewater Collection Credit Amount for Lower Collection Service Area</b>										
9	Study Period Incremental EDUs in Upper/Middle/Lower Collection Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Lower Collection Service Area</b>										

**Table E-21: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater  
 Collection Facilities in Lower Collection Service Area**

Line No.	Description	21	22	23	24	25	26	27	28	29	30
		2039	2040	2041	2042	2043	2044	2045	2046	2047	2048
1	Beginning of Year EDUs	1,008,178	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814
2	Incremental EDUs	17,087	17,377	17,672	17,971	18,276	18,585	18,900	19,221	19,547	19,878
3	Total EDUs	1,025,265	1,042,643	1,060,314	1,078,285	1,096,561	1,115,146	1,134,047	1,153,268	1,172,814	1,192,692
4	Annual Debt Service Payment	\$820,943	\$866,095	\$913,730	\$963,986	\$1,017,005	\$1,072,940	\$1,131,952	\$1,194,209	\$1,259,891	\$1,329,185
5	Debt Service Payment per EDU	\$0.80	\$0.83	\$0.86	\$0.89	\$0.93	\$0.96	\$1.00	\$1.04	\$1.07	\$1.11
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Middle/Lower Collection	100,595	100,595	100,595	100,595	100,595	100,595	100,595	100,595	100,595	100,595
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$80,548	\$83,562	\$86,688	\$89,932	\$93,297	\$96,788	\$100,409	\$104,166	\$108,064	\$112,107
8	<b>Wastewater Collection Credit Amount for Lower Collection Service Area</b>										
9	Study Period Incremental EDUs in Upper/Middle/Lower Collection Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Lower Collection Service Area</b>										

**Table E-21: Calculation of Credit for Projected Principal Payments on Eligible Future Wastewater  
 Collection Facilities in Lower Collection Service Area**

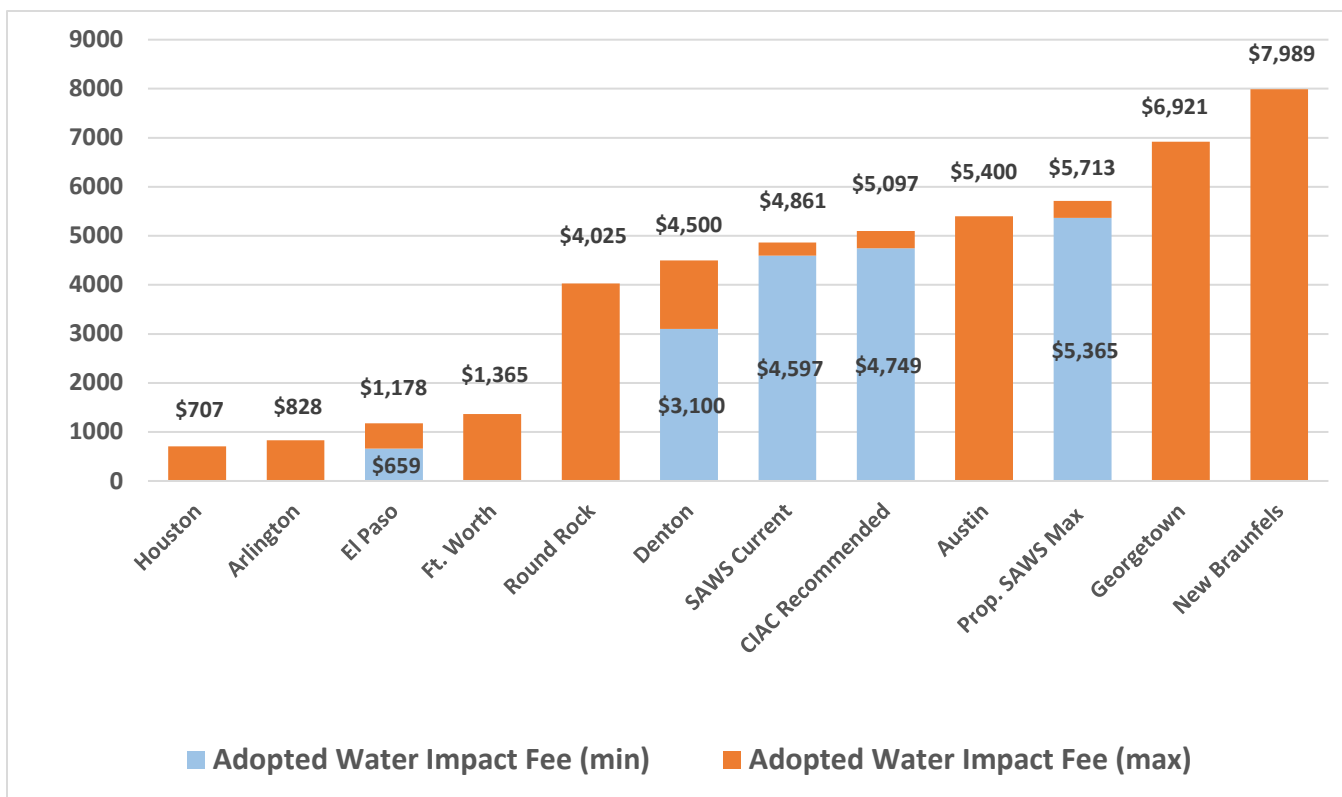
Line No.	Description	31 2049	32 2050	33 2051	34 2052	35 2053	36 2054	37 2055	38 2056	39 2057	40 2058
1	Beginning of Year EDUs	1,192,692	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459
2	Incremental EDUs	20,215	20,557	20,906	21,260	21,620	21,987	22,360	22,739	23,124	23,516
3	Total EDUs	1,212,907	1,233,464	1,254,370	1,275,630	1,297,251	1,319,237	1,341,597	1,364,336	1,387,459	1,410,975
4	Annual Debt Service Payment	\$1,225,950	\$1,117,037	\$1,002,134	\$880,912	\$753,022	\$618,098	\$475,753	\$325,580	\$167,147	\$0
5	Debt Service Payment per EDU	\$1.01	\$0.91	\$0.80	\$0.69	\$0.58	\$0.47	\$0.35	\$0.24	\$0.12	\$0.00
6	Wastewater Cumulative Growth in Service Unit Equivalents - Upper/Middle/Lower Collection	100,595	100,595	100,595	100,595	100,595	100,595	100,595	100,595	100,595	100,595
7	Wastewater Debt Service for Fee-Eligible Collection System Projects to be Recovered from New Connections	\$101,677	\$91,100	\$80,367	\$69,468	\$58,393	\$47,131	\$35,673	\$24,006	\$12,119	\$0
8	<b>Wastewater Collection Credit Amount for Lower Collection Service Area</b>										
9	Study Period Incremental EDUs in Upper/Middle/Lower Collection Service Area										
10	<b>Wastewater Collection Credit for Future Principal per EDU for Lower Collection Service Area</b>										



Appendix F  
LOCAL AND NATIONAL WATER AND  
WASTEWATER IMPACT FEES COMPARISON



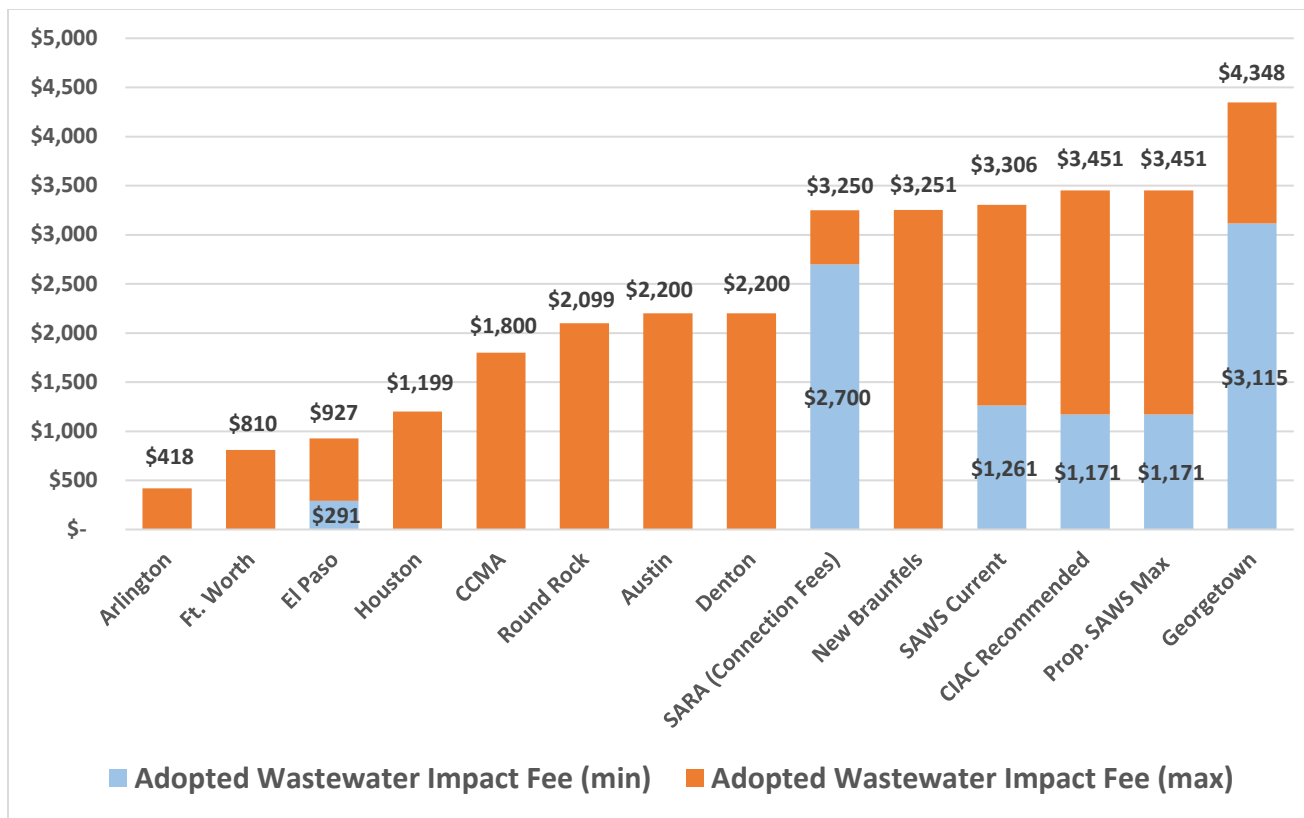
### APPENDIX F: Impact Fee Survey of Texas Cities



Comparison to other Texas utilities – water

SAWS Current represent the minimum and maximum water impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable water impact fees are also reflected in the above chart.

### APPENDIX F: Impact Fee Survey of Texas Cities

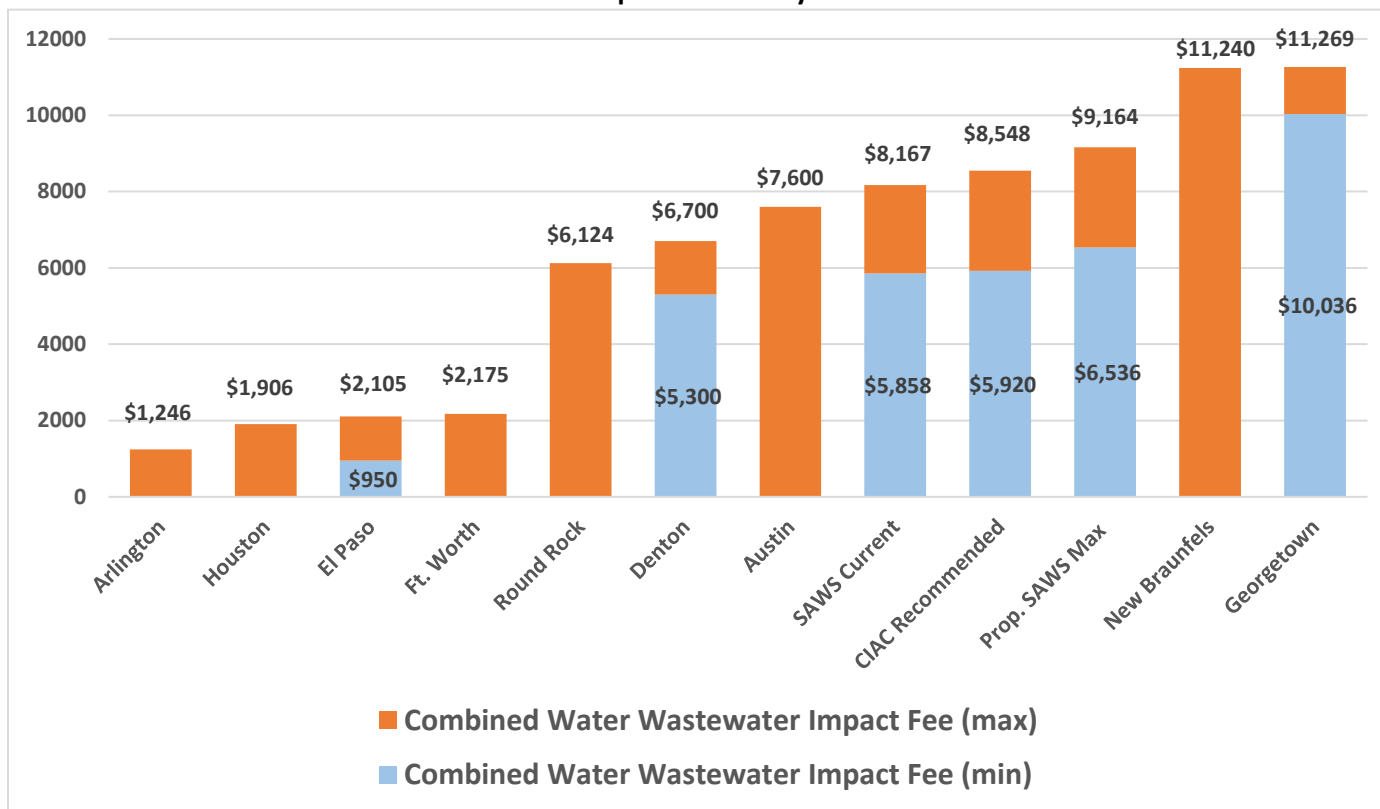


Comparison to other Texas utilities – wastewater

SAWS Current represent the minimum and maximum wastewater impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable wastewater impact fees are also reflected in the above chart.



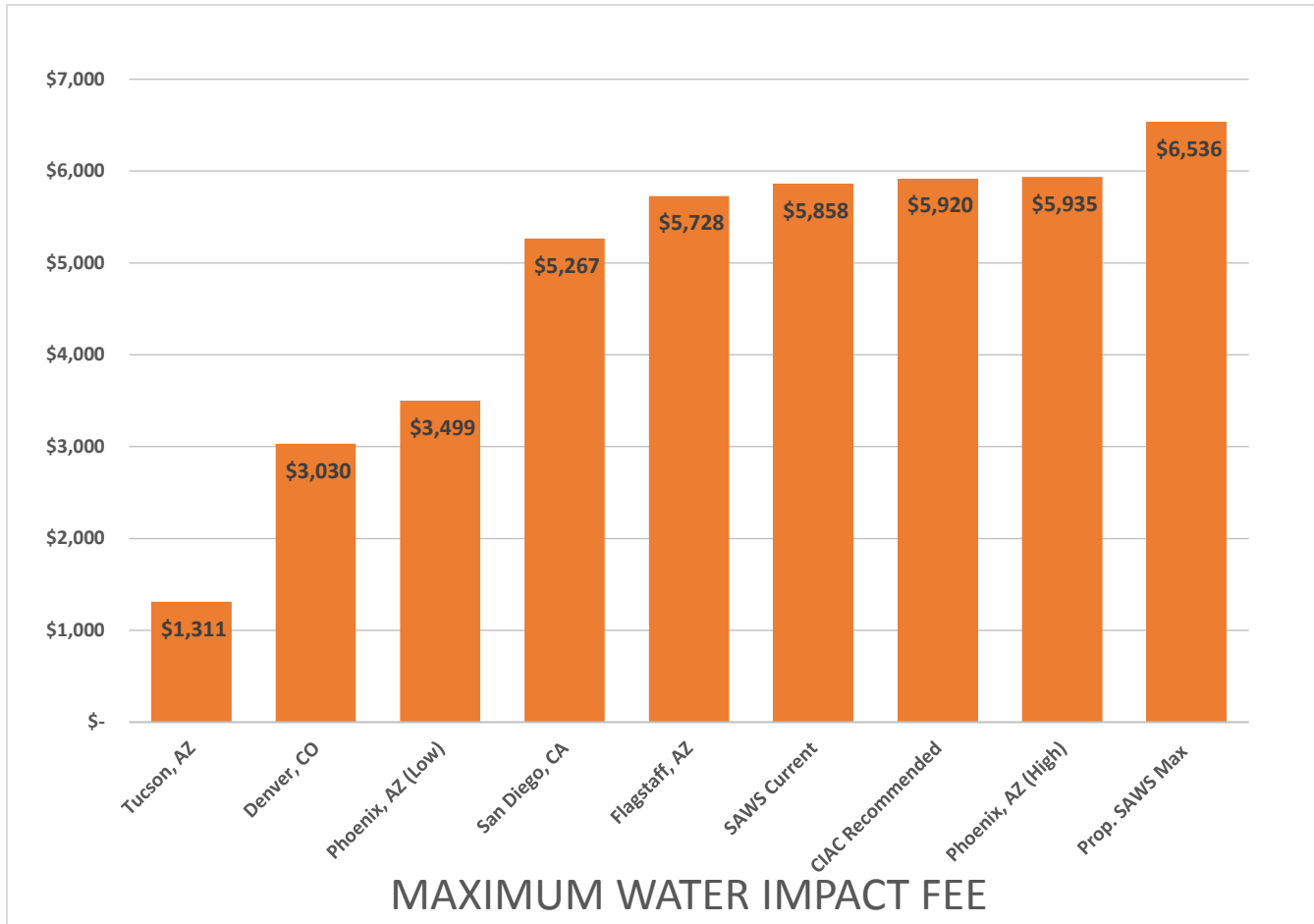
### APPENDIX F: Impact Fee Survey of Texas Cities



Comparison to other Texas utilities – water and wastewater combined

SAWS Current represent the minimum and maximum combined water/wastewater impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable combined water/wastewater impact fees are also reflected in the above chart.

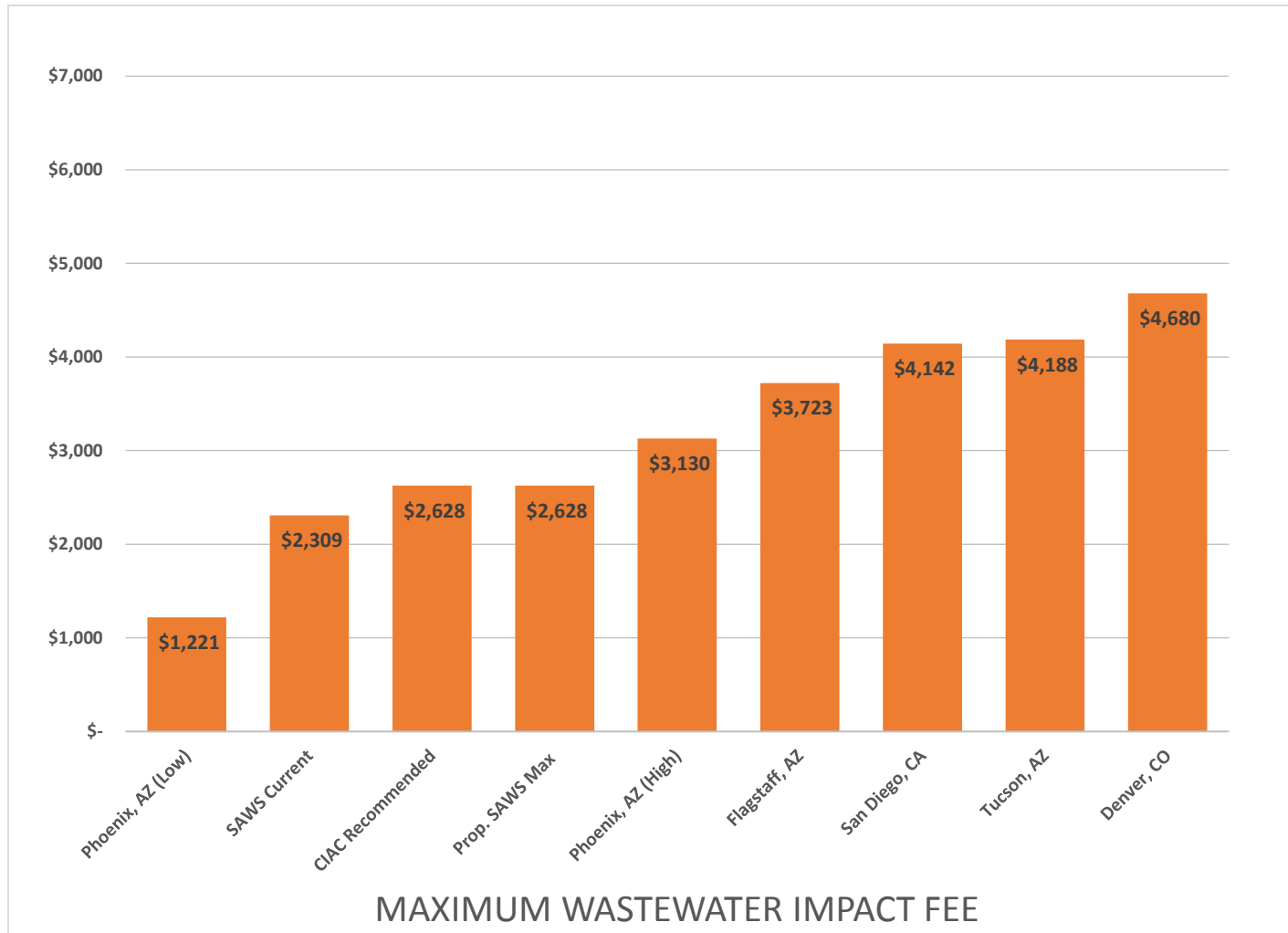
### APPENDIX F: Impact Fee Survey of U.S. Cities



Comparison to other U.S. utilities – water

SAWS Current represent the maximum water impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable water impact fees are also reflected in the above chart.

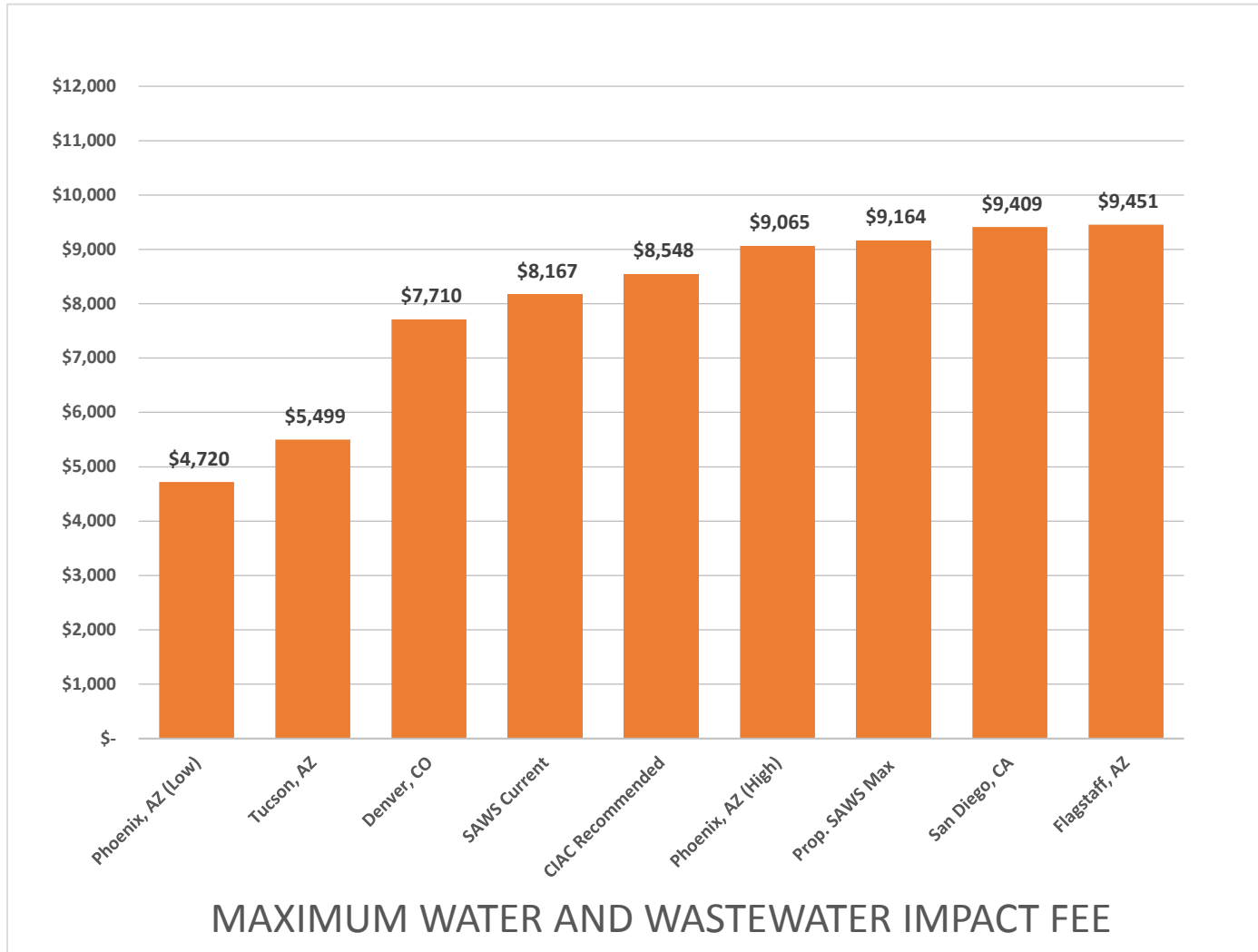
### APPENDIX F: Impact Fee Survey of U.S. Cities



Comparison to other U.S. utilities – wastewater

SAWS Current represent the maximum wastewater impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable wastewater impact fees are also reflected in the above chart.

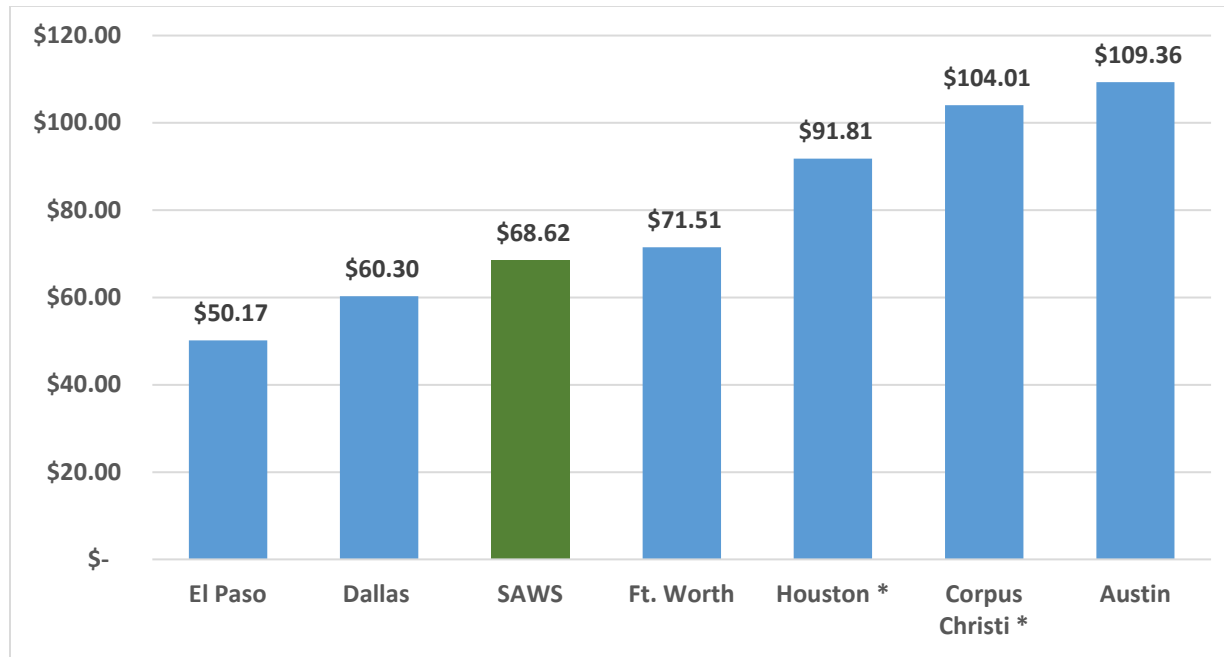
### APPENDIX F: Impact Fee Survey of U.S. Cities



Comparison to other U.S. utilities – water and wastewater combined

SAWS Current represent the maximum combined water/wastewater impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable combined water/wastewater impact fees are also reflected in the above chart.

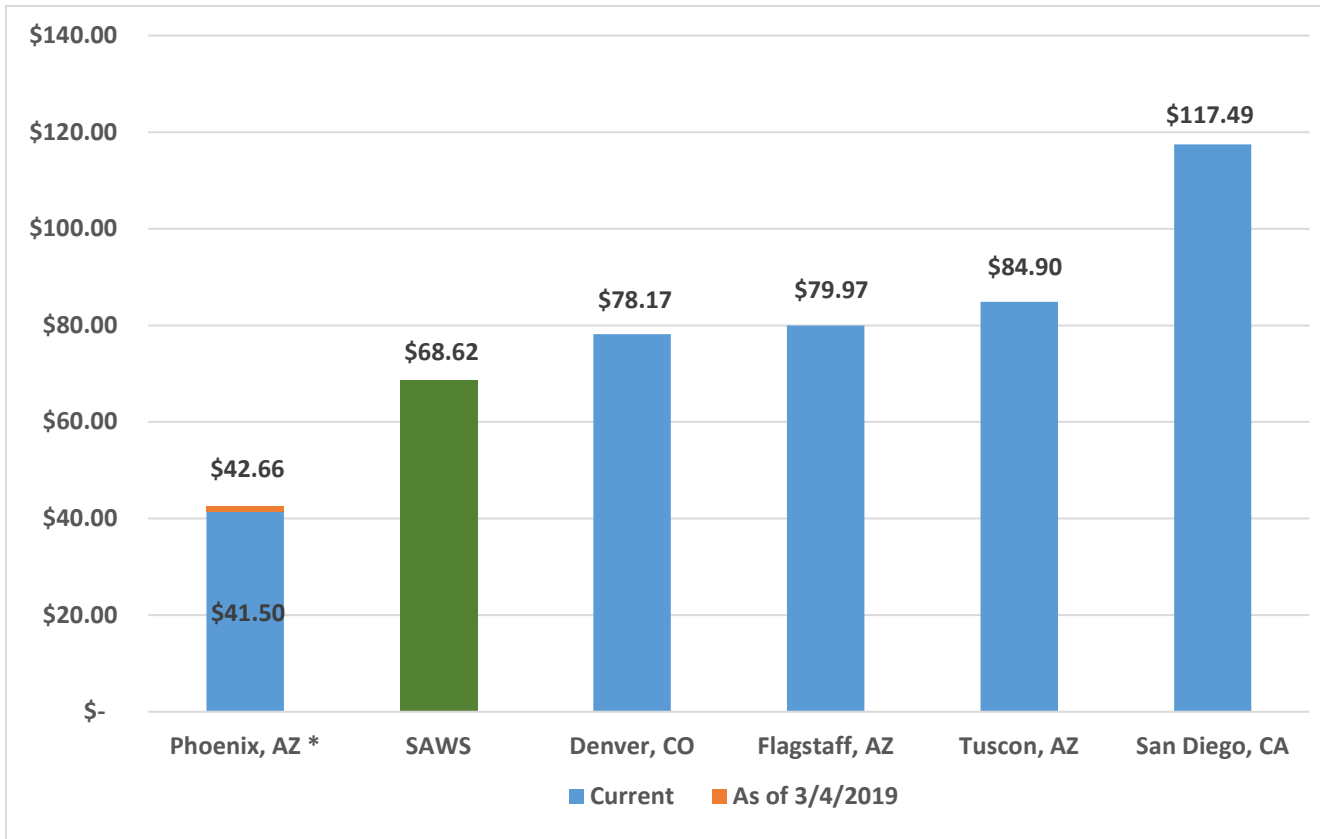
**APPENDIX F: SAWS Average Residential Bills Compared to Major Texas Cities**



Monthly charges as of January 2019. Based on 7,092 gallons per month water usage and 5,668 gallons per month wastewater usage. Includes EAA and TCEQ Fees.

\* Houston and Corpus Christi wastewater charges based solely on water usage.

**APPENDIX F: SAWS Average Residential Bills Compared to Southwest U.S. Cities Charging Impact Fees**



Monthly charges as of January 2019. Based on 7,092 gallons per month water usage and 5,668 gallons per month wastewater usage. Includes EAA and TCEQ Fees.

\* Phoenix applies different rates during three different times a year; charges shown are the highest and cover April, May, Oct. & November.

## Appendix G

# ORDINANCE DOCUMENTATION





TO: San Antonio Water System Board of Trustees

FROM: Tracey B. Lehmann, P.E., Director, Development, and Andrea L.H. Beymer, P.E., Vice President, Engineering and Construction

THROUGH: Robert R. Puente, President/Chief Executive Officer

SUBJECT: APPROVAL OF RESOLUTION ACCEPTING AND RECOMMENDING FOR CITY COUNCIL APPROVAL THE 2019 – 2028 UPDATE OF THE LAND USE ASSUMPTIONS PLAN, THE WATER DELIVERY, WATER SUPPLY, AND WASTEWATER CAPITAL IMPROVEMENTS PLAN AND THE MAXIMUM AND PROPOSED IMPACT FEE CALCULATIONS

Board Action Date: April 2, 2019

**SUMMARY AND RECOMMENDATION:**

The attached resolution accepts and recommends for City Council approval of the updated 2019 – 2028 Land Use Assumptions Plan, the Water Supply, Water Delivery, and Wastewater Capital Improvements Plans, and Maximum Impact Fee Calculations.

- Chapter 395 of the Local Government Code requires that impact fees must be updated every five years. The current impact fees for water delivery, water supply and wastewater were approved by the San Antonio City Council in May 2014.
- Chapter 395 of the Local Government Code requires that impact fees be calculated based upon a land use assumptions plan (LUAP) that projects demand over the next ten-year period and the capital costs associated with providing service to that new demand.
- San Antonio Water System (the “System”) staff have been meeting with the Capital Improvements Advisory Committee (CIAC) since June 2018 to update the report on LUAP, capital improvements plans for water supply, water delivery and wastewater, and the maximum impact fees for water delivery, water supply and wastewater (Attachment I). A draft copy of the report, in substantially final form, is available on the SAWS’ website at [http://www.saws.org/business\\_center/developer/ImpactFees](http://www.saws.org/business_center/developer/ImpactFees). That draft report will be replaced by the final report upon final approval by City Council.
- Growth projections for the 2019 – 2028 LUAP are consistent with the System’s 2017 Water Management Plan. The projections were based on the COSA adopted ACOG/MPO projections which were developed in conjunction with the development community, city agencies, state agencies and private organizations. The plan forecasts the change in demand for the ten-year period.

- Water LUAP = 144,770 equivalent dwelling units (EDU's)
  - Wastewater LUAP = 131,840 EDU's
- System staff have identified new and existing capital improvement projects in the 2019 – 2028 water supply, water delivery, and wastewater capital improvements plan (CIP) as necessary projects to serve the projected growth.

○	Water Supply CIP	\$ 519.0 million
○	Water Delivery CIP	<u>\$ 322.2 million</u>
	▪ Flow	\$ 182.2 million
	▪ System Development	\$ 140.0 million
○	Wastewater CIP	<u>\$ 337.2 million</u>
	▪ Collection	\$ 235.2 million
	▪ Treatment	\$ 102.0 million
	<b>TOTAL</b>	<b>\$1.18 billion</b>

- From the LUAP and the water supply, water delivery and wastewater CIP's, the maximum impact fees per EDU were calculated as follows:

○	Maximum Water Supply Impact Fee	=	\$ 3,322
○	Maximum Water Flow	=	\$ 1,188
○	Maximum System Development		
	▪ High	=	\$ 1,203
	▪ Middle	=	\$ 1,014
	▪ Low	=	\$ 855
○	Maximum Collection Impact Fee		
	▪ Medio Creek	=	\$ 861
	▪ Upper Medina	=	\$ 1,422
	▪ Lower Medina	=	\$ 520
	▪ Upper Collection	=	\$ 2,800
	▪ Middle Collection	=	\$ 2,013
	▪ Lower Collection	=	\$ 902
○	Maximum Treatment Impact Fee		
	▪ Medio Creek	=	\$ 1,222
	▪ Dos Rios/Leon Creek	=	\$ 651


- The Proposed impact fee includes the maximum water delivery, maximum treatment and modified supply impact fee per EDU as follows:
  - Maximum Water Supply Impact Fee = \$ 2,706
  - Maximum Water Flow = \$ 1,188
  - Maximum System Development
    - High = \$ 1,203
    - Middle = \$ 1,014
    - Low = \$ 855
  - Maximum Collection Impact Fee
    - Medio Creek = \$ 861
    - Upper Medina = \$ 1,422
    - Lower Medina = \$ 520
    - Upper Collection = \$ 2,800
    - Middle Collection = \$ 2,013
    - Lower Collection = \$ 902
  - Maximum Treatment Impact Fee
    - Medio Creek = \$ 1,222
    - Dos Rios/Leon Creek = \$ 651
  
- Changes in the draft updated impact fee program for 2019 – 2028 include:
  - System staff recommend assessing a prorated Supply Impact Fee of \$2,706.00 per EDU to account for the maximum calculated Supply Impact Fee of \$3,322 and the expected future calculated Supply Impact Fee of \$2,637 when the Vista Ridge Project will be accepted by the System and become a component of the equity calculation. Acceptance of the Vista Ridge Project is expected in 2020.
  - Finance charges are included in the Water Supply Fee calculation for the first time. Finance charges have been and continue to be included with the Water Delivery and Treatment Fee calculations.
  - Usage per EDU has indicated consistent reduction over the last 5 years and therefore a reduction in the gallons per day per EDU is warranted. Revision of the water and wastewater EDUs resulted in a decrease from 313 to 290 gallons per day for water, and from 240 to 200 gallons per day for sewer with an inflow and infiltration (I/I) factor of 600 gallons per acre per day.
  
- Chapter 395 of the Texas Local Government Code requires the CIAC to oversee and comment on the impact fee process. The committee has eleven members and is appointed by City Council.


- On February 13, 2019, the CIAC accepted with comments and recommended for adoption by City Council the proposed updated 2019 – 2028 LUAP, the water delivery, water supply, and wastewater CIP's and the maximum water delivery, water supply, and wastewater impact fee calculations. The CIAC recommended charging the maximum water delivery and wastewater impact fees, and \$2,706/EDU instead of the maximum calculated water supply impact fee.
- The CIAC developed findings and comments to present to City Council as part of their report. The findings are attached as Attachment 2. Staff concurs with findings of CIAC.
- Once accepted by the San Antonio Water System's Board of Trustees and recommended for City Council adoption, the updated 2019 – 2028 LUAP, water delivery, water supply, and wastewater CIP's, and the maximum and proposed water delivery, water supply, and wastewater impact fee calculations will be presented to City Council for final approval.

Staff recommends approval of this resolution.

**FINANCIAL IMPACT:**

Impact fees are charged on an equivalent dwelling unit (EDU) basis. The fee collected will be used to fund capital improvements listed in the plan and to reimburse the System for existing capacity.

  
\_\_\_\_\_  
Tracey B. Lehmann, P.E.  
Director  
Development

  
\_\_\_\_\_  
Andrea L.H. Beymer, P.E.  
Vice President  
Engineering and Construction

APPROVED:

  
\_\_\_\_\_  
Robert R. Puente  
President/Chief Executive Officer

Attachments:

1. Draft 2019 – 2028 Land Use Water Assumptions, Water Delivery, Water Supply, and Wastewater Capital Improvements Plans and Maximum Impact Fees
2. Draft Capital Improvements Advisory Committee Findings

**CAPITAL IMPROVEMENTS ADVISORY COMMITTEE  
REPORT TO THE SAN ANTONIO CITY COUNCIL ON THE UPDATE OF THE 2019 –  
2028 LAND USE ASSUMPTION PLAN, CAPITAL IMPROVEMENTS PLAN AND  
MAXIMUM IMPACT FEES**

Chapter 395 of the Texas Local Government Code establishes both the procedural and substantive requirements for the City Council of the City of San Antonio (City) to adopt impact fees related to the San Antonio Water System's (SAWS) water and wastewater capital costs associated with new development. As part of those requirements, Section 395.058 of the Code requires the City Council to appoint an impact fee advisory committee, but gives the Council the option to either: designate the Planning or Zoning Commission as the advisory committee; or create a separate and independent advisory committee. In August of 1987, pursuant to Resolution No. 87-41-64, the City Council created the Capital Improvements Advisory Committee (CIAC) as an independent impact fee advisory committee.

Pursuant to Section 395.058, the CIAC is charged with the following responsibilities: advise and assist the City/SAWS in adopting a Land Use Assumptions Plan (LUAP); review the Capital Improvements Plan (CIP) and file written comments; monitor and evaluate the implementation of the CIP; file semiannual reports on the progress of the CIP and report any perceived inequities to the City/SAWS; and advise the City/SAWS of the need to update the CIP, LUAP and/or Impact Fees (see § 395.058). For the purposes of the proposed comprehensive five (5) year update, the CIAC's main purpose is to timely file its written comments consistent with those relevant responsibilities delineated above. The SAWS Board has the authority to make an independent recommendation to City Council and the Council has the final authority to adopt the updated CIP, LUAP and Impact Fees up to the maximum calculations. The CIAC shall meet at least semi-annually to review the status of the impact fee program and to meet the current legislative requirements.

## **BACKGROUND**

### **1. Legal Basis**

- a. Impact fees may be adopted and collected under Chapter 395 of the Texas Local Government Code.
- b. Impact fees are a framework for financing the capital improvements related to growth for water and sewer infrastructure.
- c. Impact fees are a one-time charge to fund the cost of building new infrastructure to serve new development. They may be collected only for capital costs. Costs for operations and maintenance are not eligible.
- d. Chapter 395 requires that impact fees must be updated every five years, for a ten year period.
- e. Chapter 395 of the L.G.C. requires utilities to calculate a rate credit for growth related capital improvements to be subtracted from the calculated impact fee.
- f. The rate credit is based on the amount of projected future rate revenues or taxes expected to be generated by the new development and used to pay for capital improvements identified in the CIP.
- g. Utilities can calculate the rate credit and apply it to the impact fee or apply a credit equal to 50% of the calculated impact fee.
- h. SAWS has historically opted to calculate the rate credit which results in the calculation of the maximum impact fee.
- i. Chapter 395 requires the calculation of the maximum impact fee. It does not require that the maximum impact fee be charged.
- j. A copy of all agendas, minutes, recordings and presentations to the CIAC will be maintained by SAWS. A copy of the draft 2019-2028 impact fee report is attached for reference.
- k. The CIAC, in its advisory capacity to City Council, is required to file its written comments on the proposed updates and amendments to the CIP, LUAP and maximum impact fees no later than six (6) business days prior to the public hearing on the updates and amendments (see § 395.056).

### **2. Factual Basis**

- a. The San Antonio Water System updated impact fees in May 2014. The SAWS impact fees must be updated before June 2019.
- b. Chapter 395 of the L.G.C. allows for financing costs to be included in the calculation of impact fees.
- c. Financing costs for existing projects were included in the impact fee calculation.
- d. Financing costs for future projects were not included since SAWS reserves the option to fund growth projects with cash.
- e. Historically, the City of San Antonio has approved charging the maximum impact fee.
- f. Other cities charge an impact fee that is less than the maximum impact fee. A comparison of other U.S. and Texas cities' impact fees is in Appendix B.
- g. If less than the maximum impact fee is charged the difference would be made up from other sources in order to fund future CIP.

- h. Using a timeline of 1993 through July of 2018, SAWS staff found that without the inclusion of an impact fee the average SAWS water bill would increase approximately \$6.19, equating to an overall rate increase of 9.84%. A comparison of rates in other cities can be found in Appendix C.
- i. In contrast to previous impact fee calculation cycles, the committee did not consider alternate LUAP projections.

## **LAND USE ASSUMPTIONS PLAN (LUAP)**

### **3. The Land Use Assumptions Plan is accepted and recommended for City Council approval.**

- a. 10 year water Land Use Assumptions Plan = 141,770 EDUs.
- b. 10 year wastewater Land Use Assumptions Plan = 131,840 EDUs.
- c. A summary of the change in EDUs, CIP, and maximum calculated impact fees is in Appendix A.
- d. The committee recommended approval of the Land Use Assumptions Plan by a vote of 8-0. There were two committee members absent (D7 & D8) and one unfilled position (D5).
- e. The SAWS Water Management Plan was updated in 2017, and the population projections that were used by SAWS staff are consistent with COSA, AACOG and MPO.

## **EQUIVALENT DWELLING UNIT (EDU) DEFINITIONS**

### **4. EDU Definitions**

#### **The EDU definitions are accepted and recommended for City Council approval.**

- a. A water EDU = 290 gallons per day.
- b. A wastewater EDU = 200 gallons per day with an I/I factor (inflow and infiltration) of 600 gallons per acre per day.
- c. The committee recommended approval of the EDU definitions by a vote of 8-0. There were two committee members absent (D7 & D8) and one unfilled position (D5).

## CAPITAL IMPROVEMENTS PLAN

### **5. The Water Supply Capital Improvements Plan is based on the SAWS 50-Year Water Management Plan.**

- a. San Antonio's long-standing commitment and investment in water conservation and infrastructure improvements has yielded its most diverse water supply. SAWS, in partnership with the community, has successfully cultivated an ethic of conservation and invested in infrastructure over the past 25 years and effectively reduced the gallons per capita per day (GPCD) by approximately 50 percent, all while SAWS' service area population has grown by approximately 150 percent.
- b. The 50-Year Water Management Plan uses the drought of record as the guide to determine when projects are needed and the amount of Edwards Aquifer water that will be available based on projected pumping restrictions.
- c. The existing water supply projects used in the calculation are Edwards Aquifer Storage & Recovery, Local Carrizo, Regional Carrizo (through SSLGC), Trinity Aquifer, GBRA (Canyon Lake), Desalination, Canyon Regional Water Authority, and Medina System Surface Water.
- d. SAWS staff determined the 2018 water supply capacity to be 281,495 AF (acre feet) and the 2028 water supply capacity to be 331,495 AF including 50,000 AF from the Vista Ridge project. (*An acre foot is 325,853 gallons of water.*)
- e. SAWS staff determined the 2018 AD (annual demand) to be 251,629 AF and the 2028 AD to be 297,682 AF.
- f. SAWS staff changed the assumption for debt financing the future Water Supply CIP from 50% to 85% debt financing, matching SAWS multi-year financial plan. Increasing the debt financing assumption increases the rate credit.
- g. The CIAC does not recommend the maximum calculated Supply Impact Fee.
- h. The CIAC recommends assessing a prorated Supply Impact Fee of \$2,706 per EDU, which is a weighted average of the maximum calculated Supply Impact Fee of \$3,322 and the expected future calculated Supply Impact Fee of \$2,637 when the Vista Ridge Project will be in operation and become a component of the equity calculation. The Vista Ridge Project is expected to be completed in 2020.
- i. A reconciled CIP list will be provided to the CIAC biannually for review.
- j. A summary of the change in EDUs, CIP, maximum calculated impact fees and CIAC recommended impact fees is in Appendix A.

### **6. The Water Delivery System Development and Flow Capital Improvements Plan**

- a. The gallons per day used to define an EDU has been reduced from 313 to 290 GPD based on updated data provided by SAWS staff.
- b. EDUs have increased over the last five years while total water supplied has remained fairly constant.
- c. SAWS staff changed the assumption for debt financing the future Water Delivery CIP from 70% to 60%, matching the SAWS multi-year financial plan. Decreasing the debt financing assumption decreases the rate credit.



- d. The CIAC recommends assessing the maximum Water Delivery System and Flow Impact Fees.
- e. A reconciled CIP list will be provided to the CIAC at the biannual meetings for review.
- f. A summary of the change in EDUs, CIP, maximum calculated impact fees and CIAC recommended impact fees is in Appendix A.

**7. The Wastewater Treatment and Collection Capital Improvements Plan**

- a. The gallons per day used to define an EDU has been reduced from 240 to 200 GPD based on updated data collected by SAWS staff monitoring flows at SAWS treatment plants, collection of winter averaging data, and flow meters throughout the SAWS wastewater system.
- b. From data collected with additional flow meters in conjunction with the SAWS requirement in the EPA consent Decree, SAWS determined that an inflow and infiltration factor of 300 gallons per acre was inadequate, and was increased to 600 gallons per acre.
- c. SAWS staff changed the assumption for debt financing the future Wastewater CIP from 70% to 60%, matching the SAWS multi-year financial plan. Decreasing the debt financing assumption decreased the rate credit.
- d. The CIAC recommends assessing the maximum Wastewater Treatment and Collection fees.
- e. A reconciled CIP list will be provided to the CIAC at the biannual meetings for review.
- f. A summary of the change in EDUs, CIP, maximum calculated impact fees and CIAC recommended impact fees is in Appendix A.

**8. The Capital Improvements Plan is accepted and recommended for City Council approval.**

- a. 10-year value of eligible water supply projects = \$519,048,777
- b. 10-year value of eligible water flow projects = \$182,232,572
- c. 10-year value of eligible water system development projects = \$139,999,299
- d. 10-year value of eligible wastewater treatment projects = \$102,044,699
- e. 10-year value of eligible wastewater collection projects = \$235,191,944
- Total 10-year value of all impact fee eligible projects= \$1,178,517,291

## MAXIMUM IMPACT FEES

### 9. The maximum calculated impact fees are shown below:

a.	Water Supply Impact Fee.....	\$3,322
b.	Water Flow Impact Fee.....	\$1,188
c.	Water System Development Impact Fee	
	i. High.....	\$1,203
	ii. Middle.....	\$1,014
	iii. Low.....	\$855
d.	Wastewater Treatment	
	i. Medio Creek.....	\$1,222
	ii. Dos Rios / Leon Creek.....	\$651
e.	Wastewater Collection	
	i. Medio Creek.....	\$861
	ii. Upper Medina.....	\$1,422
	iii. Lower Medina.....	\$520
	iv. Upper Collection.....	\$2,800
	v. Middle Collection.....	\$2,013
	vi. Lower Collection.....	\$902

The Committee recommended approval of the Maximum Calculated Impact Fees by a vote of 9-0. One committee member was absent (D3) and one position unfilled (D5).

The percentage change and dollar amount of the maximum impact fees by service areas are shown in Appendix B.

### 10. Impact Fee Waiver Program

- a. Currently SAWS provides three million dollars in impact fee waivers to City of San Antonio annually for the Fee Waiver Program.
- b. City Council adopted the August 2018 Affordable Housing Taskforce recommendation to waive impact fees for affordable housing units.

## CAPITAL IMPROVEMENTS ADVISORY COMMITTEE RECOMMENDATIONS

**11. The CIAC accepts and recommends for City Council the approval of the maximum calculated impact fees except for the Water Supply Impact Fee as shown below and in Appendix D:**

a.	Water Supply Impact Fee.....	\$2,706
b.	Water Flow Impact Fee.....	\$1,188
c.	Water System Development Impact Fee	
	i. High.....	\$1,203
	ii. Middle.....	\$1,014
	iii. Low.....	\$855
d.	Wastewater Treatment	
	i. Medio Creek.....	\$1,222
	ii. Dos Rios / Leon Creek.....	\$651
e.	Wastewater Collection	
	i. Medio Creek.....	\$861
	ii. Upper Medina.....	\$1,422
	iii. Lower Medina.....	\$520
	iv. Upper Collection.....	\$2,800
	v. Middle Collection.....	\$2,013
	vi. Lower Collection.....	\$902

## APPENDIX A

### CIAC Approved 2019-2028 Maximum Impact Fee Calculation

	EDU Definition (gpd)		LUAP (EDUs)		Eligible Equity & CIP (\$)		Calculated Fee (\$/EDU)		Rate Credit (\$/EDU)		Impact Fee (\$/EDU)		Fee Change	
	Current	Approved	Current	Approved	Current	Approved	Current	Approved	Current	Approved	Current	Approved Max	\$	%
<b>Water Supply</b>	313	290	95,817	141,770	\$ 282,391,017	\$ 519,048,777	\$ 2,947	\$ 3,661	\$ 151	\$ 339	\$ 2,796	\$ 3,322	\$ 526	19%
<b>Water Flow</b>	313	290	95,817	141,770	\$ 121,466,247	\$ 182,232,572	\$ 1,268	\$ 1,285	\$ 86	\$ 97	\$ 1,182	\$ 1,188	\$ 6	1%
<b>Water System Development (total)</b>	313	290	95,817	141,770	\$ 73,696,321	\$ 139,999,299	\$ 769	\$ 988	\$ 41	\$ 52	\$ 728	\$ 935	\$ 207	28%
High Elevation			8,783	6,845	\$ 6,574,789	\$ 8,467,874	\$ 923	\$ 1,237	\$ 40	\$ 34	\$ 883	\$ 1,203	\$ 320	36%
Middle Elevation			45,265	56,478	\$ 34,596,341	\$ 60,338,483	\$ 843	\$ 1,068	\$ 44	\$ 54	\$ 799	\$ 1,014	\$ 215	27%
Low Elevation			41,769	78,447	\$ 32,525,191	\$ 71,192,942	\$ 657	\$ 908	\$ 38	\$ 53	\$ 619	\$ 855	\$ 236	38%
<b>Wastewater Treatment (total)</b>	240	200	95,589	131,840	\$ 86,683,968	\$ 102,044,699	\$ 907	\$ 774	\$ 61	\$ 57	\$ 845	\$ 717	\$ (129)	-15%
Medio Creek			8,838	15,167	\$ 13,385,880	\$ 19,820,413	\$ 1,515	\$ 1,307	\$ 86	\$ 85	\$ 1,429	\$ 1,222	\$ (207)	-14%
Leon/Dos Rios Creeks			86,751	116,673	\$ 73,298,089	\$ 82,224,287	\$ 845	\$ 705	\$ 59	\$ 54	\$ 786	\$ 651	\$ (135)	-17%
<b>Wastewater Collection (total)</b>	240 & 300	200 & 600	95,589	131,840	\$ 167,093,734	\$ 235,191,944	\$ 1,748	\$ 1,784	\$ 95	\$ 103	\$ 1,653	\$ 1,681	\$ 28	2%
Medio Creek			8,838	15,167	\$ 7,627,627	\$ 13,693,357	\$ 863	\$ 903	\$ 25	\$ 42	\$ 838	\$ 861	\$ 23	3%
Upper Medina			18,744	11,667	\$ 21,475,227	\$ 11,011,473	\$ 1,651	\$ 1,504	\$ 86	\$ 82	\$ 1,565	\$ 1,422	\$ (143)	-9%
Lower Medina			3,762	4,410	\$ 11,374,282	\$ 9,011,045	\$ 505	\$ 560	\$ 30	\$ 40	\$ 475	\$ 520	\$ 45	9%
Upper Collection			35,689	39,389	\$ 39,431,580	\$ 32,831,501	\$ 2,666	\$ 2,969	\$ 146	\$ 169	\$ 2,520	\$ 2,800	\$ 280	11%
Middle Collection			12,048	21,769	\$ 37,842,239	\$ 71,615,338	\$ 1,561	\$ 2,136	\$ 92	\$ 123	\$ 1,469	\$ 2,013	\$ 544	37%
Lower Collection			16,508	39,438	\$ 49,342,780	\$ 97,029,230	\$ 768	\$ 965	\$ 49	\$ 63	\$ 719	\$ 902	\$ 183	25%
<b>Totals</b>					\$ 731,331,287	\$ 1,178,517,291	\$ 7,639	\$ 8,492	\$ 434	\$ 649	\$ 7,205	\$ 7,843	\$ 638	9%

- Notes:
1. Current= Final Approved 2014 to 2023 impact fee program
  2. Approved = Approved 2019 to 2028 impact fee program presented to the CIAC
  3. Total Impact Fees (\$/EDU) are weighted averages for water system development, wastewater treatment, wastewater collection, and total.
  4. Eligible CIP is the prorated amount of existing and Approved infrastructure to serve the LUAP.
  5. EDU definition applies as warranted based on average daily flow in gallons per day (gpd) except collection which shows 200 gpd average dry weather flow & 600 gpd per acre Inflow & Infiltration (I/I).
- February 11, 2019

## APPENDIX A

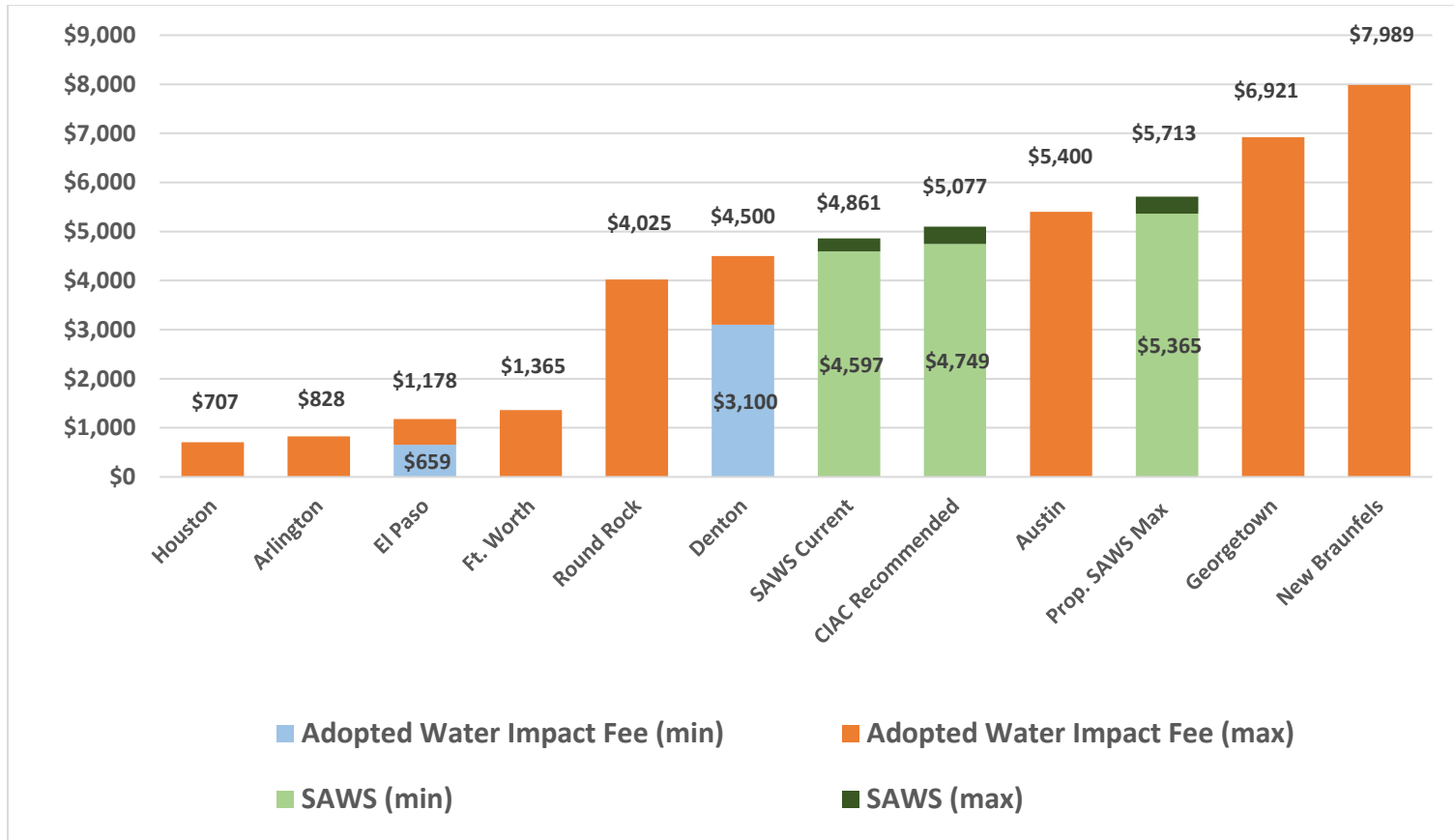
### 2019 - 2028 EDU, LUAP, CIP and Impact Fee Summary

	EDU Definition (gpd)		LUAP (EDUs)		Eligible Equity & CIP (\$)		2014-2023 Impact Fee	Maximum Calculated 2019 - 2028 Impact Fee			CIAC Recommended 2019 - 2028 Impact Fee		
	Current	Approved	Current	Approved	Current	Approved	\$/EDU	\$/EDU	\$ Change	% Change	\$/EDU	\$ Change	% Change
<b>Water Supply</b>	313	290	95,817	141,770	\$ 282,391,017	\$ 519,048,777	\$ 2,796	\$ 3,322	\$ 526	19%	\$ 2,706	\$ (90)	-3%
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Upper Collection			35,689	39,389	\$ 39,431,580	\$ 32,831,501	\$ 2,520	\$ 2,800	\$ 280	11%	\$ 2,800	\$ 280	11%
Middle Collection			12,048	21,769	\$ 37,842,239	\$ 71,615,338	\$ 1,469	\$ 2,013	\$ 544	37%	\$ 2,013	\$ 544	37%
Lower Collection			16,508	39,438	\$ 49,342,780	\$ 97,029,230	\$ 719	\$ 902	\$ 183	25%	\$ 902	\$ 183	25%
<b>Totals</b>					\$ 731,331,287	\$ 1,178,517,291	\$ 7,205	\$ 7,843	\$ 638	9%	\$ 7,227	\$ 22	0%

**Notes:**

1. Current = Final Approved 2014 to 2023 impact fee program
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- February 11, 2019

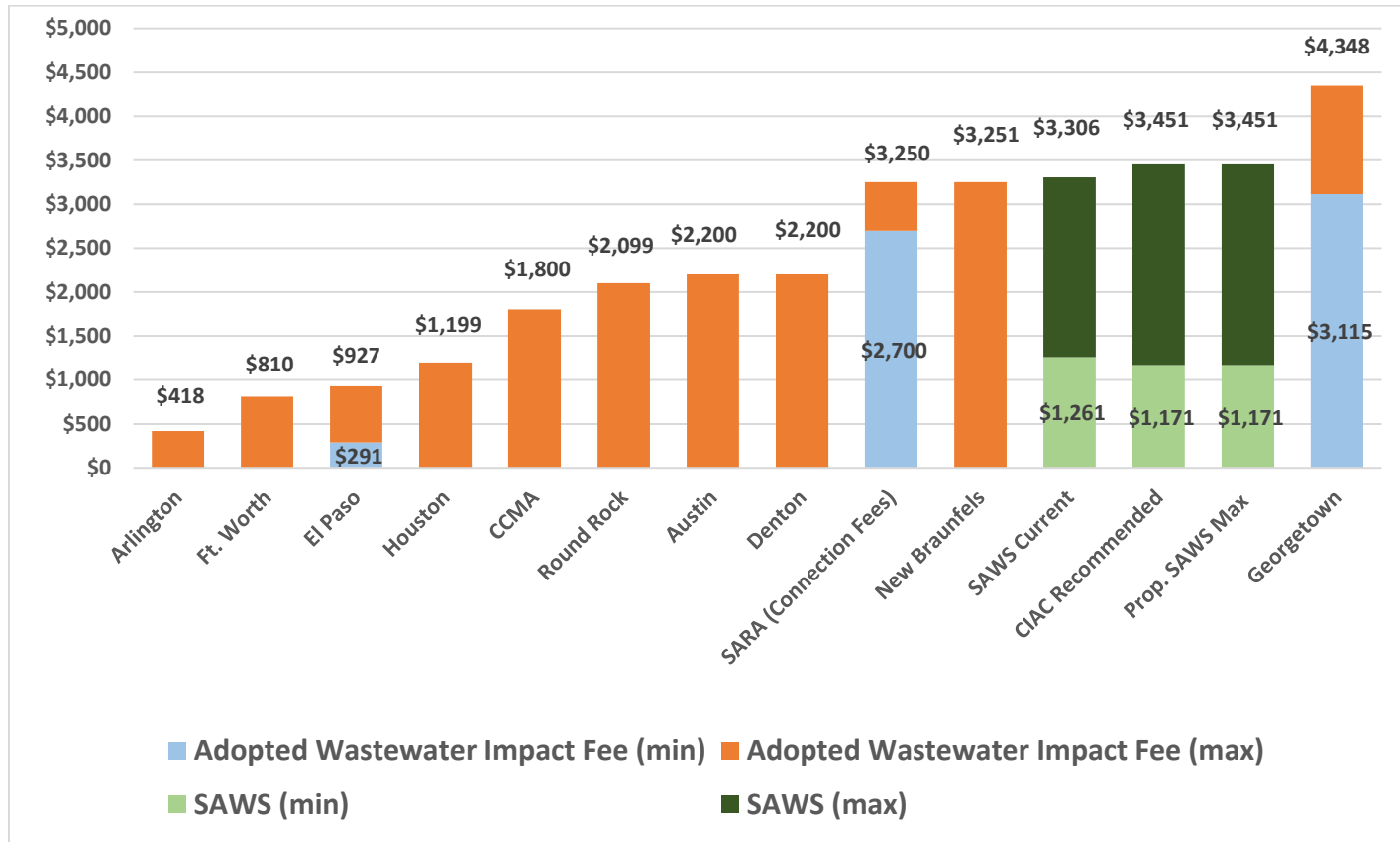
## APPENDIX B: Impact Fee Survey of Texas Cities



Comparison to other Texas utilities – water

SAWS Current represent the minimum and maximum water impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable water impact fees are also reflected in the above chart.

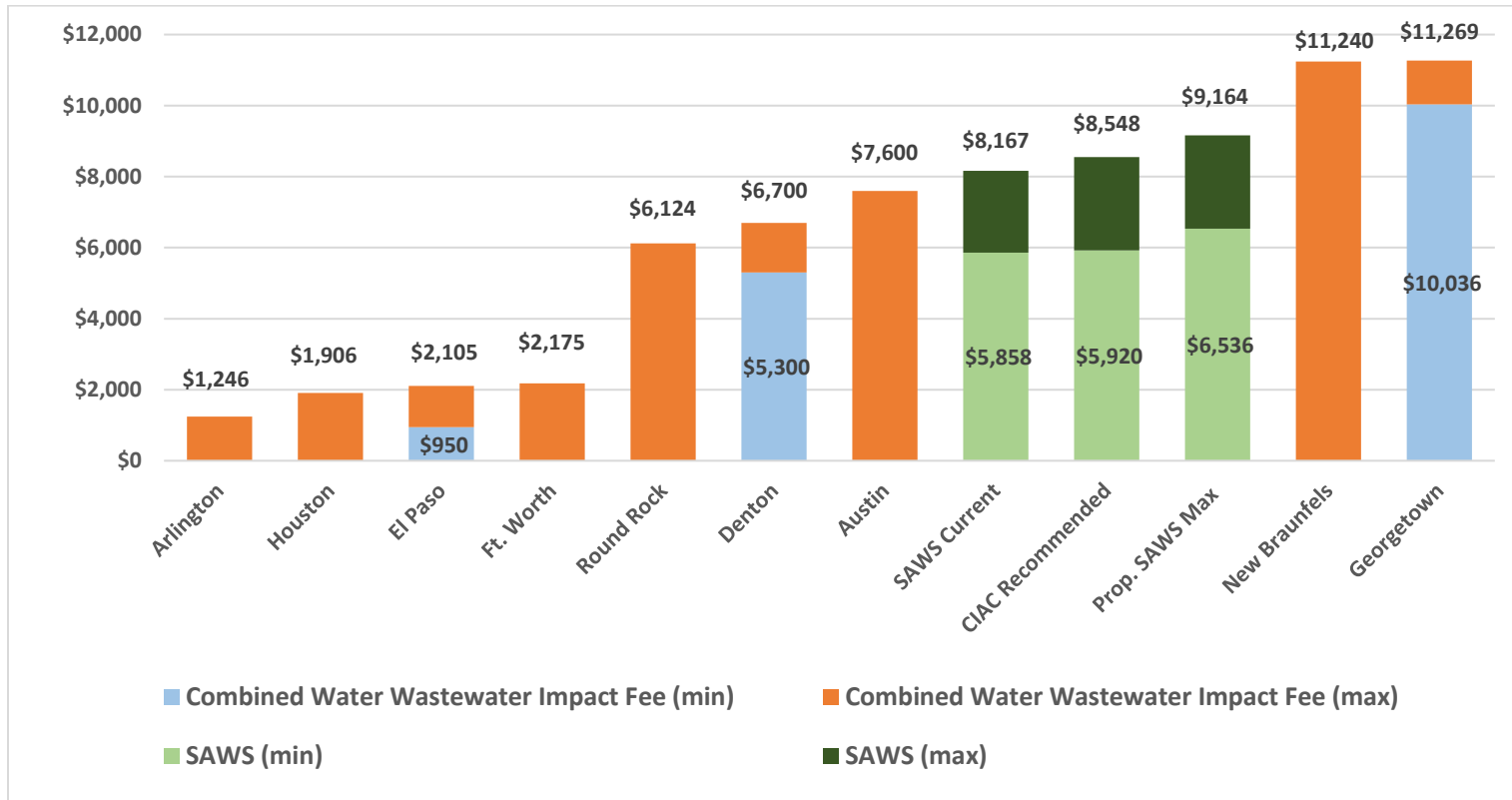
## APPENDIX B: Impact Fee Survey of Texas Cities



Comparison to other Texas utilities – wastewater

SAWS Current represent the minimum and maximum wastewater impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable wastewater impact fees are also reflected in the above chart.

## APPENDIX B: Impact Fee Survey of Texas Cities

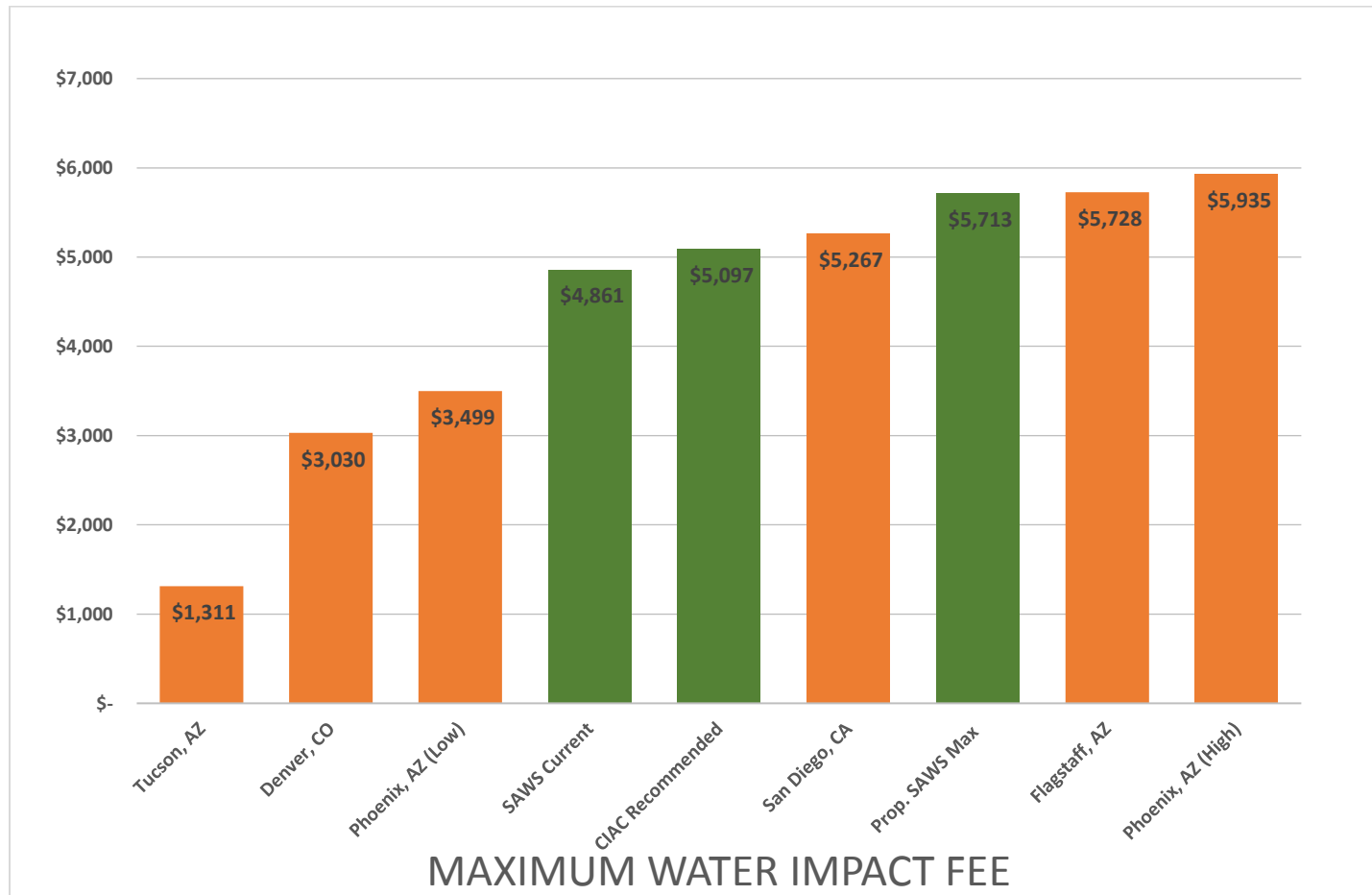


Comparison to other Texas utilities – water and wastewater combined

SAWS Current represent the minimum and maximum combined water/wastewater impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable combined water/wastewater impact fees are also reflected in the above chart.



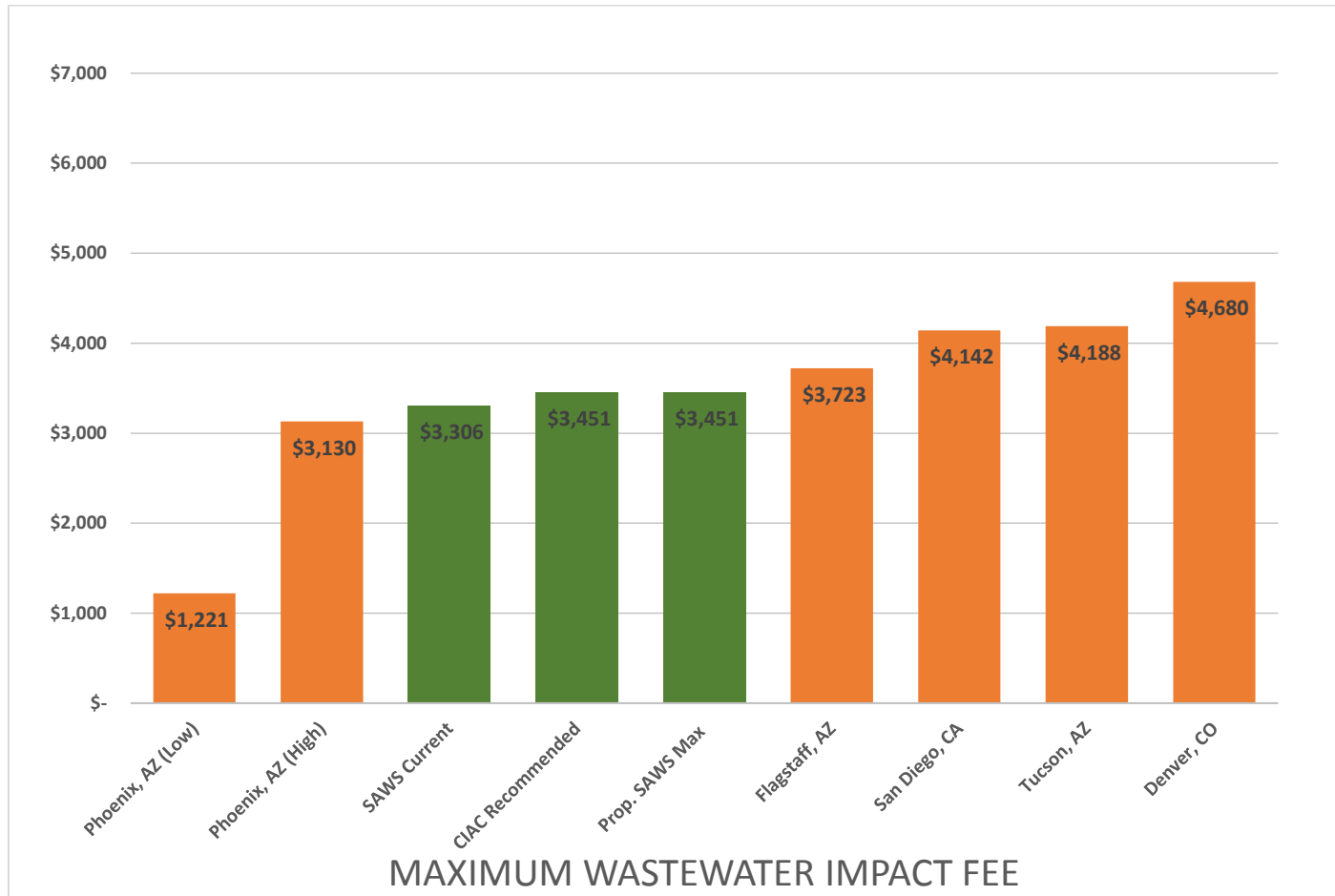
## APPENDIX B: Impact Fee Survey of U.S. Cities



Comparison to other U.S. utilities – water

SAWS Current represent the maximum water impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable water impact fees are also reflected in the above chart.

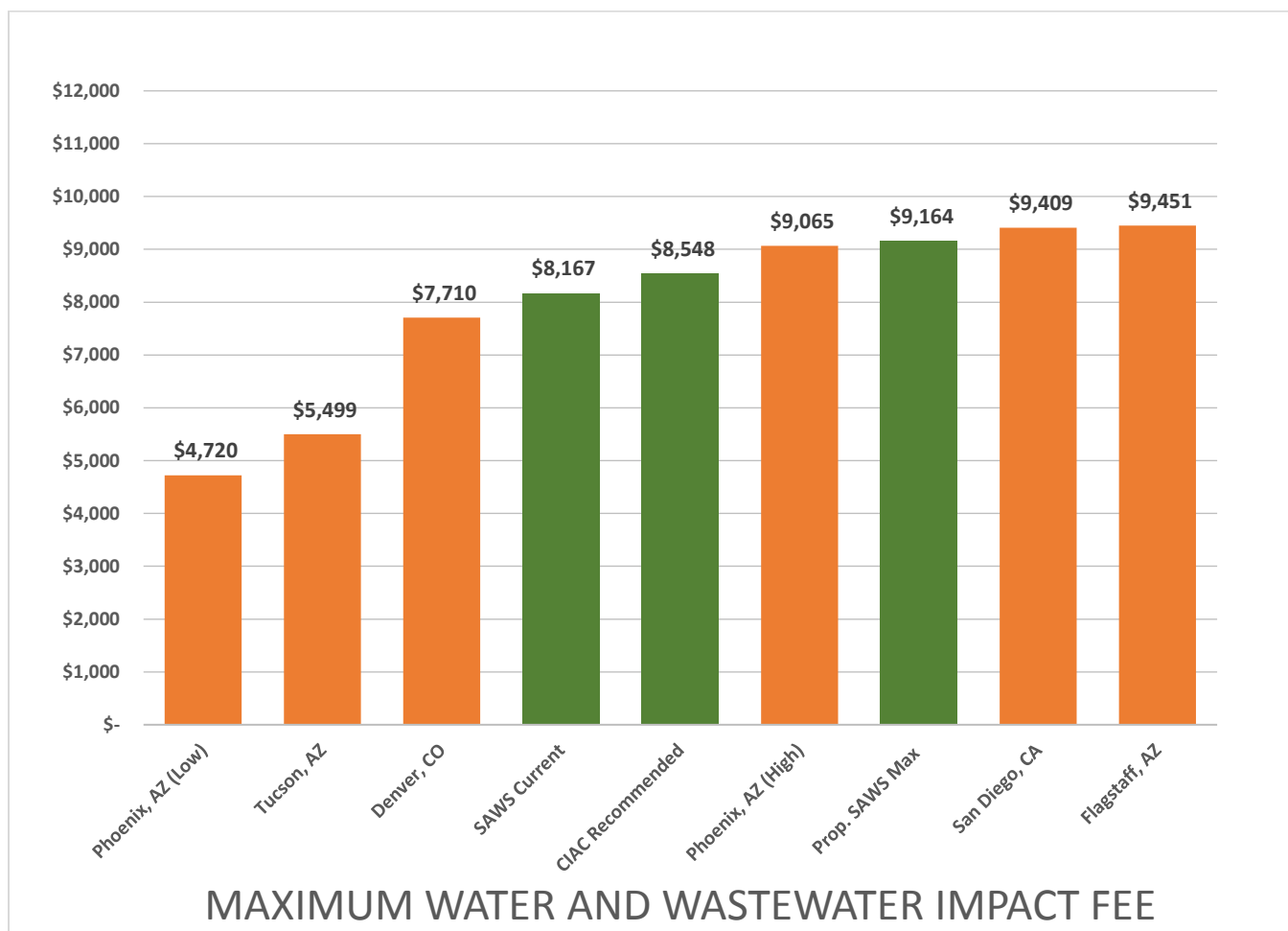
## APPENDIX B: Impact Fee Survey of U.S. Cities



Comparison to other U.S. utilities – wastewater

SAWS Current represent the maximum wastewater impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable wastewater impact fees are also reflected in the above chart.

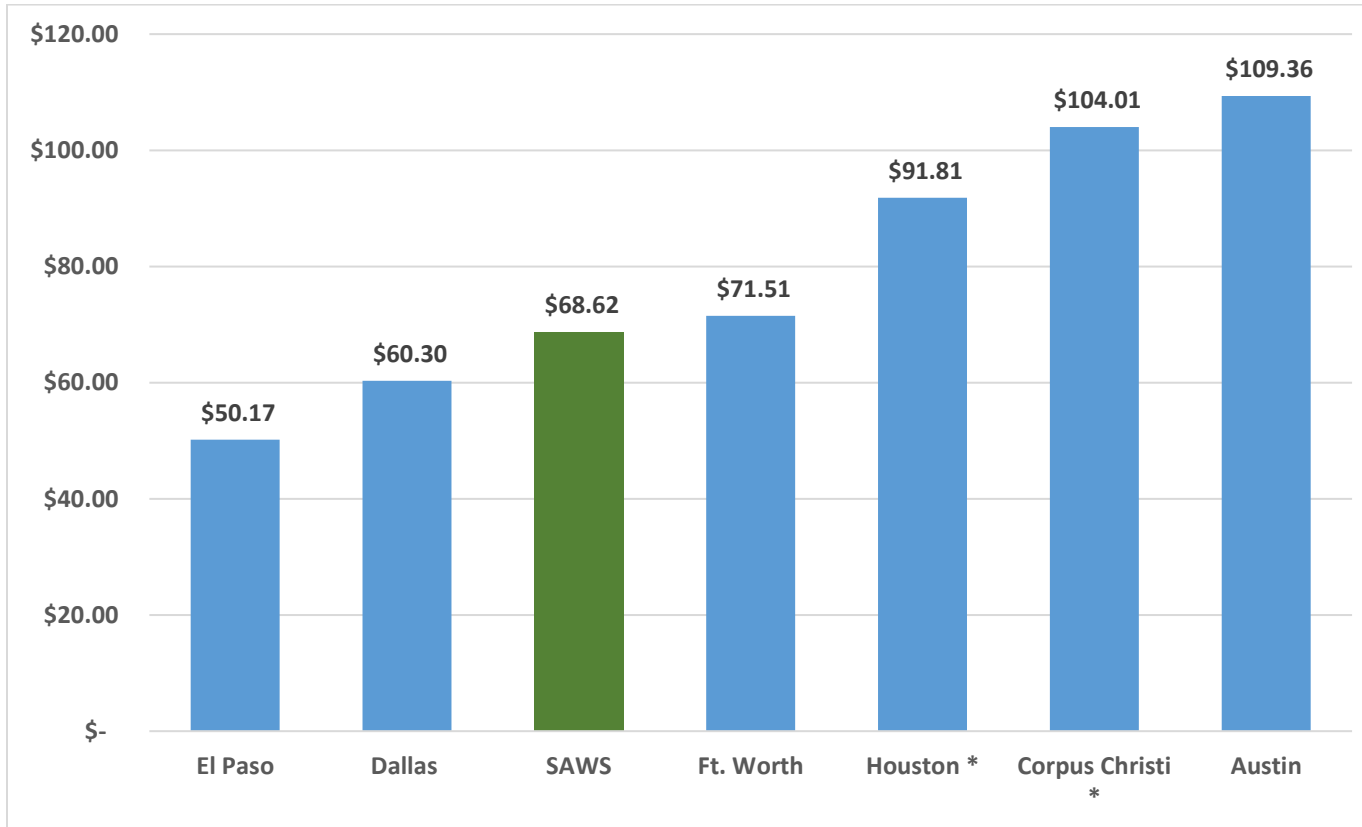
## APPENDIX B: Impact Fee Survey of U.S. Cities



Comparison to other U.S. utilities – water and wastewater combined

SAWS Current represent the maximum combined water/wastewater impact fees in effect as of February 6, 2019. Proposed SAWS Maximum Allowable combined water/wastewater impact fees are also reflected in the above chart.

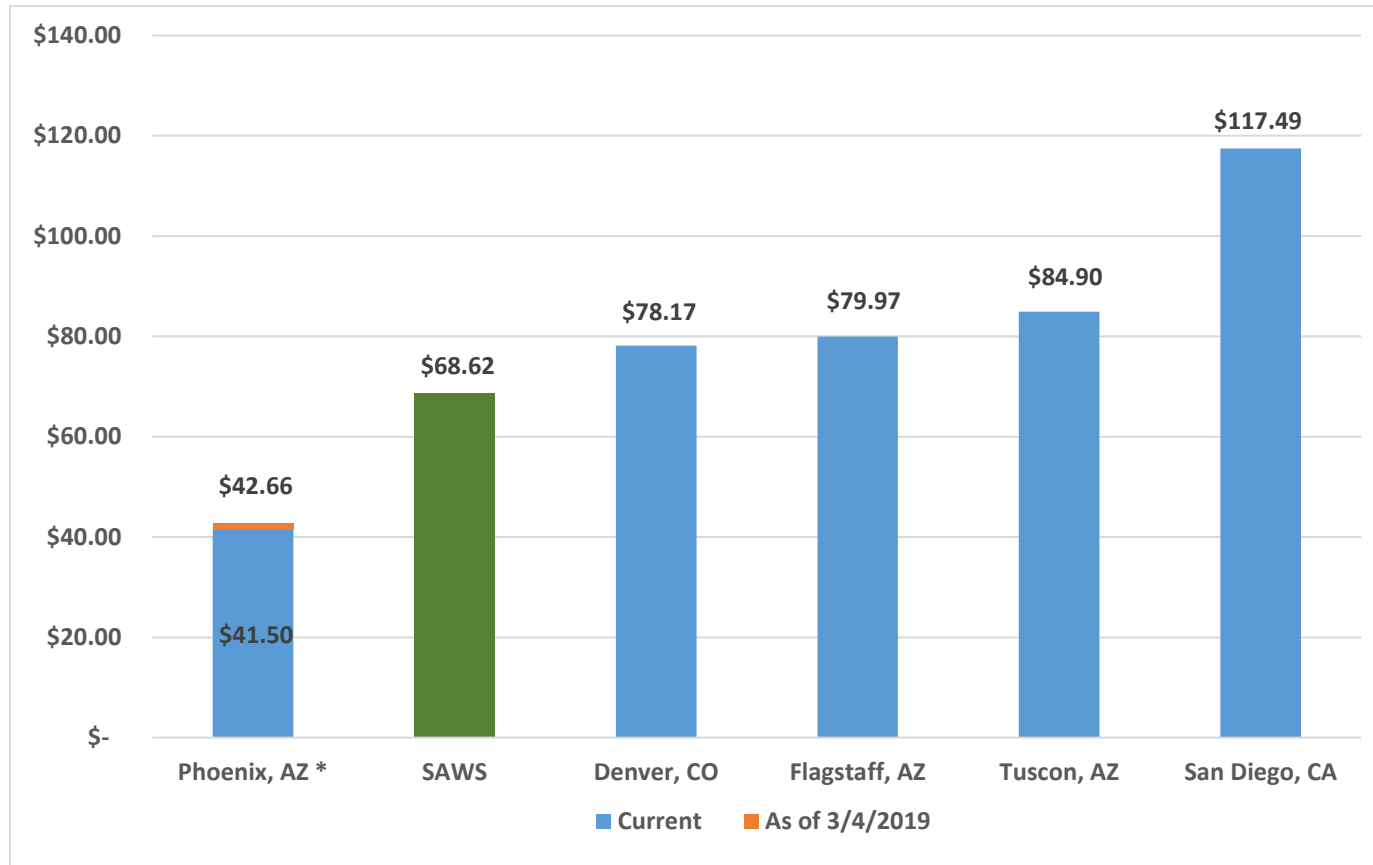
### APPENDIX C: SAWS Average Residential Bills Compared to Major Texas Cities



Monthly charges as of January 2019. Based on 7,092 gallons per month water usage and 5,668 gallons per month wastewater usage. Includes EAA and TCEQ Fees.

\* Houston and Corpus Christi wastewater charges based solely on water usage.

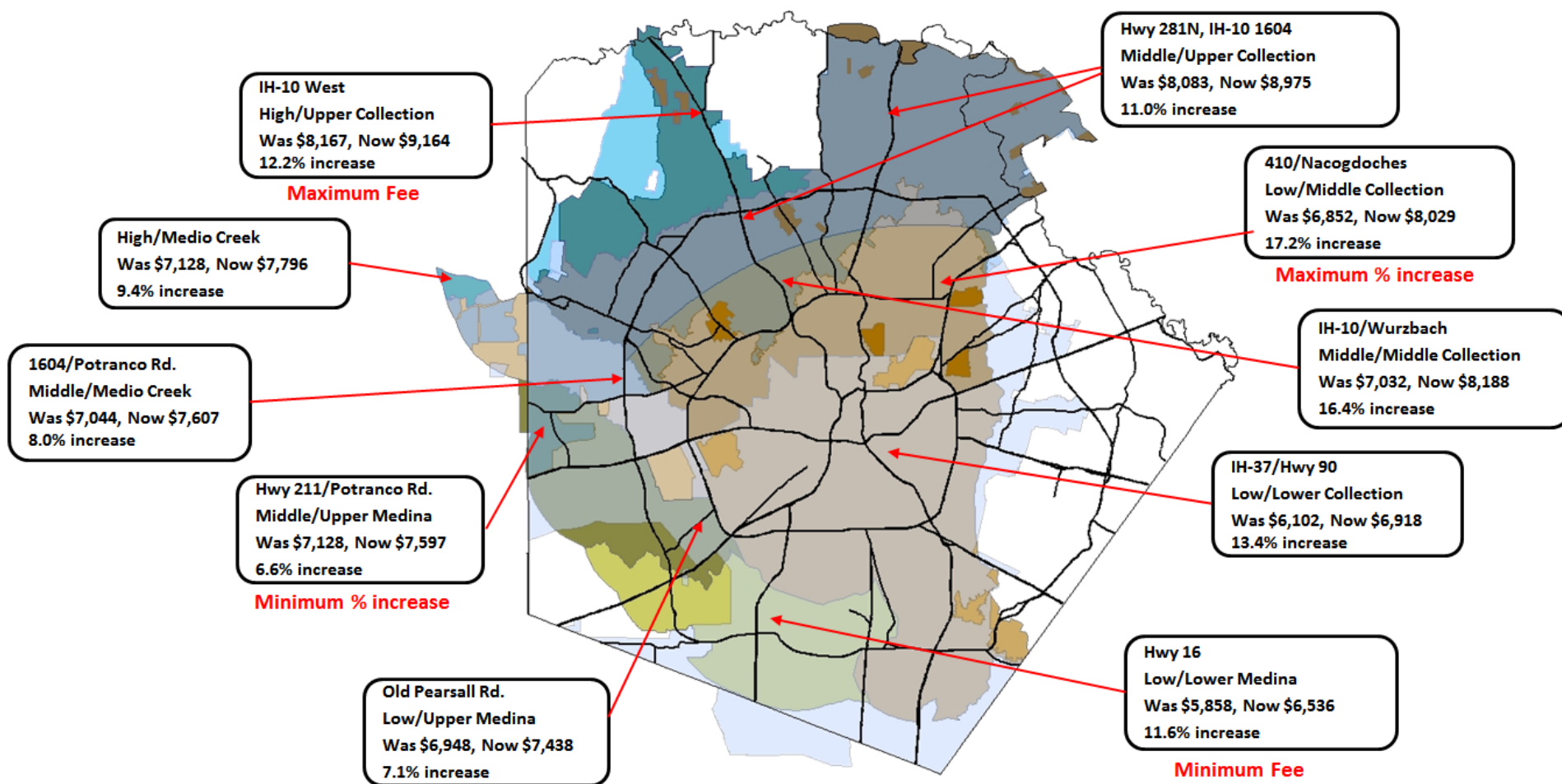
## APPENDIX C: SAWS Average Residential Bills Compared to U.S. Cities Charging Impact Fees



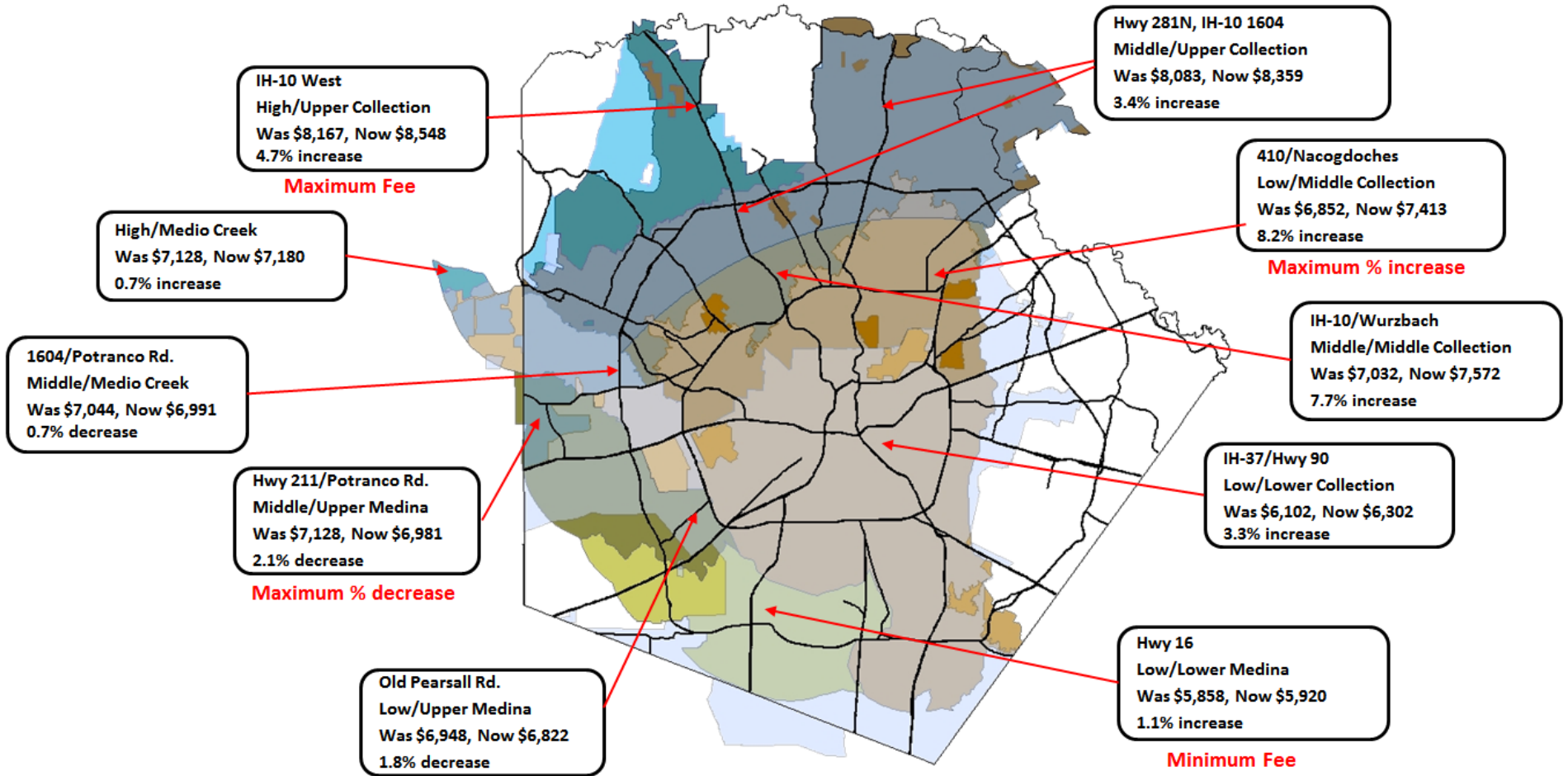
Monthly charges as of January 2019. Based on 7,092 gallons per month water usage and 5,668 gallons per month wastewater usage. Includes EAA and TCEQ Fees.

\* Phoenix applies different rates during three different times a year; charges shown are the highest and cover April, May, Oct. & November.

## APPENDIX D: Maximum Calculated Impact Fees by Impact Fee Area



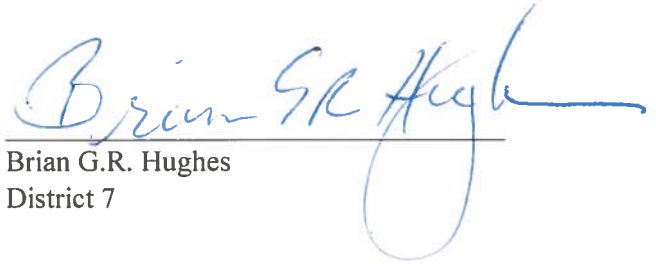
## APPENDIX D: CIAC Recommended Impact Fees by Impact Fee Area



Capital Improvements Advisory Committee



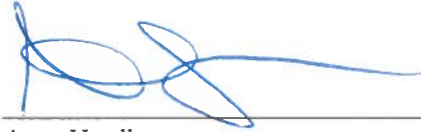
Arlene B. Fisher  
District 1



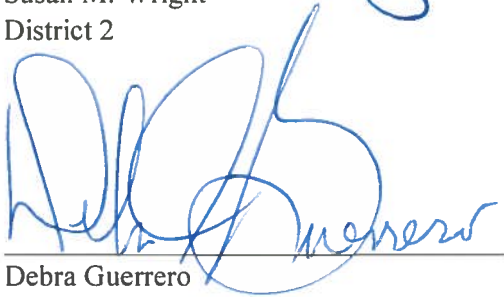
Brian G.R. Hughes  
District 7



Susan M. Wright  
District 2



Amy Hardberger  
District 8



Debra Guerrero  
District 3



Michael Moore  
District 9



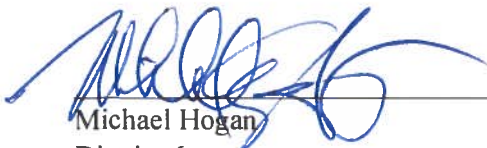
Michael W. Cude  
District 4

Daniel D. Kossl  
District 10  
Chair

Vacant  
District 5



Stephen Colley  
ETJ



Michael Hogan  
District 6



RESOLUTION NO. **19-095**

**OF THE SAN ANTONIO WATER SYSTEM BOARD OF TRUSTEES ACCEPTING THE UPDATED 2019 – 2028 LAND USE ASSUMPTIONS PLAN, THE WATER DELIVERY, WATER SUPPLY AND WASTEWATER CAPITAL IMPROVEMENTS PLANS, AND THE MAXIMUM AND PROPOSED IMPACT FEE CALCULATIONS FOR WATER DELIVERY, WATER SUPPLY, AND WASTEWATER; RECOMMENDING THAT THE CITY COUNCIL APPROVE AND ADOPT THE UPDATED 2019 – 2028 LAND USE ASSUMPTIONS PLAN, THE WATER DELIVERY, WATER SUPPLY AND WASTEWATER CAPITAL IMPROVEMENTS PLANS, AND THE MAXIMUM AND PROPOSED IMPACT FEE CALCULATIONS FOR WATER DELIVERY, WATER SUPPLY, AND WASTEWATER; FINDING THE RESOLUTION TO HAVE BEEN CONSIDERED PURSUANT TO THE LAWS GOVERNING OPEN MEETINGS; PROVIDING A SEVERABILITY CLAUSE; AND ESTABLISHING AN EFFECTIVE DATE**

**WHEREAS**, Chapter 395 of the Local Government Code of the State of Texas requires municipalities to develop a Land Use Assumptions Plan and Capital Improvements Plan as part of the impact fee development process; and

**WHEREAS**, Chapter 395 of the Local Government Code requires that impact fees must be updated every five years and the current impact fees for water delivery, water supply and wastewater were approved by the San Antonio City Council in May 2014; and

**WHEREAS**, the City Council of the City of San Antonio has established a Capital Improvements Advisory Committee and charged it with overseeing the development of a Land Use Assumptions Plan, Capital Improvements Plan and recommending maximum allowable impact fees; and

**WHEREAS**, the Capital Improvements Advisory Committee, with comments and recommendations, has accepted the proposed 2019 – 2028 Land Use Assumptions Plan, Water Delivery, Water Supply, and Wastewater Capital Improvements Plans and the Maximum Impact Fee Calculations for Water Delivery, Water Supply, and Wastewater as described in Attachment I which will be submitted to the City Council of the City of San Antonio; now therefore:

**BE IT RESOLVED BY THE SAN ANTONIO WATER SYSTEM BOARD OF TRUSTEES:**

1. That the updated report on 2019 – 2028 Land Use Assumptions Plan, the Water Delivery, Water Supply and Wastewater Capital Improvements Plans, and the Maximum and Proposed Water Delivery, Water Supply, and Wastewater Impact Fee Calculations are hereby accepted by the San Antonio Water System Board of Trustees. A draft copy of the report, in substantially final form, is available on the San Antonio Water System's website at [http://www.saws.org/business\\_center/developer/ImpactFees](http://www.saws.org/business_center/developer/ImpactFees). That draft report will be replaced by the final report upon final approval by City Council.
2. That the San Antonio Water System Board of Trustees hereby recommends that the City Council of the City of San Antonio approve and adopt the updated 2019 – 2028 Land Use Assumptions Plan, the Water Delivery, Water Supply and Wastewater Capital Improvements Plans, and the Maximum and Proposed Water Delivery, Water Supply, and Wastewater Impact Fee Calculations.
3. It is officially found, determined and declared that the meeting at which this resolution is adopted was open to the public, and that public notice of the time, place and subject matter of the public business to be conducted at such meeting, including this resolution, was given to all as required by the Texas Codes Annotated, as amended, Title 5, Chapter 551, Government Code.
4. If any part, section, paragraph, sentence, phrase or word of this resolution is for any reason held to be unconstitutional, illegal, inoperative or invalid, or if any exception to or limitation upon any general provision herein contained is held to be unconstitutional, illegal, invalid or ineffective, the remainder of this resolution shall nevertheless stand effective and valid as if it had been enacted without the portion held to be unconstitutional, illegal, invalid or ineffective.
5. This resolution becomes effective immediately upon its passage.

PASSED AND APPROVED this 2<sup>nd</sup> day of April, 2019.

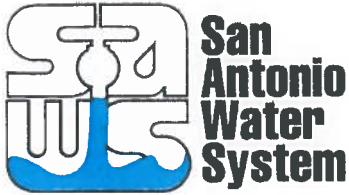


\_\_\_\_\_  
Berto Guerra, Jr., Chairman

ATTEST:



\_\_\_\_\_  
Amy Hardberger, Secretary



RECEIVED  
CITY OF SAN ANTONIO  
CITY CLERK  
19 APR 10 PM 3:42

April 10, 2019

Leticia Vacek  
City Clerk  
City of San Antonio  
P. O. Box 839966  
San Antonio, Texas 78283

Dear Ms. Vacek:

This letter is to deliver to the City of San Antonio City Council the substantially completed 2019 – 2028 Updated Impact Fee Report, which is titled “Water and Wastewater Facilities Land Use Assumptions Plan, Capital Improvements Plan, and Maximum Impact Fees Study”, as well as the Findings Report of the Capital Improvements Advisory Committee.

City Council is scheduled to consider an ordinance on April 11<sup>th</sup> that will set the public hearing for May 16<sup>th</sup> with potential consideration same day. San Antonio Water System Board of Trustees recommended approval of the 2019 – 2018 Updated Impact Fee Report on April 2<sup>nd</sup>.

The two referenced documents will be distributed to the Mayor and each Council Member on April 11, 2019

Sincerely,

A handwritten signature in blue ink that reads "Andrea L.H. Beymer".

Andrea L.H. Beymer, P.E.  
Vice President, Engineering and Construction

Attachments

AN ORDINANCE 2019-04-11-0297

**SETTING A PUBLIC HEARING FOR MAY 16, 2019, TO CONSIDER  
UPDATED LAND USE ASSUMPTIONS, CAPITAL  
IMPROVEMENTS PLAN, AND IMPACT FEES FOR THE SAN  
ANTONIO WATER SYSTEM SERVICE AREA.**

\* \* \* \* \*

**WHEREAS**, the San Antonio Water System ("SAWS") operates a combined water and wastewater utility system on behalf of the City of San Antonio, which serves approximately 502,000 water and 449,000 wastewater customer connections in the San Antonio metropolitan area; and

**WHEREAS**, Chapter 395 of the Local Government Code establishes the requirements and the process that the City of San Antonio must follow in order to assess and collect impact fees; and

**WHEREAS**, the appropriate level of impact fees is based on the Land Use Assumption Plan ("LUAP") and Capital Improvements Plan ("CIP") for the SAWS service area; and

**WHEREAS**, the purpose of the LUAP is to describe the service area subject to impact fees and establish a ten year forecast of expected changes in land uses, densities, intensities, and population in the service area; while the CIP provides an overview of the costs associated with the capital improvements and facility expansions necessary to support new development in the service area based on the land use assumptions; and

**WHEREAS**, SAWS staff have been meeting with the council appointed members of the Capital Improvements Advisory Committee ("CIAC") since June 2018 to update the LUAP, capital improvements plans for water supply, water delivery, and wastewater; and the maximum impact fee for the water delivery, water supply, and wastewater applicable to new development; and

**WHEREAS**, Chapter 395 requires impact fees to be updated every five years - the current impact fees for water delivery, water supply, and wastewater were approved by the San Antonio City Council on May 29, 2014; and

**WHEREAS**, in order to update the LUAP, CIP and impact fees applicable to the SAWS service area, a public hearing must be held to accept public comments and consider the proposed updates to the LUAP, CIP, and impact fees; **NOW THEREFORE:**

**BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF SAN ANTONIO:**

**SECTION 1.** The San Antonio City Council will hold a public hearing on May 16, 2019, in City Council Chambers to accept public comments on the proposed updates to the LUAP, CIP, and impact fees for the SAWS service area.


**SECTION 2.** SAWS is directed to provide notice by publication of the hearing as required by

RP  
04/11/2019  
Item No. 4B


Chapter 395 of the Local Government Code in the San Antonio Express News and any other publication that SAWS deems appropriate.

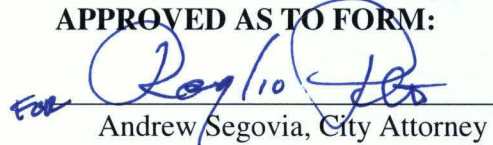
**SECTION 3.** This ordinance shall become effective immediately.

**PASSED AND APPROVED**, this 11<sup>th</sup> day of April, 2019.



**M A Y O R**  
Ron Nirenberg

**ATTEST!**  
  
Leticia M. Vacek, City Clerk

**APPROVED AS TO FORM:**  
  
Andrew Segovia, City Attorney

## PUBLIC NOTICE

### NOTICE OF PUBLIC HEARING ON AMENDMENT OF IMPACT FEES, INCLUDING UPDATES TO LAND USE ASSUMPTIONS, CAPITAL IMPROVEMENTS PLANS AND THE MAXIMUM IMPACT FEES FOR WATER SUPPLY, WATER FLOW, WATER SYSTEM DEVELOPMENT, WASTEWATER TREATMENT AND WASTEWATER COLLECTION

May 16, 2019 • 9:00 a.m.

Municipal Plaza Building City Council Chambers  
105 Main Plaza, San Antonio, Texas 78205

The purpose of the hearing is to consider the five (5) year updates to the land use assumptions, capital improvements plan, and the imposition of maximum impact fees for water supply, water flow, water system development, wastewater treatment and wastewater collection.

#### 2019-2028 IMPACT FEES

	<u>Maximum</u>	<u>Proposed</u>		<u>Maximum</u>	<u>Proposed</u>
Water Supply	\$ 3,322	\$ 2,706	Wastewater Collection		
Water Flow	\$ 1,188	\$ 1,188	Medio Creek	\$ 861	\$ 861
System Development			Upper Medina	\$ 1,422	\$ 1,422
High	\$ 1,203	\$ 1,203	Lower Medina	\$ 520	\$ 520
Middle	\$ 1,014	\$ 1,014	Upper Collection	\$ 2,800	\$ 2,800
Low	\$ 855	\$ 855	Middle Collection	\$ 2,013	\$ 2,013
Wastewater Treatment			Lower Collection	\$ 902	\$ 902
Medio Creek	\$ 1,222	\$ 1,222			
Dos Rios/Leon Creek	\$ 651	\$ 651			

Any member of the public has the right to appear at the hearing and present evidence for or against the update of the Land Use Assumptions, the Capital Improvements Plan or Maximum Impact Fees.

For information, please call the San Antonio Water System at 210-233-3286 or 210 233-3731. Copies of the reports have been filed with, and are available at, the City Clerk's Office and can be viewed on the SAWS website at [www.saws.org/business\\_center/developer/impactfees/](http://www.saws.org/business_center/developer/impactfees/).



# San Antonio Express-News

Saturday, April 13, 2019 | ExpressNews.com and mySA.com | Vol. 154, No. 195 | The voice of South Texas since 1865 | \$2.00

Morning rain: High 81, Low 46

## 3 S.A. hospitals ranked low by feds

When it comes to infections, safety of patients, they're in bottom 25%

By **Laura Garcia**  
STAFF WRITER

Three San Antonio hospitals rank among the worst-performing medical centers in the U.S. when it comes to hospital-acquired infections and patient safety.

The hospitals — Christus Santa Rosa Medical Center, Southwest General Hospital and University

Hospital — ranked in the federal government's bottom 25 percent of medical centers this year, along with 800 others nationally, in an annual survey by the Centers for Medicare and Medicaid Services (CMS).

The facilities are among the more than 50 hospitals in Texas subject to a financial penalty stemming from the rankings — a 1 per-

cent payment reduction by the federal government.

Bexar County's public hospital, which is part of the University Health System and is licensed to operate 1,034 beds, is expected to lose about \$973,000 in reimbursement for the fiscal year that ends Sept. 30, University officials confirmed.

"We take every infection seriously, and want to emphasize that financial penalties are important but not the primary motivator," they said in a written statement.

"High quality of care and patient safety are the barometer for our success."

This is the fifth year University Hospital ranked in the bottom quarter for hospital-acquired conditions, which can include sepsis, bed sores and blood clots after surgery as well as infections of MRSA, a strain of drug-resistant bacteria.

Officials say their most recent data for the past year demonstrates a "steady and significant improvement" in reducing infection rates.

The hospital changed its practices to reduce infection risks, including cutting back on the use of catheters and central lines, and a push for more hand washing among other measures.

Gina Acosta, director of business operations and marketing for Southwest General Hospital, said she couldn't comment on the penalties.

The 327-bed hospital is on the South Side and is one of 36 hospitals owned by Steward Health

**Hospitals continues on A9**

## Ag chief fuming over bid to limit authority

By **Andrea Zelinski**  
AUSTIN BUREAU

AUSTIN — Legislators again are trying to weaken Agriculture Commissioner Sid Miller's consumer protection powers, this time by taking away his authority to oversee gasoline quality.

Over Miller's objections, the Senate passed a bill 27-4 this week that would shift regulation of motor fuel quality and metering to the state Department of Licensing and Regulation.



A similar bill won committee approval in the House earlier this month and is expected to be brought to the floor in the coming weeks.

The move comes amid frustration from the Texas Food and Fuel Association, which contends that Miller's agency is ratcheting up enforcement measures and inspection fees for vendors despite a small number of valid fuel complaints.

Of 1 billion fuel transactions in Texas last fiscal year, there were just 187 transactions in which a problem was found, such as water in the gas, said Paul Hardin, president of the association representing gas stations and convenience stores.

The cost of the inspections varies depending on location, according to Hardin, ranging from \$250 in urban areas to more than \$500 in rural Texas.

Hardin has said his organization has found Miller to be vindictive. The group endorsed his opponent in the 2018 Republican primary election.

"The industry is regulated by an elected position and a lot of times the industry is used ... as political hay during the re-election process," said Hardin, who added that elected officials can be seen on television talking.

**Miller continues on A9**

## The world — or at least St. Mary's U. — is their oyster



**Jerry Misner and his wife, Christine, dance to the music at Oyster Bake as young Scarlett Obay decides to do somersaults at St. Mary's University. Although Oyster Bake usually is held the first weekend of Fiesta, it was moved up a week this year so it wouldn't conflict with Easter. Metro, A3**

## Famed cellist notes power of music

Yo-Yo Ma will play on both sides of the border today

By **Melissa Fletcher Stoeltje**  
STAFF WRITER

The power of music to bring people together and transcend boundaries has motivated the famed cellist and global humanitarian Yo-Yo Ma since he began performing nearly six decades ago.

The Bach Project is his latest endeavor to use culture and art to make a better world. Over two years, Ma is performing Johann Sebastian Bach's six suites for solo cello in 36 locations on six continents. He's already visited places as disparate as Montreal and Mumbai.

In addition to the concerts, the project features Days of Action that seek to harness music and culture to heal divisions.

"The goal is to find commonalities in the issues we all face, from border crossings of one sort or another to changing populations," he said Friday. "And Bach is my calling card, the best I have to offer."

Ma played a sold-out concert Friday night at Trinity University's



Jason Bell / Contributor

**World renowned cellist Yo-Yo Ma performed at a sold-out concert Friday in San Antonio.**

Laurie Auditorium. Today, he will bring the project to Laredo and Nuevo Laredo, Mexico, for cross-border performances and community conversations. The concerts are presented by ARTS San Antonio.

Ma, 63, the son of Chinese immigrants who moved from Paris to New York when he was a child, said the events in *los dos Laredos* get to the very heart of the Bach Project.

## Today in Laredo

Ma will perform at 9 a.m. at Tres Laredos Park in Laredo and again at 11 a.m. at Plaza Juarez in Nuevo Laredo. Both performances are free and open to the public.

The Day of Action will end with a free pachanga at Tres Laredos Park from 2 to 7 p.m., that will include a performance at 4 p.m. by Ma, the Laredo Philharmonic and mariachis. They will play "Rapsodia," a piece by Laredo composer Colin Campbell about the power of music to bring people together.

"This is about bringing understanding, what we do when we want to find out what the truth is," said Ma, who during the interview was warm, funny and humble. "That is at the basis of culture and the trust that exists between people."

As he talked of borders and the struggles associated with them, Ma steered clear of politics and policy, never mentioning President Donald Trump.

Today, Ma will give a short performance at 9 a.m. at Tres Laredos Park on the banks of the Rio

**Celist continues on A8**

## Judge shows Thrash's girlfriend the door

By **John MacCormack**  
STAFF WRITER

The monthslong legal tug of war over Charlie Thrash, 81, a wealthy San Antonio man who is mentally incapacitated, took a decisive turn Friday that left his girlfriend, Laura Martinez, on the outs.

After a three-day hearing, Probate Court Judge Oscar Kazen issued a temporary injunction against Martinez and her family members that forbids any of them from coming within 500 feet of Thrash, the longtime owner of a specialty car repair shop on West Avenue.

Kazen also ordered Martinez and her adult children to vacate Thrash's spacious home in Shawano Park by April 28 and to relinquish any of his assets they may possess. Still at issue is a \$100,000 Corvette, believed to be hidden in Junction.

In their closing arguments Friday afternoon, lawyers for court-appointed guardians Mary Werner and Tonya Barina reminded the judge of the extensive evidence of exploitation presented during the hearing.

"Laura was trying to scare Mr. Thrash that the guardians were out to get his money. The truth is, the only people out to get his money were the Martinez family," said Laura Cavareta, attorney for Barina, the guardian of Thrash's estate.

"We believe that if our requests are not granted, Mr. Thrash will continue to be intimidated and his assets drained," she added.

Philip Ross, the lawyer for Martinez, 54, and her adult children, told the judge they were the only ones who truly cared about him.

"They were doing everything they possibly could for Charlie without asking for payment in return," he said.

Earlier, while testifying, Laura Martinez became emotional on the witness stand.

**Thrash continues on A8**

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- ✓ SERVICE DEPARTMENTS OPEN WEEKENDS

\*BASED ON 2018 SALES DATA FROM NEWS FOR COMPETING DEALERS.





ORDINANCE 2019-05-16-0390

**APPROVING AMENDMENTS TO THE LAND USE ASSUMPTION PLAN,  
CAPITAL IMPROVEMENTS PLAN, AND SAN ANTONIO WATER  
SYSTEM (SAWS) IMPACT FEES BY SERVICE CATEGORY.**

\* \* \* \* \*

**WHEREAS**, the San Antonio Water System (“SAWS”) operates a combined water and wastewater utility system on behalf of the City of San Antonio, which serves approximately 502,000 water and 449,000 wastewater customers in the San Antonio metropolitan area; and

**WHEREAS**, Chapter 395 of the Local Government Code (“Chapter 395”) establishes the requirements and the process that the City of San Antonio must follow in order to assess and collect impact fees; and

**WHEREAS**, under Chapter 395 “impact fees” are defined as assessments imposed by a political subdivision against new development in order to generate revenue for funding or recouping the costs of capital improvements or facility expansions necessitated by and attributable to the new development; and

**WHEREAS**, the calculation of impact fees is based on the Land Use Assumptions Plan (“LUAP”) and Capital Improvements Plan (“CIP”) for the SAWS service area; and

**WHEREAS**, the purpose of the LUAP is to describe the service area subject to impact fees and establish a ten year forecast of expected changes in land uses, densities, intensities, and population in the service area; while the CIP provides an overview of the parts and costs of the capital improvements and facility expansions necessary to support new development in the service area based on the land use assumptions; and

**WHEREAS**, Chapter 395 requires impact fees to be updated every five years – the SAWS impact fees for several water and wastewater categories were last approved by the City Council on May 29, 2014 by Ordinance No. 2014-05-29-0363; and

**WHEREAS**, with the assistance of Carollo Engineers, a professional engineering firm, SAWS developed the updated 2019-2028 LUAP and CIP (collectively the “Plans”), and maximum impact fee calculations related to the following five service categories: (i) water supply; (ii) water flow; (iii) water system development; (iv) wastewater collection; and (v) wastewater treatment (the SAWS 2019 Impact Fee Study is attached as **Exhibit A**); and

**WHEREAS**, the formula for calculating the maximum impact fees is prescribed by Chapter 395 as Maximum Impact Fee = [(Cost of Growth ÷ EDUs) – Rate Credit], where:

- “Cost of Growth” is the CIP capital cost attributed to additional infrastructure needed to serve new development (i.e., new customers) during the ten year forecast period;
- “EDU” stands for “equivalent dwelling unit” and represents a new customer as measured by the demand of water flow needed by an average household;
- “Rate Credit” is calculated as (i) the projected rate revenue that is used to pay for impact fee eligible infrastructure or debt and attributed to the EDUs added during the ten year forecast

period and deducted from CIP capital costs, and (ii) a portion of the ad valorem tax generated by that growth which is a zero sum since SAWS does not collect or use tax revenue to fund any infrastructure or services.

**WHEREAS**, the LUAP forecasts the following demand attributed to new development for the period 2019-2028:

- Water LUAP = 141,770 EDUs
- Wastewater LUAP = 131,840 EDUs

**WHEREAS**, the CIP identifies existing and future capital improvement projects necessary to serve new development during the period 2019-2028 totaling \$1,178,517,291 and allocated as follows:

- Water Supply CIP \$ 519,048,777
- Water Delivery CIP
  - Flow \$ 182,232,572
  - System Development \$ 139,999,299
- Wastewater CIP
  - Treatment \$ 102,044,699
  - Collection \$ 235,191,944

**WHEREAS**, the following maximum impact fees per EDU for the SAWS service areas taking into account the calculated rate credit (SAWS impact fee schedule is attached as **Exhibit B**):

- Water Supply - \$ 3,322
- Water Flow - \$ 1,188
- Water System Development
  - High Elevation Service Area - \$ 1,203
  - Middle Elevation Service Area - \$ 1,014
  - Low Elevation Service Area - \$ 855
- Wastewater Treatment
  - Medio Creek Service Area - \$ 1,222
  - Leon Creek/Dos Rios Service Area - \$ 651
- Wastewater Collection
  - Medio Creek Collection Service Area - \$ 861
  - Upper Medina Collection Service Area - \$ 1,422
  - Lower Medina Collection Service Area - \$ 520
  - Leon Creek/Dos Rios Upper Collection Service Area - \$ 2,800
  - Leon Creek/Dos Rios Middle Collection Service Area - \$ 2,013
  - Leon Creek/Dos Rios Lower Collection Service Area - \$ 902

**WHEREAS**, on April 2, 2019, the SAWS Board of Trustees adopted the updated 2019-2028 LUAP, CIP, maximum impact fee calculations and proposed impact fees for all five impact fee categories, and by resolution forwarded the Plans and recommendations to the City Council in order for the City Council to proceed with notice of public hearing, receive public comment, and consider the Plans, maximum impact fees and proposed impact fees in accordance with Chapter 395 – the SAWS Board Resolution is attached as **Exhibit C**; and

**WHEREAS**, pursuant to Chapter 395, the Capital Improvements Advisory Committee (“CIAC”) whose members are appointed by the City Council, reviewed and evaluated the Plans and maximum

impact fee calculations produced by SAWS and issued its own recommendations which have been filed with the City Clerk's Office and are consistent with SAWS proposed impact fees and were incorporated into the report adopted by the SAWS Board on April 2, 2019 (see **Exhibit D**); and

**WHEREAS**, the CIAC approved of the SAWS updated 2019-2028 LUAP and CIP, and maximum impact fee calculation for water supply, water flow, water system development, wastewater treatment, and wastewater collection, but objected to charging the maximum calculated water supply impact fee (the CIAC recommended impact fee schedule is attached as **Exhibit B**) and made the following recommendations:

- Assess a prorated Supply Impact Fee of \$2,706 per EDU to account for the maximum calculated Supply Impact Fee of \$3,322 and the expected future calculated Supply Impact Fee of \$2,637 when the Vista Ridge Project will be accepted by the System and become a component of the existing infrastructure calculation. Acceptance of the Vista Ridge Project is expected in 2020.

**WHEREAS**, the process for updating the LUAP, CIP, and maximum impact fees outlined in Chapter 395 has been followed as outlined below:

- April 2, 2019 – the SAWS Board passed a resolution accepting and recommending that the City Council approve the updated LUAP, CIP, and maximum impact fees and implement the proposed impact fees (see **Exhibit C**);
- April 10, 2019 – the City Clerk received the SAWS 2019 *Water and Wastewater Facilities Land Use Assumptions Plan, Capital Improvements Plan, and Maximum Impact Fees Study* and the Findings Report of the CIAC which has been publicly available at the City Clerk's Office and on the SAWS website at [www.saws.org/CIAC](http://www.saws.org/CIAC) since that date;
- April 11, 2019 – SAWS briefed the City Council in "A" Session on the updates to the LUAP, CIP, and maximum and recommended impact fees (attached as **Exhibit E**);
- April 11, 2019 – the City Council passed an ordinance setting a public hearing on the updates and amended impact fees for May 16, 2019 (attached as **Exhibit F**);
- April 13, 2019 – notice of the public hearing was published in the San Antonio Express News (attached as **Exhibit G**);
- May 16, 2019 – the City Council held a public hearing where it received public comments and the recommendations from SAWS and CIAC on the proposed updates to the LUAP, CIP, and maximum impact fees.

**WHEREAS**, within 30 days following the public hearing, the City Council must approve or disapprove the proposed updates to the LUAP and CIP, and modification of the impact fees by service category; and

**WHEREAS**, on May 16, 2019 the City Council convened to consider adoption of the amendments to the LUAP, CIP, and maximum impact fees; and heard public comments and the recommendations from SAWS, the Supervisor of Public Utilities and the CIAC; **NOW THEREFORE:**

**BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF SAN ANTONIO:**

**SECTION 1.** The SAWS 2019 *Water and Wastewater Facilities Land Use Assumptions Plan, Capital Improvements Plan, and Maximum Impact Fees Report* is hereby adopted as attached in **Exhibit A** and is incorporated into this Ordinance for all purposes.

**SECTION 2.** The updates and amendments to the 2019-2028 LUAP are hereby authorized and approved.

**SECTION 3.** The updates and amendments to the 2019-2028 CIP are hereby authorized and approved.

**SECTION 4.** The maximum legal calculation for the water supply, water flow, water system development, wastewater treatment, and wastewater collection impact fees related to the updated and amended 2019-2028 LUAP and CIP are hereby authorized and approved.

**SECTION 5.** The recommended impact fees by SAWS and CIAC will be effective June 1, 2019. The water supply impact fee will be set at \$2,706 per EDU. All other water and wastewater impact fees will be set at the maximum calculated fee per EDU. The revised schedule of impact fees approved by this Ordinance is summarized below:

**Table I – Approved SAWS Impact Fees (Effective on June 1, 2019)**

	Impact Fee (\$/EDU)			
	Current	2019	\$ Change	% Change
<b>Water Supply</b>	\$ 2,796	\$ 2,706	\$ (90)	-3.2%
<b>Water Flow</b>	\$ 1,182	\$ 1,188	\$ 6	0.5%
<b>Water System Development</b>				
High Elevation	\$ 883	\$ 1,203	\$ 320	36.2%
Middle Elevation	\$ 799	\$ 1,014	\$ 215	26.9%
Low Elevation	\$ 619	\$ 855	\$ 236	38.1%
<b>Wastewater Treatment</b>				
Medio Creek	\$ 1,429	\$ 1,222	\$ (207)	-14.5%
Leon Creek/Dos Rios	\$ 786	\$ 651	\$ (135)	-17.2%
<b>Wastewater Collection</b>				
Medio Creek	\$ 838	\$ 861	\$ 23	2.7%
Upper Medina	\$ 1,565	\$ 1,422	\$ (143)	-9.1%
Lower Medina	\$ 475	\$ 520	\$ 45	9.5%
Upper Collection	\$ 2,520	\$ 2,800	\$ 280	11.1%
Middle Collection	\$ 1,469	\$ 2,013	\$ 544	37.0%
Lower Collection	\$ 719	\$ 902	\$ 183	25.5%

**SECTION 6.** All funds collected through the adoption of the updated and amended impact fees shall be deposited in interest-bearing accounts clearly identifying the category of capital improvements or facility expansions within the service area for which the fee was adopted. If impact fees are pledged as security for the payment of debt service on a bond, note or other obligation issued to finance a capital improvement or public facility expansion, the City of San Antonio certifies that none of the

RP  
05/16/2019  
Item No. 5

impact fees will be used or expended for an improvement or expansion not generally identified in the plan.

**SECTION 7.** The recitals set out above and all exhibits attached hereto are fully incorporated into this Ordinance.

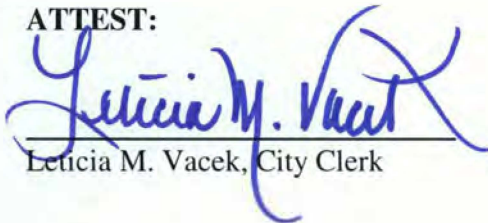
**SECTION 8.** This Ordinance shall become effective immediately upon the passage by eight (8) votes of the City Council and if passed upon fewer than eight (8) votes after the tenth (10<sup>th</sup>) day after passage.

**PASSED AND APPROVED** this 16<sup>th</sup> of JUNE 2019.



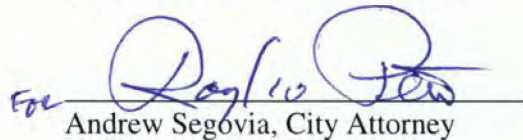
**M A Y O R**  
**Ron Nirenberg**

**ATTEST:**



Leticia M. Vacek, City Clerk

**APPROVED AS TO FORM:**



For Andrew Segovia, City Attorney

<b>Agenda Item:</b>	<b>5</b>						
<b>Date:</b>	05/16/2019						
<b>Time:</b>	01:37:16 PM						
<b>Vote Type:</b>	Motion to Approve						
<b>Description:</b>	Public Hearing and Consideration of an Ordinance approving amendment of Impact Fees, including updates to Land Use Assumption Plan, Capital Improvements Plans, and the maximum Impact Fees for the San Antonio Water System Service Area. [Ben Gorzell, Chief Financial Officer; Troy Elliot, Deputy Chief Financial Officer, Finance]						
<b>Result:</b>	Passed						
<b>Voter</b>	<b>Group</b>	<b>Not Present</b>	<b>Yea</b>	<b>Nay</b>	<b>Abstain</b>	<b>Motion</b>	<b>Second</b>
Ron Nirenberg	Mayor		x				
Roberto C. Treviño	District 1		x				x
Art A. Hall	District 2		x				
Rebecca Viagran	District 3		x				
Rey Saldaña	District 4	x					
Shirley Gonzales	District 5		x				
Greg Brockhouse	District 6			x			
Ana E. Sandoval	District 7		x				
Manny Pelaez	District 8		x			x	
John Courage	District 9			x			
Clayton H. Perry	District 10			x			