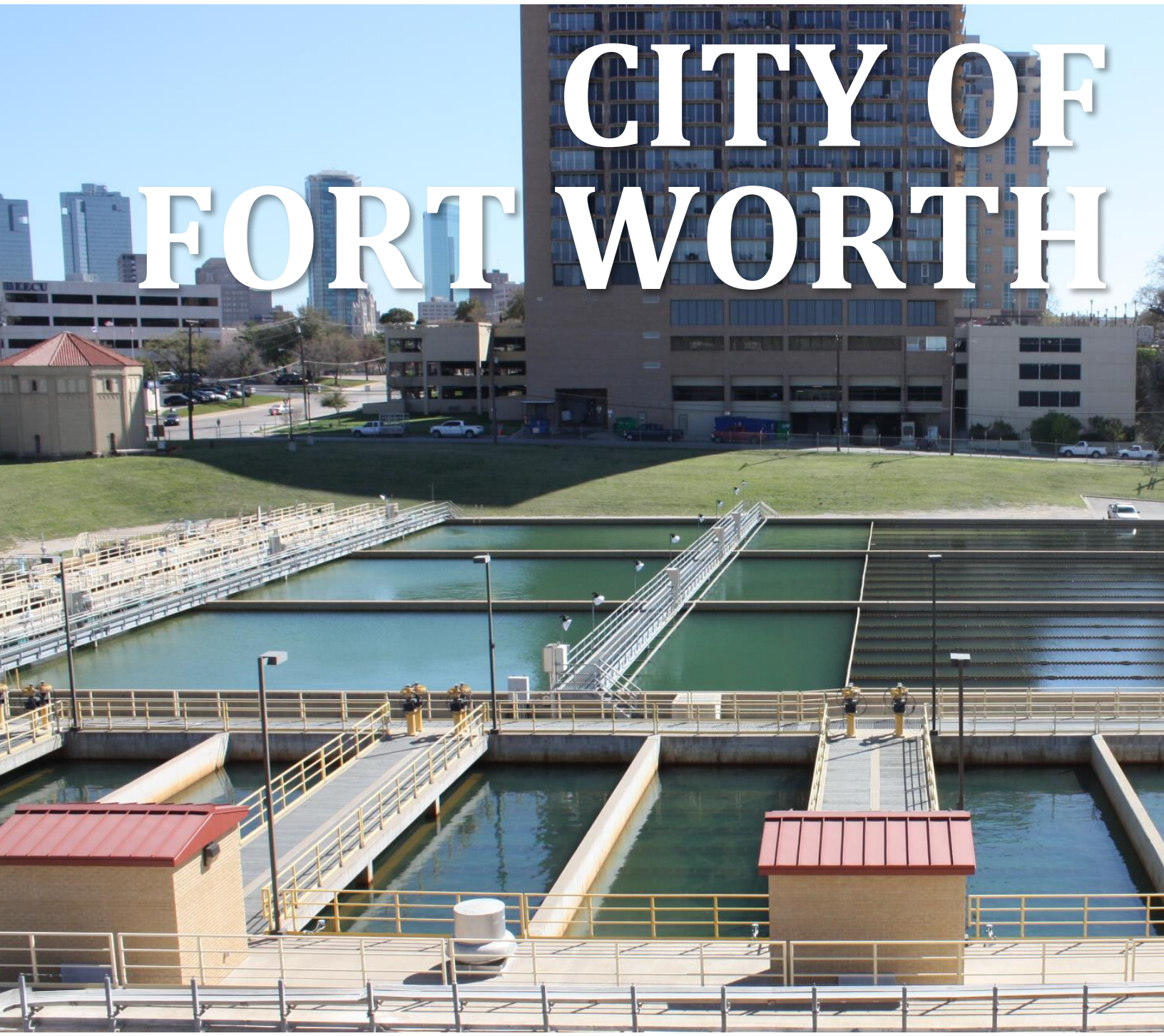

CITY OF FORT WORTH

WATER/WASTEWATER IMPACT FEE UPDATE

EXHIBIT D: CAPITAL IMPROVEMENT PLAN - WATER (2022 – 2041)

PREPARED BY:
FREESE AND NICHOLS, INC.
801 CHERRY STREET, SUITE 2800
FORT WORTH, TEXAS 76102
817-735-7300

FREESE AND NICHOLS

FORT WORTH®

Innovative approaches
Practical results
Outstanding service

WATER & WASTEWATER IMPACT FEE UPDATE

EXHIBIT D: CAPITAL IMPROVEMENT PLAN -WATER (2022 – 2041)

Prepared for:

Fort Worth Water

July 22, 2021

Prepared by:

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WATER & WASTEWATER IMPACT FEE UPDATE

Prepared for:

Fort Worth Water

7/22/2021

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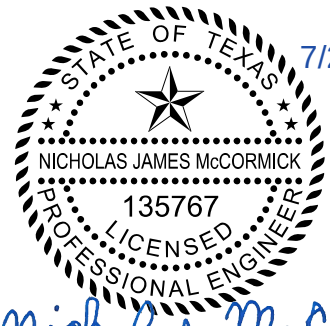

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FTW20118

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APPENDICES

1.0 INTRODUCTION

In accordance with Texas Local Government Code (TLGC), Chapter 395, the City of Fort Worth commissioned Freese and Nichols, Inc., to conduct a Water and Wastewater Impact Fee Study. This report establishes the engineering basis for the fee schedule, updating the previous study completed in 2017.

Impact fees provide the City of Fort Worth a mechanism for recouping the cost associated with expanding the municipal water system to accommodate growth in the service area. The City of Fort Worth owns and operates a system comprised of treatment facilities, pumping stations, storage facilities, and pipelines that are continuously improved and expanded. The schedule for future investment in the water system is known as the Capital Improvement Plan (CIP). The CIP was updated as a part of this study with capital projects and costs provided by previously commissioned master planning documents and input from Fort Worth Water staff.

The report describes the basis for establishing which City of Fort Worth water facilities are eligible to be included in the impact fee analysis. The additional facilities required to accommodate growth during the study period are summarized.

2.0 EXISTING WATER DISTRIBUTION SYSTEM

2.1 RAW WATER SOURCES AND TRANSMISSION

The City obtains the majority of its raw water supply from the Tarrant Regional Water District (TRWD), with the balance supplied by the City's permitted capacity at Lake Worth, the Corps of Engineers (COE) permitted capacity at Lake Benbrook, and several small reuse projects. The City's supply from TRWD is per a long term contract, with no contractual limits on the water withdrawn from the Richland-Chambers and Cedar Creek Reservoirs, subject to the TRWD permit limits. The current water supplies for the City are as follows in **Table 2-1**.

Table 2-1 Water Supply Allocated to Fort Worth

Source	Water Right Holder	Permitted or Contracted Amount (MGD)
West Fork	TRWD	142.37
Lake Worth (Fort Worth Permit)	Fort Worth	11.85*
Lake Benbrook (COE Contract)	Fort Worth	0.65
Richland-Chambers Reservoir	TRWD	182.87
Cedar Creek Reservoir	TRWD	153.88

*Fort Worth has allowed this water right to be used as part of TRWD's West Fork System.

Through a series of pump stations, the TRWD has implemented improvements to allow water from the Richland-Chambers and Cedar Creek Reservoirs to flow to Lake Benbrook. The blended water can then be pumped to the Rolling Hills Water Treatment Plant (RHWTP), North Holly Water Treatment Plant (NHWTP)/South Holly Water Treatment Plant (SHWTP), or Westside Water Treatment Plant (WSWTP). TRWD implemented improvements to tie Lake Benbrook to Eagle Mountain Lake, where Fort Worth operates the Eagle Mountain Water Treatment Plant (EMWTP). The existing raw water supply facilities are shown in **Table 2-2**.

Table 2-2 Raw Water Supply Facilities

Facility	Operated By	Capacity (MGD)
Eagle Mountain Lake	TRWD	66
Eagle Mountain Pump Station and Pipeline	TRWD	105*
Lake Worth Intake and Pipeline	Fort Worth	127
Clear Fork Pump Station	Fort Worth	90*
Cedar Creek System	TRWD	136*
Richland-Chambers System	TRWD	118*

*Indicates firm capacity with the largest pump out of service

2.2 WATER TREATMENT PLANTS, PUMP STATIONS AND STORAGE

The City's distribution system consists of eleven pressure planes. The pressure planes include the Holly, Eastside II (ES II), Northside II (NS II), Northside III (NS III), Northside IV (NS IV), Southside II (SS II), Southside III (SS III), Southside IV (SS IV), Westside II (WS II), Westside III (WS III), Westside IV (WS IV) and Westside V (WS V) Pressure Planes. Some pressure planes, such as Holly and ES II, are supplied principally by pump stations at the water treatment plants.

The City currently operates five water treatment plants, summarized in **Table 2-3**. These plants take raw water from the TRWD reservoirs and treat it, which is then pumped into the distribution system through the high service pump stations at each treatment plant.

Table 2-3 Water Treatment Plant Facilities

Water Treatment Plant	Treatment Capacity (MGD)
North Holly Plant	80
South Holly Plant	80
Rolling Hills Plant	200
Eagle Mountain Plant	108
Westside Plant	15

In order to provide adequate pressure to each of the City's eleven pressure planes, the City operates a series of 7 high service pump stations (at the Water Treatment Plants) and twenty-two distribution system pump stations for a total of twenty-nine pumping facilities. A summary of the existing system pumping capacities of each high service pump station as well as the in-system pump stations can be found in **Appendix A**. These pump stations are used to fill the twenty-nine ground and elevated storage tanks located throughout the City. A summary of the existing system storage capacities of the ground and elevated storage tanks can be found in **Appendix B**.

3.0 PROJECTED WATER DEMANDS

Water demand design criteria were developed for the City of Fort Worth in the *2017 Water Master Plan Update*. Based on historical usage, specific residential and non-residential per capita were developed for each pressure plane. FNI applied the water demand design criteria to Fort Worth population and employment projections to develop projected water demands, excluding wholesale customers, resulting in a City 2022 average day demand of 185.97 MGD, and a City 2031 average day demand of 231.80 MGD. An average day to maximum day peaking factor was also developed for each pressure plane, resulting in a City 2022 maximum day demand of 354.31 MGD and a City 2031 maximum day demand of 444.06 MGD.

The wholesale customer demand was provided by the wholesale customers as part of the wholesale customer surveys. The 2022 average day demand for wholesale customers is 73.64 MGD, and the 2031 average day demand for the wholesale customers is 84.41 MGD. The 2022 maximum day demand for wholesale customers is 163.36 MGD, and the 2031 maximum day demand for the wholesale customers is 183.08 MGD.

The total 2022 average day demand for Fort Worth and its wholesale customers is 259.61 MGD (2022 maximum day demand of 517.67). The total 2031 average day demand for Fort Worth and its wholesale customers is 316.21 MGD (2031 maximum day demand of 627.14). The *2017 Water Master Plan Update* recommended a maximum day to peak hour peaking factor of 1.5, resulting in a total 2022 peak hour demand for Fort Worth and its wholesale customers of 776.51 MGD, and a total 2031 peak hour demand for Fort Worth and its wholesale customers of 940.71 MGD. **Table 3-1** summarizes the projected water demands for Fort Worth and its wholesale customers.

Table 3-1 Projected Water Demands

Entity	Planning Year	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Peak Hour Demand (MGD)
City of Fort Worth	2022	185.97	354.31	531.47
	2031	231.80	444.06	666.09
Wholesale Customers (Portion Served by Fort Worth)	2022	73.64	163.36	245.04
	2031	84.41	183.08	274.62
Total Demand	**2022**	**259.61**	**517.67**	**776.51**
	2031	**316.21**	**627.14**	**940.71**

4.0 WATER CAPITAL IMPROVEMENTS

This section establishes the water facilities and engineering studies that are eligible for inclusion in the calculation of the impact fee. Projects included in the CIP are designated to increase system capacity as a result of projected growth. Only those projects warranted by capacity needs derived from growth occurring during the study period (2022-2031) can be included in the impact fee calculation. Additionally, projects are excluded from the impact fee calculation if alternate mechanisms for cost recovery are in place.

Projects included in the impact fee study are TRWD supply projects, City of Fort Worth raw water supply and transmission facilities, water treatment facilities, regional transmission lines, pump stations, storage facilities, and engineering studies.

Table 4-1 provides a summary of each water CIP project cost and allocation for the 2022-2031 study period. The 2022 percent utilization is the portion of a project's capacity required to serve existing development. It is not included in the impact fee cost calculations. The 2022-2031 percent utilization is the portion of the project's capacity that will be required to serve development projected to occur from 2022 to 2031. The portion of a project's total cost that is used to serve development projected to occur from 2022 through 2031 is calculated as the total cost multiplied by the 2022-2031 percent utilization. Only this portion of the cost is used in the impact fee analysis. The percent utilization beyond 2031 is the portion of a project's capacity allocated to development projected to occur after 2031.

Figures D-1 and **D-2** show existing and proposed facilities, respectively, for the impact fee study period. **Appendix C** describes each water CIP project for the 2022-2031 planning period. A project description, the purpose of each project, and the portion of each project that is allocated to associated growth are included.

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Table 4-1 Water Capital Improvement Projects 2022 - 2031

Project ID	Project Title	Project Phase	Initial Project Cost	Project Cost in 2020 Dollars[1]	Start Date	Completion Date	Added Capacity	% Allocated to Existing 2022 Capacity	Cost Allocated to Existing 2022 Capacity	% Allocated to 2022-2031 Impact Fees	Cost Allocated to 2022-2031 Impact Fees (2020 Dollars)	Inflation Adjusted Impact Fee Costs[1] ('Start Date' Dollars)	% Allocated to Impact Fees after 2031	Cost Allocated to Impact Fees after 2031
TARRANT REGIONAL WATER DISTRICT (TRWD) PROJECTS														
-	Richland-Chambers Wetlands	Const	$61,000,000	$61,000,000	1999	2013	89.6 MGD	68%	$41,480,000	32%	$19,520,000	$19,520,000	0%	$0
-	Eagle Mountain Connection Raw Water Line & Pump Station	Const	$138,867,058	$138,867,058	2006	2008	47 MGD	46%	$63,878,847	11%	$15,275,376	$15,275,376	43%	$59,712,835
-	Integrated Pipeline & Pump Stations	Const	$1,076,947,000	$1,076,947,000	2009	2022	160 MGD	0%	$0	37%	$398,470,390	$398,470,390	63%	$678,476,610
				$1,276,814,058						**TRWD PROJECTS ELIGIBLE COST**	**$433,265,766**	**$433,265,766**		
RAW WATER SUPPLY AND TREATMENT PLANTS														
W3-5B (2005 MP)	Westside WTP - Phase I (0-12 MGD)	Eng	$4,992,954	$4,992,954	2009	2009	-	34%	$1,711,870	26%	$1,283,902	$1,283,902	40%	$1,997,182
W3-5B (2005 MP)	Westside WTP - Phase I (0-12 MGD)	Const	$46,847,759	$46,847,759	2009	2012	12 MGD	34%	$16,062,089	26%	$12,046,567	$12,046,567	40%	$18,739,104
N2-5A (2005 MP)	Eagle Mountain Clearwell #3	Eng & Const	$2,968,644	$2,968,644	2011	2014	2.5 MG	53%	$1,582,287	47%	$1,386,357	$1,386,357	0%	$0
W3-8 (2017 MP)[2]	Westside WTP Expansion 12 MGD to 15 MGD - Membrane Rack	Const	$500,000	$500,000	2016	2017	3 MGD	74%	$371,500	26%	$128,500	$128,500	0%	$0
W3-8 (2017 MP)[2]	Westside WTP Expansion 15 MGD to 18 MGD - Membrane Rack	Const	$1,200,000	$1,200,000	2020	2021	3 MGD	22%	$267,600	78%	$932,400	$932,400	0%	$0
W3-8 (2017 MP)[2]	Westside WTP Expansion 18 MGD to 21 MGD - Membrane Rack	Eng & Const	$2,000,000	$2,000,000	2023	2024	3 MGD	0%	$0	94%	$1,880,000	$2,054,327	6%	$120,000
N2-7 (2017 MP)[2]	Eagle Mountain WTP Expansion from 110 MGD to 140 MGD	Eng	$6,000,000	$6,000,000	2024	2025	-	0%	$0	42%	$2,546,000	$2,865,545	58%	$3,454,000
N2-7 (2017 MP)[2]	Eagle Mountain WTP Expansion from 110 MGD to 140 MGD	CM	$3,500,000	$3,500,000	2026	2027	-	0%	$0	42%	$1,485,167	$1,773,367	58%	$2,014,833
N2-7 (2017 MP)[2]	Eagle Mountain WTP Expansion from 110 MGD to 140 MGD	Const	$50,000,000	$50,000,000	2026	2027	30 MGD	0%	$0	42%	$21,216,667	$25,333,810	58%	$28,783,333
N2-20B (2005 MP)	Expand Second Eagle Mountain Raw Water PS from 35 MGD to 70 MGD	Eng	$480,000	$529,336	2026	2027	-	0%	$0	42%	$223,909	$267,359	58%	$305,427
N2-20B (2005 MP)	Expand Second Eagle Mountain Raw Water PS from 35 MGD to 70 MGD	Const	$4,800,000	$5,293,360	2027	2029	35 MGD	0%	$0	42%	$2,239,091	$2,753,800	58%	$3,054,269
				$123,832,053						**RAW WATER SUPPLY AND WATER TREATMENT PLANT ELIGIBLE COST**	**$45,368,560**	**$50,825,934**		
PUMP STATIONS AND REGIONAL TRANSMISSION LINES														
S2-3 (2005 MP)	McCart Pump Station Expansion to 35 MGD Total Capacity	Eng & Const	$563,375	$563,375	2013	2013	10 MGD	85%	$480,417	15%	$82,958	$82,958	0%	$0
W5-1 (2005 MP)	3.0 MGD Westside V Pump Station at Walsh Ranch Tank	Eng	$173,000	$173,000	2015	2016	-	56%	$96,303	44%	$76,697	$76,697	0%	$0
W5-1 (2005 MP)	3.0 MGD Westside V Pump Station at Walsh Ranch Tank	Const	$1,729,685	$1,729,685	2016	2017	3 MGD	56%	$962,858	44%	$766,827	$766,827	0%	$0
N2-1 (2005 MP)	Northside II 48-Inch Transmission Line	Eng & Const	$38,334,816	$38,334,816	2016	2020	48 MGD	10%	$3,680,142	39%	$15,103,918	$15,103,918	51%	$19,550,756
N2-1 (2017 MP)	Expansion of the Northside Pump Station to 70 MGD Total Capacity	Eng & Const	$1,294,391	$1,396,051	2022	2024	12 MGD	0%	$0	100%	$1,396,051	$1,481,071	0%	$0
W4-5 (2005 MP)[3]	8.0 MGD Southside IV Pump Station	Eng	$120,000	$416,508	2021	2021	-	0%	$0	55%	$226,997	$233,807	46%	$189,511
W4-5 (2005 MP)[3]	8.0 MGD Southside IV Pump Station	Const	$1,200,000	$3,832,000	2023	2024	8 MGD	0%	$0	55%	$2,088,440	$2,282,095	46%	$1,743,560
W4-4 (2017 MP)	5.0 MGD Westside IV Pump Station	Eng	$252,000	$271,792	2021	2023	-	0%	$0	26%	$70,188	$72,294	74%	$201,604
W4-4 (2017 MP)	5.0 MGD Westside IV Pump Station	Const	$2,100,000	$2,264,931	2023	2025	5 MGD	0%	$0	26%	$584,900	$639,136	74%	$1,680,031
W5-8 (2017 MP)	5.0 MGD Westside V Pump Station	Eng	$252,000	$271,792	2021	2023	-	0%	$0	47%	$128,761	$132,624	53%	$143,030
W5-8 (2017 MP)	5.0 MGD Westside V Pump Station	Const	$2,100,000	$2,264,931	2023	2025	5 MGD	0%	$0	47%	$1,073,011	$1,172,508	53%	$1,191,920
S3-7 (2017 MP)	McCart Pump Station Expansion to 45 MGD Total Capacity	Eng	$432,000	$465,929	2027	2029	-	0%	$0	33%	$152,359	$187,382	67%	$313,570
S3-7 (2017 MP)	McCart Pump Station Expansion to 45 MGD Total Capacity	Const	$3,600,000	$3,882,739	2027	2029	10 MGD	0%	$0	33%	$1,269,656	$1,561,517	67%	$2,613,083
S3-11 (2017 MP)	Alta Mesa Pump Station Expansion to 49.4 MGD Total Capacity	Eng	$432,000	$465,929	2027	2029	-	0%	$0	33%	$152,359	$187,382	67%	$313,570
S3-11 (2017 MP)	Alta Mesa Pump Station Expansion to 49.4 MGD Total Capacity	Const	$3,600,000	$3,882,739	2027	2029	10 MGD	0%	$0	33%	$1,269,656	$1,561,517	67%	$2,613,083
				$60,216,216						**REGIONAL TRANSMISSION LINES AND PUMP STATIONS ELIGIBLE COST**	**$24,442,778**	**$25,541,733**		
STORAGE TANKS														
N2-7/N3-5 (2005 MP)*	Sendera Ranch Ground Storage Tank & Pump Station	Eng & Const	$4,284,791	$4,284,791	2006	2008	5 MG	78%	$3,342,137	22%	$942,654	$942,654	0%	$0
N4-2 (2005 MP)	1.0 MG Northside IV Elevated Storage Tank on Hwy. 287	Eng	$672,115	$672,115	2014	2015	-	19%	$127,702	81%	$544,413	$544,413	0%	$0
N4-2 (2005 MP)	1.0 MG Northside IV Elevated Storage Tank on Hwy. 287 & Land Purchase	Const & Land	$4,068,060	$4,068,060	2014	2015	1 MG	19%	$772,931	81%	$3,295,129	$3,295,129	0%	$0
N2-10 (2005 MP)	5.0 MG Northside II Ground Storage Tank at the Caylor Tank Site	Eng	$601,729	$601,729	2014	2015	-	40%	$239,122	50%	$300,865	$300,865	10%	$61,743
N2-10 (2005 MP)	5.0 MG Northside II Ground Storage Tank at the Caylor Tank Site	Const	$4,879,440	$4,879,440	2015	2016	5 MG	40%	$1,939,047	50%	$2,439,720	$2,439,720	10%	$500,673
W5-2 (2017 MP)[2]	1.0 MG Westside V Elevated Storage Tank on Beggs Ranch	Eng	$575,000	$575,000	2016	2019	-	5%	$28,750	14%	$80,500	$80,500	81%	$465,750
W5-2 (2017 MP)[2]	1.0 MG Westside V Elevated Storage Tank on Beggs Ranch	Const	$3,000,000	$3,000,000	2019	2020	1 MG	5%	$150,000	14%	$420,000	$420,000	81%	$2,430,000
W4-5 (2005 MP)[3]	0.03 MG Southside IV Hydropneumatic Tank	Eng	$103,910	$103,910	2021	2022	-	0%	$0	100%	$103,910	$107,027	0%	$0
W4-5 (2005 MP)[3]	0.03 MG Southside IV Hydropneumatic Tank	Const	$956,000	$956,000	2021	2022	0.03 MG	0%	$0	100%	$956,000	$984,680	0%	$0
W3-3 (2017 MP)[3]	2.5 MG Westside III Ground Storage Tank South of IH-20	Eng	$180,000	$450,000	2021	2023	-	0%	$0	59%	$264,600	$272,538	41%	$185,400
W3-3 (2017 MP)[3]	2.5 MG Westside III Ground Storage Tank South of IH-20	Const	$1,680,000	$3,000,000	2023	2025	2.5 MG	0%	$0	59%	$1,764,000	$1,927,570	41%	$1,236,000
W4-10 (2005 MP)[3]	1.0 MG Westside IV Elevated Storage Tank	Eng	$234,000	$540,000	2022	2023	-	0%	$0	43%	$232,200	$246,341	57%	$307,800
W4-10 (2005 MP)[3]	1.0 MG Westside IV Elevated Storage Tank	Const	$2,340,000	$3,600,000	2023	2024	1 MG	0%	$0	43%	$1,548,000	$1,691,541	57%	$2,052,000
N3-7 (2017 MP)[3]	2.0 MG Northside III Elevated Storage Tank	Eng	$432,000	$1,080,000	2024	2024	-	0%	$0	100%	$1,080,000	$1,215,550	0%	$0
N3-7 (2017 MP)[3]	2.0 MG Northside III Elevated Storage Tank	Const	$4,032,000	$7,200,000	2025	2026	2 MG	0%	$0	100%	$7,200,000	$8,346,773	0%	$0
S3-10 (2017 MP)[3]	1.0 MG Southside III Elevated Storage Tank off Crowley Plover Road	Eng	$315,700	$540,000	2025	2027	-	0%	$0	70%	$378,000	$438,206	30%	$162,000
S3-10 (2017 MP)[3]	1.0 MG Southside III Elevated Storage Tank off Crowley Plover Road	Const	$2,630,400	$3,600,000	2025	2027	1 MG	0%	$0	70%	$2,520,000	$2,921,371	30%	$1,080,000
S3-7 (2017 MP)[3]	5.0 MG Southside II Ground Storage Tank at the McCart Pump Station	Eng	$900,000	$900,000	2027	2029	-	0%	$0	23%	$209,700	$257,905	77%	$690,300
S3-7 (2017 MP)[3]	5.0 MG Southside II Ground Storage Tank at the McCart Pump Station	Const	$6,000,000	$6,000,000	2027	2029	5 MG	0%	$0	23%	$1,398,000	$1,719,364	77%	$4,602,000
N4-5 (2017 MP)[3]	1.0 MG Northside IV Elevated Storage Tank	Eng	$288,000	$540,000	2027	2029	-	0%	$0	8%	$43,200	$53,131	92%	$496,800
N4-5 (2017 MP)[3]	1.0 MG Northside IV Elevated Storage Tank	Const	$2,688,000	$3,600,000	2027	2029	1 MG	0%	$0	8%	$288,000	$354,204	92%	$3,312,000
W5-5 (2017 MP)[3]	0.5 MG Westside V Elevated Storage Tank	Eng	$216,000	$270,000	2027	2029	-	0%	$0	14%	$37,800	$46,489	86%	$232,200
W5-5 (2017 MP)[3]	0.5 MG Westside V Elevated Storage Tank	Const	$1,800,000	$1,800,000	2027	2029	0.5 MG	0%	$0	14%	$252,000	$309,928	86%	$1,548,000
				$52,261,045						**STORAGE TANKS ELIGIBLE COST**	**$26,298,691**	**$28,915,899**		
ENGINEERING STUDIES														
-	2005 Water Master Plan (2005-2025)	Study	$1,360,386	$1,360,386	2003	2005	-	85%	$1,156,328	15%	$204,058	$204,058	0%	$0
-	2017 Water Master Plan (2013-2033)	Study	$768,168	$768,168	2013	2016	-	45%	$345,676	50%	$384,084	$384,084	5%	$38,408
-	Impact Fee Study (2022-2031)	Study	$150,000	$150,000	2019	2021	-	0%	$0	100%	$150,000	$150,000	0%	$0
				$2,278,554						**ENGINEERING STUDIES ELIGIBLE COST**	**$738,142**	**$738,142**		
				$1,515,401,926						**WATER CIP ELIGIBLE COST**	**$530,113,937**	**$539,287,474**		

[1]ENR factor of 7.9% used to inflate projected cost from 2017 WMP to 2020 dollars and an inflation rate of 3%/year was assumed on proposed projects only.

[2]Revised project costs for 2020 provided by City Staff.

[3]Revised project costs due to deviations from 2017 WMP CIP.

*City of Fort Worth cost participation.

Information Sources:

- 2005 Water System Master Plan, Freese & Nichols
- 2017 Water System Master Plan, Freese & Nichols
- 5-year CIP Budget 2021 - 2025, City of Fort Worth
- Semiannual CIP Progress Report, City of Fort Worth
- City of Fort Worth staff
- Tarrant Regional Water District staff

Created By Freese and Nichols, Inc.
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Location: H:\W_WW_PLANNING\01_DELIVERABLES\00_FINAL_REPORT\Exhibit D Water CIP\(Figure_D1)-Existing_Water_Facilities(11x17).mxd
Updated: Thursday, June 10, 2021
User: 02499

FIGURE D-1

CITY OF FORT WORTH

EXISTING WATER SYSTEM FACILITIES

LEGEND

- Pump Station
- Ground Storage Tank
- Elevated Storage Tank
- Water Treatment Plant
- Road
- Lake
- Impact Fee Water Service Area
- Fort Worth City Limit
- Fort Worth ETJ Boundary
- Water Wholesale Customer
- Non-Wholesale Customer
- County Boundary

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Wise County
Denton County
Tarrant County
Parker County
Johnson County
Ellis County
Eagle Mountain Lake
Lake Worth
Benbrook Lake
Joe Pool Lake
Pantego

Sendera Ranch GST and PS
Willow Springs EST
Crumb EST
Caylor Road GSTs
Lago Vista PS
Bradley EST
North Beach GST and PS
Lake Country EST
Eagle Mountain WTP
Cantrell-Sansom PS
Jenkins Heights PS
New Northside GST and PS and Northwest EST
Old Northside PS
Fleetwood GST and PS
Westside V EST
Westland GST and PS
Westside WTP
Stagecoach GST and PS
Walsh Ranch GST, Standpipe, and PS
Westside PS
North Holly WTP
South Holly WTP
Calmont EST
Como GSTs and PS
Edwards Ranch PS
Eastside PS
Randol Mill GST and PS
Meadowbrook EST
Eastwood EST
Timberline EST
Southside GST and PS
Seminary Hill EST
Russom Ranch PS
Rolling Hills WTP
Alta Mesa GST and PS
Armstrong Ranch EST
McCart GST and PS
Sun Country EST

0 18,000
SCALE IN FEET

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Updated: Tuesday, July 20, 2021
User: 02499

Additional Impact Fee Eligible TRWD Projects

- Integrated Pipeline & Pump Stations
- Richland-Chambers Wetlands

ENGINEERING STUDIES

2005 Water Master Plan 2005-2025

2017 Water Master Plan 2013-2033

Impact Fee Study 2022-2031

FIGURE D-2
CITY OF FORT WORTH
2022 WATER IMPACT FEE STUDY
PROPOSED IMPROVEMENTS

LEGEND

- Proposed Pump Station
- Proposed Ground StorageTank
- Proposed Elevated StorageTank
- Proposed Hydropneumatic Tank
- Impact Fee Water Service Area
- Existing Pump Station
- Existing Ground Storage Tank
- Existing Elevated Storage Tank
- Existing Water Treatment Plant
- Existing Water Line
- TRWD Pump Station
- TRWD Raw Water Line
- Road
- Lake
- Fort Worth City Limit
- Fort Worth ETJ Boundary
- Water Wholesale Customer
- Non-Wholesale Customer
- County Boundary

FORT WORTH®

FREESE AND NICHOLS

Proposed NS-III - 2.0 MG EST
N3-7 (2017 MP)

Proposed NS-IV - 1.0 MG EST
N4-5 (2017 MP)

Sendera Ranch GST & PS
N2-7 (2005 MP), N3-5 (2005 MP)

Caylor GST
NS-II - 5.0 MG GST
N2-10 (2005 MP)

NS-IV - 1.0 MG EST
N4-2 (2005 MP)

NS-II 48-Inch Transmission Line
N2-1 (2005 MP)

Eagle Mountain WTP
Proposed Improvements
N2-5A (2005 MP), N2-7 (2017 MP)

Eagle Mountain RWPS
Proposed Improvements
N2-20B (2005 MP)

Northside PS
Proposed Improvements
N2-1 (2017 MP)

WS-V - 1.0 MG EST
W5-2 (2017 MP)

Westside WTP
Proposed Improvements
W3-5B (2005 MP), W3-8 (2017 MP)

Walsh Ranch WS-V PS
W5-1 (2005 MP)

Proposed WS-IV/WS-V PS
W4-4 (2017 MP), W5-8 (2017 MP)

Proposed WS-III 2.5 MG GST
W3-3 (2017 MP)

Proposed WS-V 0.5 MG EST
W5-5 (2017 MP)

Eagle Mountain Connection
Raw Water Line & Pump Station

Proposed WS-IV 1.0 MG EST
W4-10 (2005 MP)

Alta Mesa PS
Proposed Improvements
S3-11 (2017 MP)

Proposed SS-IV PS
W4-5 (2005 MP)

Proposed SS-IV 0.03 MG HP Tank
W4-5 (2005 MP)

McCart GST and PS
Proposed Improvements
S2-3 (2005 MP), S3-7 (2017 MP)

Proposed SS-III 1.0 MG EST
S3-10 (2017 MP)

0 18,000
SCALE IN FEET

5.0 IMPACT FEE ANALYSIS

Table 5-1 summarizes the impact fee eligible costs for projects from **Table 4-1**. The calculated cumulative interest includes the following assumptions:

- Existing impact fee eligible CIP
  - Based on the actual interest for the already outstanding debt for the full term of the bond issuance.
- Future impact fee eligible CIP
  - Based on the projects start date.
  - Utilizing a bond issuance cost of 2.0%.
  - Utilizing an interest rate of 4.0%.
  - Utilizing a Fort Worth bond term of 30 years.

A more detailed explanation of the cumulative interest is included in the impact fee credit analysis, which can be found in **Appendix D**.

Table 5-1 2022-2031 Impact Fee Eligible Costs

CIP Category	Total Growth Related Cost	% Allocated to 2022-2031 Impact Fees	2022-2031 Growth Related Cost
TRWD Projects	$1,276,814,058	34%	$433,265,766
Raw Water Supply/Treatment Plants	$123,832,053	41%	$50,825,934
Transmission Lines/Pump Stations	$60,216,216	42%	$25,541,733
Storage Tanks	$52,261,045	55%	$28,915,899
Engineering Studies	$2,278,554	32%	$738,142
ELIGIBLE IMPACT FEE CIP SUBTOTAL (INFLATION ADJUSTED)			**$539,287,474**
Cumulative Interest - Fort Worth			$34,790,933
Cumulative Interest - TRWD			$103,185,997
TOTAL IMPACT FEE ELIGIBLE COST			**$677,264,404**

5.1 SERVICE UNITS

Costs between various customer types and sizes are allocated through the application of equivalent meters. Since the 5/8" x 3/4" water meter is the most frequently used meter by the residential customer, a factor has been calculated to relate the capacities of other meter sizes to the 5/8" x 3/4" meter capacity. **Table 5-2** presents the factors developed using capacity information from the American Water Works Association (AWWA) M6 Manual Standard C700, Cold-Water Meters – Displacement Type and AWWA Standard C701, Cold-Water Meters – Turbine Types I and II for Customer Service.

Table 5-2 AWWA Meter Equivalency Factors

Meter Size	5/8" x 3/4" Equivalency Factor
5/8" x 3/4"	1.00
3/4"	1.50
1"	2.50
1-1/2"	5.00
2"	8.00
3"	21.75
4"	37.50
6"	80.00
8"	140.00
10"	210.00

Appendix E contains the current number of water meters for residential and non-residential customers by meter size for the City of Fort Worth, as well as for the wholesale customers who provided this information to FNI. The number of equivalent meters was also calculated for the City and wholesale customers.

The next calculation step determines factors for population per residential meter and employment per non-residential meter. **Table 5-3** summarizes this calculation for the City of Fort Worth and wholesale customers using 2020 information.

Table 5-3 Development of Factors of 2020 Population and Employment by Equivalent Meter

Description	Residential	Non-Residential
City of Fort Worth		
Number of Equivalent Meters	332,846	127,592
Population / Employment	873,130	589,052
Population per Equivalent Meter	2.62	--
Employment per Equivalent Meter	--	4.62
Wholesale Customers		
Number of Equivalent Meters	170,512	61,725
Population / Employment	406,953	230,335
Population per Equivalent Meter	2.39	--
Employment per Equivalent Meter	--	3.73

FNI did not receive meter count information from two of Fort Worth's wholesale water customers; however, their meter counts were estimated based on growth since the previous impact fee study. The

number of equivalent meters used to calculate the wholesale customers' population/employment per equivalent meter in **Table 5-3** is the total number of equivalent meters served by Fort Worth for all its wholesale customers. In order to more accurately estimate the population/employment per equivalent meter, FNI divided the number of equivalent meters by the sum of population or employment served by Fort Worth.

The projected increase in equivalent meters between 2022 and 2031 uses the ratios in **Table 5-3** and the population and employment projections for 2022 and 2031 in *Exhibit A- Water Land Use Assumptions Report*. The calculation is shown below:

City of Fort Worth Increase in Equivalent Meters

Residential = Population Change / Population per Equivalent Meter
= (1,133,678 – 911,970) / 2.62
= 84,621 Service Units

Non- Residential = Employment Change / Employment per Equivalent Meter
= (704,041 – 615,009) / 4.62
= 19,271 Service Units

Fort Worth Total = Residential + Non-Residential
= 84,621 + 19,271
= 103,892 Service Units

Wholesale Customers Increase in Equivalent Meters

Residential = Population Change / Population per Equivalent Meter
= (489,325 – 423,632) / 2.39
= 27,487 Service Units

Non- Residential = Employment Change / Employment per Equivalent Meter
= (255,528 – 235,555) / 3.73
= 5,355 Service Units

Wholesale Total = Residential + Non-Residential
= 27,487 + 5,355
= 32,842 Service Units

Grand Total = Fort Worth Total + Wholesale Total
= 103,892 + 32,842
= 136,734 Service Units

5.2 MAXIMUM ALLOWABLE IMPACT FEE CALCULATION

Impact fees are the quotient of the total cost of eligible CIP for the study period from **Table 5-1** divided by the increase in equivalent meters from **Section 5.1**. This fee equals the water impact fee per service unit for a 5/8" x 3/4" water meter size.

Water Impact Fee per Service Unit = Max Infrastructure Cost / Increase in Equivalent Meters
= $677,264,404 / 136,734
= $4,953 per 5/8" x 3/4" equivalent meter

The maximum allowable impact fee that can be collected is calculated by subtracting a credit from the impact fee eligible cost. A detailed impact fee credit analysis is included in **Appendix D**. A summary of the maximum allowable water impact fee including the credit analysis is shown in **Table 5-4**.

Table 5-4 Water Impact Fee with Credit Analysis

Credit Analysis Methodology	
Preliminary Maximum Calculated Infrastructure Cost	$677,264,404
Minus the CREDIT	($12,618,067)
Max Allowable Calculated Infrastructure Cost	$664,646,337
Service Units	136,734
Max Allowable Impact Fee per Service Unit	**$4,860**

The water impact fees for meters other than 5/8" x 3/4" are the product of the fee per 5/8" x 3/4" equivalent meter multiplied by the respective equivalent meter factor from **Table 5-2**. The maximum allowable water impact fees are provided in **Table 5-5**.

Table 5-5 Water Impact Fees by Meter Size

Meter Size	5/8" x 3/4" Equivalency Factor	Calculated Impact Fee per Service Unit (Before Subtracting Credit)	Maximum Allowable Impact Fee (After Subtracting Credit)
5/8" x 3/4"	1.00	$4,953	$4,860
3/4"	1.50	$7,430	$7,290
1"	2.50	$12,383	$12,150
1-1/2"	5.00	$24,765	$24,300
2"	8.00	$39,624	$38,880
3"	21.75	$107,728	$105,705
4"	37.50	$185,738	$182,250
6"	80.00	$396,240	$388,800
8"	140.00	$693,420	$680,400
10"	210.00	$1,040,130	$1,020,600

Appendix A
Existing Water Pumping Facilities

APPENDIX A
Existing Water Pumping Capacities

North Holly Plant:

Four 27.0 MGD and two 15.0 MGD electrically driven centrifugal units. Total pumping capacity of 138.0 MGD. The total measured capacity of the pump station is 90.0 MGD due to piping restrictions.

South Holly Plant:

Four 30.0 MGD and one 15.0 MGD electrically driven centrifugal units. Total pumping capacity of 135.0 MGD.

Rolling Hills Plant:

HSPS #1:

Seven 30.0 MGD, one 22.0 MGD, one 17.0 MGD, and one 10.0 MGD electrically driven centrifugal units. Total pumping capacity of 259.0 MGD.

HSPS #2:

Two vertical turbines 30.0 MGD and two 20.0 MGD vertical turbines. Total pumping capacity of 100.0 MGD.

Eagle Mountain Plant:

HSPS #1:

Four 21.7 MGD, two 15.0 MGD, three 3.6 MGD, and two 8.6 MGD. Total pumping capacity of 144.8

HSPS #2:

Three 22.0 MGD and two 3.0 MGD. Total pumping capacity of 72.0 MGD.

Westside Plant:

Two 9.8 MGD and two 6.3 MGD vertical turbines. Total Pumping Capacity of 32.2 MGD.

Southside II Pressure Plane:

Edwards Ranch Station:

Two 16.0 MGD and one 10.0 MGD electrically driven centrifugal units, as well as one 5.0 MGD emergency generator pump. Total pumping capacity of 47.0 MGD.

South Side Reservoir Station:

Two 5.7 MGD electrically driven centrifugal units. Total pumping capacity of 11.4 MGD.

Southside III Pressure Plane:

Russom Ranch Station:

One 6.0 MGD and one 5.0 MGD electrically driven centrifugal units, as well as one 10.0 MGD electric and gas unit. Total pumping capacity of 21.0 MGD.

Alta Mesa Station:

Two 10.0 MGD, one 9.4 MGD, and one 5.0 MGD electrically driven centrifugal units, as well as one 5.0 MGD emergency generator pump. Total pumping capacity of 39.4 MGD.

McCart Station:

Two 10.5 MGD, one 10.0 MGD, and one 4.6 MGD electrically driven centrifugal units. Total pumping capacity of 35.6 MGD.

Northside II Pressure Plane:

Old Northside Station:

Two 5.7 MGD and one 3.4 MGD electrically driven centrifugal units, and one 4.5 MGD gas driven unit. Total pumping capacity of 19.3 MGD.

Cantrell-Sansom Station:

One 5.0 MGD, one 3.0 MGD, and one 2.0 MGD electrically driven centrifugal units.
Total pumping capacity of 10.0 MGD.

North Beach Station:

One 2.0 MGD electrically driven centrifugal unit. Total pumping capacity of 2.0 MGD.

New Northside Station:

Two 18.3 MGD, two 12.9 MGD, and one 11.9 MGD electrically driven centrifugal units. Total pumping capacity of 74.3 MGD.

Northside III Pressure Plane:

Jenkins Heights Station:

One 2.0 MGD, one 3.9 MGD and one 3.4 MGD electrically driven centrifugal units. Total pumping capacity of 9.3 MGD.

North Beach Station:

Two 4.0 MGD electrically driven centrifugal units. Total pumping capacity of 8.0 MGD.

Sendera Ranch Station:

One 5.8 MGD and three 10.1 MGD electrically driven centrifugal units. Total pumping capacity 36.1 MGD.

Northside IV Pressure Plane:

Lago Vista Station:

Two 0.25 MGD and two 0.5 MGD electrically driven centrifugal units. Total pumping capacity of 1.5 MGD.

Sendera Ranch Station:

Three 10.1 MGD and one 5.8 MGD electrically driven centrifugal units. Totally pumping capacity of 36.1 MGD.

Westside II Pressure Plane:

Westside Station:

One 12.0 MGD, one 6.3 MGD and two 5.0 MGD electrically driven centrifugal units, and one 7.0 MGD gas driven standby unit. Total pumping capacity of 35.3 MGD.

Como Station:

Three 15.0 MGD, one 10.0 MGD electrically driven centrifugal units, and one 5.8 MGD emergency generator. Total pumping capacity of 60.8 MGD.

Westside III Pressure Plane:

Stagecoach Road Station:

Two 8.0 MGD and two 5.0 MGD electrically driven centrifugal units, as well as one 5.0 MGD emergency generator. Total pumping capacity of 31.0 MGD.

Westside IV Pressure Plane:

Westland Pump Station:

Two 3.0 MGD and two 5.0 MGD electrically driven centrifugal units. Total pumping capacity of 16.0 MGD.

Westside V Pressure Plane:

Walsh Ranch Pump Station:

Two 1.5 MGD electrically driven centrifugal units. Total pumping capacity of 3.0 MGD.

Eastside II Pressure Plane:

Eastside Station:

One 22.0 MGD, one 17.0 MGD and three 10.0 MGD electrically driven centrifugal units and one 7 MGD Gas-driven standby unit. Total pumping capacity of 76.0 MGD.

Randol Mill Station:

One 10.0 MGD and two 5.0 MGD electrically driven centrifugal units. Total pumping capacity of 20.0 MGD.

Fleetwood Station:

One 3.0 MGD and three 2.0 MGD electrically driven centrifugal units. Total pumping capacity of 9.0 MGD.

Appendix B
Existing Distribution System Storage

APPENDIX B
Existing Distribution System Storage

Eastside Pressure Plane II (805'):	**CAPACITY (MG)**
Eastwood Elevated Tank	1.5
Timberline Elevated Tank	2.0
Meadowbrook Elevated Tank	2.0
Randol Mill Ground Reservoir	6.0
North Beach Street Ground Reservoir	5.5
Fleetwood Ground Reservoir	5.5
Eastside Pressure Plane Total	**22.5**

Holly Pressure Plane (706'):	
Northside Ground Reservoir	4.0
Como Ground Storage Reservoir	6.0
Como Ground Storage Reservoir	2.0
Southside Ground Storage Reservoir	5.0
Holly Pressure Plane Total	**17.0**

Northside Pressure Planes:

Elevation 853' Plane II	
Northwest Elevated Tank	1.0
Caylor Ground Storage Reservoir	5.0
Caylor Ground Storage Reservoir #2	5.0
Sendera Ranch Ground Storage Reservoir	5.0
Elevation 936' Plane III	
Lake Country Elevated Tank	0.5
Elevation 950' Plane III	
Bradley Elevated Tank	2.0
Willow Springs Elevated Tank	2.0
Elevation 1040' Plane IV	
Crumb Elevated Tank	1.0
Northside Pressure Plane Total	**21.5**

Southside Pressure Planes:	**CAPACITY (MG)**
Elevation 850' Plane II	
Seminary Hill Elevated Tank	2.0
Alta Mesa Ground Storage Reservoir	9.2
McCart Ground Storage Reservoir	5.0
Elevation 990' Plane III	
Armstrong Ranch Elevated Tank	2.0
Sun Country Elevated Tank	2.0
Southside Pressure Plane Total	**20.2**

Westside Pressure Planes:	
Elevation 857' Plane II	
Calmont Elevated Tank	1.0
Stagecoach Ground Storage Reservoir	5.5
Elevation 974' Plane III	
Westland Ground Storage Reservoir	5.0
Elevation 1065' Plane IV	
Walsh Ranch Ground Storage Reservoir	2.5
Walsh Ranch Standpipe (used for pressure)	0.06
Elevation 1190' Plane V	
Westside V Elevated Tank on Beggs Ranch	1.0
Westside Pressure Plane Total	**15.06**

TOTAL DISTRIBUTION SYSTEM STORAGE CAPACITY:	**96.26 MG**

Water Treatment Plants:	**CAPACITY (MG)**
Eagle Mountain WTP	10.5
Holly WTP	20.0
Rolling Hills WTP	17.2
Westside WTP	2.5
TOTAL CLEARWELL CAPACITY:	**50.2 MG**

Appendix C
Water CIP Projects

Appendix C
Water CIP Projects

TARRANT REGIONAL WATER DISTRICT PROJECTS

Project Title: **Richland-Chambers Wetlands**

Description: Construction of wetlands near Richland-Chambers Reservoir.

Purpose: Provide an additional raw water supply to the Integrated Pipeline Project.

Allocation: This project is allocated 32% to growth in the study period, as it is required to provide capacity to meet projected water demands. Allocation was determined using the projected growth in demand (2022—2031), divided by the added capacity from the Richland-Chambers Wetlands project (89.6 MGD).

Project Title: **Eagle Mountain Connection Raw Water Line and Pump Station**

Description: Construction of raw water line and pump station from Benbrook Lake to Eagle Mountain Lake.

Purpose: Provide additional raw water supplies to the Eagle Mountain Water Treatment Plant (WTP) and the Westside WTP.

Allocation: This project is allocated 11% to growth in the study period, as it is required to provide capacity to meet projected water demands. Allocation was determined using the proportion need of the raw water supply from Lake Benbrook to provide supply for the Westside WTP and the Eagle Mountain WTP to serve 10-year projected growth.

Project Title: **Integrated Pipeline and Pump Stations**

Description: Construction of raw water line and pump stations from Richland-Chambers Reservoir to Benbrook Lake.

Purpose: Provide an additional raw water line to provide additional raw water supplies.

Allocation: This project is allocated 37% to growth in the study period, as it is required to provide capacity to meet projected water demands. Allocation was determined using the projected growth in demand (2022—2031), approximately 62% of which will be supplied through this project (as indicated by TRWD), divided by the capacity added by the Integrated Pipeline and Pump Stations (160 MGD).

Appendix C
Water CIP Projects

RAW WATER SUPPLY

Project Title: **Expand Second Eagle Mountain Raw Water PS from 35 MGD to 70 MGD (N2-20B - 2005 MP)**

Description: Design and construction of additional pumping capacity in the Second Eagle Mountain Raw Water Pump Station.

Purpose: Provide additional raw water supplies to the Eagle Mountain WTP to a capacity of 70 MGD. This project was recommended in the *2005 Water Master Plan Update.*

Allocation: This project is allocated 42% to growth in the study period. Allocation was determined using the projected growth in demand for the Northside Pressure Plane (2029—2031), divided by the added capacity of the Second Eagle Mountain Raw Water Pump Station expansion (35 MGD).

Appendix C
Water CIP Projects

WTPS

Project Title: **Westside WTP – Phase 1 (0 – 12 MGD) (W3-5B – 2005 MP)**

Description: Design and construction of new 12 MGD WTP. This project includes improvements at the Westside WTP to account for an ultimate capacity of 35 MGD.

Purpose: A new WTP is recommended to meet the demands in the northwest part of the City. This project was recommended in the *2005 Water Master Plan Update.*

Allocation: This project is allocated 26% to growth in the study period, as it is required to provide capacity to meet projected water demands in the Westside Pressure Plane. Allocation was determined using the projected growth in demand (2022—2031), divided by the ultimate capacity of the treatment plant (35 MGD).

Project Title: **Eagle Mountain Clearwell #3 (N2-5A – 2005 MP)**

Description: Design and construction of the third clearwell at the Eagle Mountain WTP.

Purpose: The completion of the third clearwell adds 2.5 MG of capacity as well as allows for the full 105 MGD capacity to be utilized at the WTP. This project was recommended in the *2005 Water Master Plan Update*.

Allocation: This project is allocated 47% to growth in the study period, as it is required to provide capacity to meet projected water demands. Allocation was determined using the projected growth in demand, divided by the capacity of the clearwell (2.5 MG).

Project Title: **Westside WTP Expansion 12 MGD to 15 MGD – Membrane Rack (W3-8 – 2017 MP)**

Description: Construction of a 3 MGD expansion of the Westside WTP.

Purpose: An expansion of the WTP capacity from 12 MGD to 15 MGD is recommended to meet the demands in the northwest part of the City. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 26% to growth in the study period, as it is required to provide capacity to meet projected water demands. Allocation was determined using the projected 2031 demand in the Westside III/IV/V Pressure Planes, divided by the added capacity of the treatment plant expansion, less the allocation to existing 2022 capacity, since the capacity will be fully utilized during the planning period.

Appendix C
Water CIP Projects

Project Title: **Westside WTP Expansion 15 MGD to 18 MGD – Membrane Rack (W3-8 – 2017 MP)**

Description: Construction of a 3 MGD expansion of the Westside WTP.

Purpose: An expansion of the WTP capacity from 15 MGD to 18 MGD is recommended to meet the demands in the northwest part of the City. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 78% to growth in the study period, as it is required to provide capacity to meet projected water demands. Allocation was determined using the projected 2031 demand in the Westside III/IV/V Pressure Planes, divided by the added capacity of the treatment plant expansion, less the allocation to existing 2022 capacity, since the capacity will be fully utilized during the planning period.

Project Title: **Westside WTP Expansion 18 MGD to 21 MGD – Membrane Rack (W3-8 – 2017 MP)**

Description: Construction of a 3 MGD expansion of the Westside WTP.

Purpose: An expansion of the WTP capacity from 18 MGD to 21 MGD is recommended to meet the demands in the northwest part of the City. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 94% to growth in the study period, as it is required to provide capacity to meet projected water demands. Allocation was determined using the projected 2031 demand in the Westside III/IV/V Pressure Planes, divided by the total capacity of the treatment plant expansion (21 MGD).

Project Title: **Eagle Mountain WTP Expansion from 110 MGD to 140 MGD (N2-7 – 2017 MP)**

Description: Design and construction of Eagle Mountain WTP expansion to treat 140 MGD.

Purpose: An expansion of Eagle Mountain WTP to be increased further to 140 MGD because of the growth of the City's north side and Alliance Airport, and because of the projected water demand increase. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 42% to growth in the study period, as it is required to provide capacity to meet projected water demands. Allocation was determined using the projected growth in coincidental demand (2027—2031) in the Northside Pressure Plane less the Northside II projected coincidental demand met by N2-1, divided by the capacity added from the Eagle Mountain WTP Expansion (30 MGD).

Appendix C
Water CIP Projects

PUMP STATIONS AND REGIONAL TRANSMISSION LINES

Project Title: **McCart Pump Station Expansion to 35 MGD Total Capacity (S2-3 – 2005 MP)**

Description: Design and construction of an expansion to the McCart Pump Station with an expanded capacity from 25 to 35 MGD.

Purpose: A larger pump station is necessary to provide additional pumping capacity to the Southside II Pressure Plane and redeveloping areas. This project was recommended in the *2005 Water Master Plan Update*. The additional 10 MGD pump station capacity increases the total pump station capacity by 40% to meet future water system demands.

Allocation: This project is allocated 15% to growth in the study period. Allocation was determined assuming the remaining capacity is projected to be fully utilized in the planning period.

Project Title: **3.0 MGD Westside V Pump Station at Walsh Ranch Tank (W5-1 – 2005 MP)**

Description: Design and construction of a new Westside V Pump Station with a capacity of 3 MGD.

Purpose: A new pump station is necessary to address the projected new population growth in the Westside V Pressure Plane. This project was recommended in the *2005 Water Master Plan Update*.

Allocation: This project is allocated 44% to growth in the study period. Allocation was determined because the projected growth in demand (2022—2031) in the Westside V Pressure Plane was greater than remaining capacity of the pump station. The pump station will be 56% utilized in 2022, which was determined using the projected demand for 2022, divided by the added capacity from the expansion (3 MGD).

Project Title: **Northside II 48-inch Transmission Line (N2-1 – 2005 MP)**

Description: Design and construction of a 48-inch transmission line in the Northside II Pressure Plane. This project runs from Cromwell Marine Creek Road to Texas Sage Trail.

Purpose: A large transmission line is necessary to address the projected new population growth in the area. This project was recommended in the *2005 Water Master Plan Update*.

Allocation: This project is allocated 39% to growth in the study period. Allocation was determined using the projected growth in demand (2022—2031) in the Northside II pressure plane, divided by the added capacity of the transmission line (48 MGD).

Appendix C
Water CIP Projects

Project Title: **Expansion of the Northside Pump Station to 70 MGD Total Capacity (N2-1 – 2017 MP)**

Description: Design and construction of an expansion to the Northside Pump Station with an expanded capacity from 58 to 70 MGD.

Purpose: A larger pump station is necessary to provide additional pumping capacity to the Northside II Pressure Plane and redeveloping areas. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project was allocated 100% to growth in the study period. Allocation was determined using the projected growth in demand (2024—2031) for the Northside II Pressure Plane, which is larger than the added capacity from the Northside Pump Station Expansion (12 MGD). It is assumed that the expansion will be fully utilized, and the remaining demand will be met from the Eagle Mountain WTP
High Service Pump Station.

Project Title: **8.0 MGD Southside IV Pump Station (W4-5 – 2005 MP)**

Description: Design and construction of a new Southside IV Pump Station with a capacity of 8 MGD.

Purpose: A new pump station is necessary to address the projected new population growth in the Southside IV Pressure Plane. This project was recommended in the *2005 Water Master Plan Update*.

Allocation: This project was allocated 55% to growth in the study period. Allocation was determined using the projected growth in demand (2022—2031) in the Southside IV Pressure Plane, divided by the added capacity with the addition of the pump station (8 MGD).

Project Title: **5.0 MGD Westside IV Pump Station (W4-4 – 2017 MP)**

Description: Design and construction of a new Westside IV Pump Station with a capacity of 5 MGD.

Purpose: A new pump station is necessary to address the projected new population growth in the Westside IV Pressure Plane. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 26% to growth in the study period. Allocation was determined using the projected growth in demand (2023—2031) in the Westside IV Pressure Plane, multiplied by the proportion of the capacity that will be provided by the pump station expansion. This value was then divided by the added capacity resulting from the pump station (5 MGD).

Appendix C
Water CIP Projects

Project Title: **5.0 MGD Westside V Pump Station (W5-8 – 2017 MP)**

Description: Design and construction of a new Westside V Pump Station with a capacity of 5 MGD.

Purpose: A new pump station is necessary to address the projected new population growth in the Westside V Pressure Plane. This project was recommended in the 2017 Water Master Plan Update.

Allocation: This project is allocated 47% to growth in the study period. Allocation was determined using the projected growth in demand (2023—2031) in the Westside V Pressure Plane, multiplied by the proportion of the capacity in the Westside V Pressure Plane that will be provided by the expansion. The resulting demand was then divided by the capacity added by the pump station (5 MGD).

Project Title: **McCart Pump Station Expansion to 45 MGD Total Capacity (S3-7 – 2017 MP)**

Description: Design and construction of an expansion to the McCart Pump Station with an expanded capacity from 35 to 45 MGD.

Purpose: A larger pump station is necessary to provide additional pumping capacity to the Southside III Pressure Plane and redeveloping areas. This project was recommended in the *2017 Water Master Plan Update*. The additional 10 MGD pump station capacity increases the total pump station capacity by approximately 29% to meet future water system demands.

Allocation: This project is allocated 33% to growth in the study period. Allocation was determined using the projected growth in demand (2029—2031) in the Southside III Pressure Plane, divided by the capacity added by the pump station expansion (10 MGD).

Project Title: **Alta Mesa Pump Station Expansion to 49.4 MGD Total Capacity (S3-11 – 2017 MP)**

Description: Design and construction of an expansion to the Alta Mesa Pump Station with an expanded capacity from 39.4 to 49.4 MGD total capacity.

Purpose: A larger pump station is necessary to provide additional pumping capacity to the Southside III Pressure Plane and redeveloping areas. This project was recommended in the 2017 Water Master Plan Update. The additional 10 MGD pump station capacity increases the total pump station capacity by approximately 29% to meet future water system demands.

Allocation: This project is allocated 33% to growth in the study period. Allocation was determined using the projected growth in demand (2029—2031) in the Southside III Pressure Plane, divided by the capacity added by the pump station expansion (10 MGD).

Appendix C
Water CIP Projects

STORAGE TANKS

Project Title: **Sendera Ranch Ground Storage Tank and Pump Station (N2-7/N3-5 – 2005 MP)**

Description: Design and construction of a 5 MG ground storage tank at the Sendera Ranch Pump Station.

Purpose: In order to meet operational storage requirements and higher water demand due to the projected population, additional storage facilities are needed. This project was recommended in the *2005 Water Master Plan Update*.

Allocation: This project is allocated 22% to growth in the study period. Allocation was determined using the projected growth in demand, divided by the capacity of the ground storage tank (5 MG).

Project Title: **1.0 MG Northside IV Elevated Storage Tank on Highway 287 (N4-2 – 2005 MP)**

Description: Design and construction of a 1.0 MG elevated storage tank for the Northside IV Pressure Plane.

Purpose: In order to meet operational storage requirements and higher water demand due to the projected population, additional storage facilities are needed in the Northside IV Pressure Plane. This project was recommended in the *2005 Water Master Plan Update*.

Allocation: This project is allocated 81% to growth in the study period. Allocation was determined assuming the remaining capacity is projected to be fully utilized in the planning period. The pump station will be 19% utilized in 2022, which was determined using the projected demand for 2022 in the Northside IV Pressure Plane, divided by the added capacity from the elevated tank.

Project Title: **5.0 MG Northside II Ground Storage Tank at the Caylor Tank Site (N2-10 —2005 MP)**

Description: Design and construction of a second 5.0 MG ground storage tank for the Northside II Pressure Plane.

Purpose: This improvement is to provide additional storage facilities that are needed in the Northside II Pressure Plane. This project was recommended in the *2005 Water Master Plan Update*.

Allocation: This project is allocated 50% to growth in the study period. Allocation was determined using the projected growth in demand (2022—2031) in the Northside II Pressure Plane, multiplied by the proportion of the capacity in the Northside II Pressure Plane that will be provided by the pump station. This value was then divided by the added capacity resulting from storage tank (5 MG).

Appendix C
Water CIP Projects

Project Title: **1.0 MG Westside V Elevated Storage Tank on Beggs Ranch (W5-2 – 2017 MP)**

Description: Design and construction of a 1.0 MG elevated storage tank for the Westside V Pressure Plane.

Purpose: In order to meet operational storage requirements and higher water demand due to the projected population, additional storage facilities are needed in the Westside V Pressure Plane. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 14% to growth in the study period. Allocation was determined using the projected growth in demand (2022—2031) in the Westside V Pressure Plane, multiplied by the proportion of the capacity in the Westside V Pressure Plane that will be provided by the pump station. The resulting demand was then divided by the added capacity resulting from the storage tank (1 MGD).

Project Title: **0.03 MG Southside IV Hydropneumatic Tank (W4-5 – 2005 MP)**

Description: Design and construction of a 0.03 MG hydropneumatic tank for the Southside IV Pressure Plane.

Purpose: In order to meet operational storage requirements and future water demand due to the projected population, additional storage facilities are needed in the Southside IV Pressure Plane. This project was recommended in the *2005 Water Master Plan Update*.

Allocation: This project is allocated 100% to growth in the study period. Allocation was determined based on the number of connections projected in the Southside IV Pressure Plane. TCEQ Chapter 290.45 states, "If pressure tanks are used, a maximum capacity of 30,000 gallons is sufficient for systems of up to 2,500 connections."

Project Title: **2.5 MG Westside III Ground Storage Tank South of IH-20 (W3-3 – 2017 MP)**

Description: Design and construction of a 2.5 MG ground storage tank for the Westside III Pressure Plane.

Purpose: In order to meet operational storage requirements and higher water demand due to the projected population, additional storage facilities are needed in the Westside III Pressure Plane. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 59% to growth in the study period. Allocation was determined using the projected growth in demand (2022—2031) for the Westside IV/V Pressure Plane, divided by the added capacity from the ground storage tank (1.5 MG).

Appendix C
Water CIP Projects

Project Title: **1.0 MG Westside IV Elevated Storage Tank (W4-10 – 2005 MP)**

Description: Design and construction of a 1.0 MG elevated storage tank for the Westside IV Pressure Plane.

Purpose: In order to meet operational storage requirements and higher water demand due to the projected population, additional storage facilities are needed in the Westside IV Pressure Plane. This project was recommended in the *2005 Water Master Plan Update*.

Allocation: This project is allocated 43% to growth in the study period. Allocation was determined using projected growth in demand (2024—2031) in the Westside IV Pressure Plane, divided by the added capacity from the elevated storage tank (1 MG).

Project Title: **2.0 MG Northside III Elevated Storage Tank (N3-7 – 2017 MP)**

Description: Design and construction of a 2.0 MG ground storage tank for the Northside III Pressure Plane.

Purpose: In order to meet operational storage requirements and higher water demand due to the projected population, additional storage facilities are needed in the Northside III Pressure Plane. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 100% to growth in the study period. Allocation was determined assuming the projected growth in demand (2022—2031) in the Northside III Pressure Plane is greater than the capacity added by the elevated storage tank (2 MG).

Project Title: **1.0 MG Southside III Elevated Storage Tank off Crowley Plover Road (S3-10 – 2017 MP)**

Description: Design and construction of a 1.0 MG elevated storage tank for the Southside III Pressure Plane.

Purpose: In order to meet operational storage requirements and higher water demand due to the projected population, additional storage facilities are needed in the Southside III. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 70% to growth in the study period. Allocation was determined using projected growth in demand (2027—2031) in the Southside III Pressure Plane, divided by the capacity added by the elevated storage tank (1 MG).

Appendix C
Water CIP Projects

Project Title: **5.0 MG Southside II Ground Storage Tank at the McCart Pump Station (S3-7 – 2017 MP)**

Description: Design and construction of a 5.0 MG ground storage tank at the McCart Pump Station.

Purpose: This improvement is to provide additional storage facilities that are needed in the surrounding areas. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 23% to growth in the study period. Allocation was determined using the projected growth in demand (2029—2031) for the Southside III Pressure Plane, divided by the added capacity from the ground storage tank that would be allocated to the Southside III Pressure Plane (3 MG).

Project Title: **1.0 MG Northside IV Elevated Storage Tank (N4-5 – 2017 MP)**

Description: Design and construction of a 1.0 MG elevated storage tank for the Northside IV Pressure Plane.

Purpose: In order to meet operational storage requirements and higher water demand due to the projected population, additional storage facilities are needed in the Northside IV Pressure Plane. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 8% to growth in the study period. Allocation was determined using projected growth in demand (2029—2031) for the Northside IV Pressure Plane, divided by the added capacity from the elevated storage tank (1 MG).

Project Title: **0.5 MG Westside V Elevated Storage Tank (W5-5 – 2017 MP)**

Description: Design and construction of a 0.5 MG elevated storage tank for the Westside V Pressure Plane.

Purpose: In order to meet operational storage requirements and higher water demand due to the projected population, additional storage facilities are needed in the Westside V Pressure Plane. This project was recommended in the *2017 Water Master Plan Update*.

Allocation: This project is allocated 14% to growth in the study period. Allocation was determined using projected growth in demand (2029—2031) for the Westside V Pressure Plane, multiplied by the proportion of the elevated storage to be provided by the elevated storage tank, divided by the added capacity from the elevated storage tank (0.5 MG).

Appendix C
Water CIP Projects

ENGINEERING STUDIES

Project Title: **2005 Water Master Plan (2005-2025)**

Description: An engineering study to update the 1994 Water Master Plan.

Purpose: The water master plan projects system flows and requirements for the 20-year period from 2005 to 2025. This plan was updated again in 2014. The water master plan guides the capital improvements program to ensure cost effective expansion of the system.

Allocation: 15% of the cost for the 2005 Water Master Plan is allocated to the study period as three of the twenty years of the plan's useful life are within the study period.

Project Title: **2017 Water Master Plan (2013-2033)**

Description: An engineering study to update the 2005 Water Master Plan.

Purpose: The water master plan projects system flows and requirements for the 20-year period from 2013 to 2033. The water master plan guides the capital improvements program to ensure cost effective expansion of the system.

Allocation: 50% of the cost for the *2017 Water Master Plan* can be allocated to the study period as 10 of the 20 years of the plan's useful life are within the study period.

Project Title: **Impact Fee Study (2022-2031)**

Description: An engineering study to revise the impact fee ordinance and recalculate the maximum allowable fee which can be assessed.

Purpose: By statute, the impact fee report and ordinance must be updated every five years.

Allocation: 100% of the cost for the 2022 impact fee study can be allocated to the study period as all ten years are within the study period. The impact fee covers water and wastewater, with 50% of costs allocated to each. This study replaces the 2017 Impact Fee Study, therefore the costs associated with the 2017 Impact Fee Study are not eligible for the 2022 impact fee update.

Appendix D
Impact Fee Credit Analysis

TECHNICAL MEMORANDUM

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TO: Wendy Chi-Babulal, P.E., Fort Worth Water
Matt Kusnir, P.E., Fort Worth Water

FROM: Jessica Brown, P.E, Freese and Nichols, Inc.
Mazen Kawasmi, P.E., CFM, GISP, Freese and Nichols, Inc.
Richard Campbell, Freese and Nichols, Inc.
Angie Flores, Senior Manager, Raftelis, Inc.

SUBJECT: 2022 Fort Worth Water/Wastewater Impact Fee Update:
Credit Methodology Memorandum

DATE: July 22, 2021

1.0 INTRODUCTION

In accordance with Texas Local Government Code (TLGC), Chapter 395, the City of Fort Worth commissioned Freese and Nichols, Inc. (FNI), to conduct a Water and Wastewater Impact Fee Study. FNI contracted with Raftelis Financial Consultants, Inc. to perform a rate credit analysis in compliance with Chapter 395. For this study, Raftelis completed the maximum allowable impact fee calculation, including the rate credit analysis. The calculated impact fee includes the outstanding debt service (principal and interest) of existing facilities with excess capacity and the projected debt service (principal and interest) of the future facilities identified in the 10-year Capital Improvement Plan (CIP). This memorandum establishes the methodology utilized for the rate credit analysis and summarizes the results.

2.0 DEBT SERVICE INTEREST CALCULATION

The impact fee eligible interest is based on existing and future debt service. The existing debt service is debt service associated with existing facilities with excess capacity, while the future debt service is based on future facilities.

For the existing impact fee eligible facilities, the interest considered in the impact fee is based on the actual interest for the already outstanding debt. Specifically, the existing debt service is based upon impact fee eligible outstanding debt for Fort Worth, Trinity River Authority (TRA), and Tarrant Regional Water District (TRWD). The interest included in the impact fee is the total impact fee eligible interest for the term of the existing debt, per discussions with City staff.

The interest for the future facilities is calculated using the assumptions in **Table 1**. The proposed debt is based upon the 10-year water and wastewater impact fee eligible CIP. In the CIP, if a project's start date is in 2022 or later and is greater than $5 million, it is assumed that it will be debt-funded. Any amounts under $5 million are assumed to be cash-funded. The interest included in the impact fee is the total impact fee eligible interest for the term of the future debt, per discussions with City staff.

Table 1 Future Debt Service Assumptions

Debt Service Details	Assumption
Bond Issuance Cost	2.0%
Interest Rate	4.0%
Fort Worth Term	30 years
TRA Term	20 years

3.0 RATE CREDIT CALCULATION

The rate credit methodology was developed by FNI and was applied to the impact fee calculation. Chapter 395 prescribes that a utility must provide a credit to account for any portion of ad valorem tax and utility service revenues that would also be reflected in the developed impact fees and paid by new service units in the program period. The utility may choose to do a detailed rate credit analysis, or automatically cap the maximum allowable impact fee at 50% of the impact fee eligible infrastructure costs. In this case, a rate credit analysis was performed to determine the applicable credit for the program period.

The purpose of this credit is to ensure that new growth is not charged twice for the portion of capital improvements attributed to them, once through the impact fee and then again through rates. The code does not specifically address the way in which this credit is to be calculated. Each utility should calculate the credit in a way that is consistent with the operation of their fund, the way they finance their capital improvements, and the way these capital improvements costs are represented in their utility rates. The next section describes how Fort Worth's credit was calculated.

FNI utilized the projected Service Unit Equivalents (SUE), developed as part of the Land Use Assumptions, to determine the pro rata share of the existing debt (interest and principal) attributable to each SUE on the system for each year of the impact fee period (2022 – 2031). The resulting cost per SUE was multiplied by the cumulative growth in SUE's for each year of the impact fee period, resulting in the portion of the existing debt (interest and principal) that future customers will pay for in water/wastewater rates. This represents the credit to the impact fees required to avoid "double counting" and this credit was subtracted from the total impact fee eligible

infrastructure costs. **Table 2** summarizes the results of the water credit calculation. **Table 3** summarizes the results of the wastewater credit calculation.

Table 2 Water Credit Analysis Summary

Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Water Impact Fee Eligible Interest + Principle for 10-Year Period	$13,736,786	$14,218,851	$14,133,513	$13,415,020	$13,309,466	$13,310,499	$12,355,111	$12,360,423	$10,980,941	$17,212,541
Total Service Unit Equivalents (SUE) Each Year	718,816	732,543	746,271	759,998	773,726	787,453	801,180	814,908	828,635	842,363
Cost per SUE	$19.04	$19.34	$18.87	$17.59	$17.14	$16.85	$15.37	$15.12	$13.21	$20.38
Cumulative SUE's in 10-Year Period	13,673	27,347	41,020	54,693	68,367	82,040	95,714	109,387	123,060	136,734
Portion Paid by Growth in 10-Year Period	**$260,293**	**$528,834**	**$774,096**	**$962,093**	**$1,172,138**	**$1,382,327**	**$1,471,490**	**$1,654,279**	**$1,626,156**	**$2,786,360**
Total Credit	**$12,618,067**									

Table 3 Wastewater Credit Analysis Summary

Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Wastewater Impact Fee Eligible Interest + Principle for 10-Year Period	$5,735,203	$5,742,152	$5,749,275	$5,748,254	$5,755,437	$5,908,684	$5,137,534	$5,130,701	$5,132,433	$5,110,891
Total Service Unit Equivalents (SUE) Each Year	611,999	624,605	637,211	649,817	662,423	675,029	687,634	700,240	712,846	725,452
Cost per SUE	$9.31	$9.13	$8.96	$8.79	$8.63	$8.69	$7.42	$7.28	$7.15	$7.00
Cumulative SUE's in 10-Year Period	12,676	25,352	38,027	50,703	63,379	76,055	88,731	101,406	114,082	126,758
Portion Paid by Growth in 10-Year Period	**$117,966**	**$231,456**	**$340,747**	**$445,449**	**$546,912**	**$661,203**	**$658,446**	**$737,996**	**$815,857**	**$887,036**
Total Credit	**$5,443,068**									

4.0 MAXIMUM ALLOWABLE IMPACT FEE CALCULATION

The maximum allowable impact fees are the result of taking the total cost of expansion for the study period, minus the calculated credit, and dividing by the increase in SUE's. This fee equals the maximum allowable impact fee per service unit for a 5/8" x 3/4" water meter size. A summary of the maximum allowable impact fee calculation for both water and wastewater is shown in **Table 4**.

Table 4 Credit Analysis Summary

	Water	Wastewater
Preliminary Maximum Calculated Infrastructure Cost	$677,264,404	$569,442,175
Minus the CREDIT	**($12,618,067)**	**($5,443,068)**
Max Allowable Calculated Infrastructure Cost	$664,646,337	$563,999,107
Service Units	136,734	126,758
Max Allowable Impact Fee per Service Unit	**$4,860**	**$4,449**

Appendix E
Water Meter Summary

Appendix E
Water Meter Summary

City of Fort Worth **% of Water Demands Served by FTW (2020):** **100%**

Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	221,072	221,072	221,072
3/4"	1.50	2,698	2,698	4,047
1"	2.50	22,201	22,201	55,503
1-1/2"	5.00	2,040	2,040	10,200
2"	8.00	2,163	2,163	17,304
3"	21.75	43	43	935
4"	37.50	98	98	3,675
6"	80.00	163	163	13,040
8"	140.00	46	46	6,440
10"	210.00	3	3	630
	TOTAL	**250,527**	**250,527**	**332,846**
Non-Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	7474	7,474	7,474
3/4"	1.50	47	47	71
1"	2.50	4241	4,241	10,603
1-1/2"	5.00	2409	2,409	12,045
2"	8.00	5885	5,885	47,080
3"	21.75	429	429	9,331
4"	37.50	349	349	13,088
6"	80.00	172	172	13,760
8"	140.00	65	65	9,100
10"	210.00	24	24	5,040
	TOTAL	**21,095**	**21,095**	**127,592**

Wholesale Customer: **City of Aledo** **% of Water Demands Served by FTW (2020):** **82%**

Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	1,507	1,236	1,854
1"	2.50	12	10	25
1-1/2"	5.00	0	0	0
2"	8.00	2	2	16
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**1,521**	**1,248**	**1,895**
Non-Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	94	77	116
1"	2.50	18	15	38
1-1/2"	5.00	10	8	40
2"	8.00	22	18	144
3"	21.75	3	2	44
4"	37.50	3	2	75
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**150**	**122**	**457**

Appendix E
Water Meter Summary

Wholesale Customer: **Benbrook Water Authority (Emergency Use Only)** **% of Water Demands Served by FTW (2020):** **0%**

Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	5,145	0	0
3/4"	1.50	43	0	0
1"	2.50	3,075	0	0
1-1/2"	5.00	17	0	0
2"	8.00	87	0	0
3"	21.75	25	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**8,392**	**0**	**0**
Non-Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	138	0	0
3/4"	1.50	4	0	0
1"	2.50	221	0	0
1-1/2"	5.00	54	0	0
2"	8.00	107	0	0
3"	21.75	11	0	0
4"	37.50	3	0	0
6"	80.00	2	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**540**	**0**	**0**

Wholesale Customer: **Bethesda Water Supply Corportation** **% of Water Demands Served by FTW (2020):** **68%**

Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	10,239	6,963	6,963
3/4"	1.50	8	5	8
1"	2.50	42	29	73
1-1/2"	5.00	4	3	15
2"	8.00	2	1	8
3"	21.75	1	1	22
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**10,296**	**7,002**	**7,089**
Non-Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	142	97	97
3/4"	1.50	8	5	8
1"	2.50	44	30	75
1-1/2"	5.00	13	9	45
2"	8.00	55	37	296
3"	21.75	1	1	22
4"	37.50	8	5	188
6"	80.00	1	1	80
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**272**	**185**	**811**

Appendix E
Water Meter Summary

Wholesale Customer: **City of Burleson** **% of Water Demands Served by FTW (2020):** **100%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	13,768	13,768	13,768
3/4"	1.50	3	3	5
1"	2.50	202	202	505
1-1/2"	5.00	8	8	40
2"	8.00	1	1	8
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**13,982**	**13,982**	**14,326**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	484	484	484
3/4"	1.50	5	5	8
1"	2.50	287	287	718
1-1/2"	5.00	140	140	700
2"	8.00	285	285	2,280
3"	21.75	58	58	1,262
4"	37.50	6	6	225
6"	80.00	1	1	80
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**1,266**	**1,266**	**5,757**

Wholesale Customer: **City of Crowley** **% of Water Demands Served by FTW (2020):** **100%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	6,467	6,467	6,467
3/4"	1.50	0	0	0
1"	2.50	35	35	88
1-1/2"	5.00	16	16	80
2"	8.00	30	30	240
3"	21.75	2	2	44
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**6,550**	**6,550**	**6,919**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	0	0	0
1"	2.50	59	59	148
1-1/2"	5.00	14	14	70
2"	8.00	48	48	384
3"	21.75	15	15	326
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**136**	**136**	**928**

Appendix E
Water Meter Summary

Wholesale Customer: Dallas Fort Worth International Airport Board

% of Water Demands Served by FTW (2020): 28%

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	0	0	0
1"	2.50	0	0	0
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**0**	**0**	**0**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	4	1	1
3/4"	1.50	0	0	0
1"	2.50	10	3	8
1-1/2"	5.00	37	10	50
2"	8.00	351	98	784
3"	21.75	149	42	914
4"	37.50	78	22	825
6"	80.00	30	8	640
8"	140.00	5	1	140
10"	210.00	0	0	0
	TOTAL	**664**	**185**	**3,362**

Wholesale Customer: City of Dalworthington Gardens

% of Water Demands Served by FTW (2020): 50%

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	493	247	247
3/4"	1.50	62	31	47
1"	2.50	343	172	430
1-1/2"	5.00	10	5	25
2"	8.00	10	5	40
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**918**	**460**	**789**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	60	30	30
3/4"	1.50	14	7	11
1"	2.50	42	21	53
1-1/2"	5.00	3	2	10
2"	8.00	22	11	88
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**141**	**71**	**192**

Appendix E
Water Meter Summary

Wholesale Customer: **City of Edgecliff Village** **% of Water Demands Served by FTW (2020):** **100%**

Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	78	78	78
3/4"	1.50	1,257	1,257	1,886
1"	2.50	33	33	83
1-1/2"	5.00	5	5	25
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**1,373**	**1,373**	**2,072**
Non-Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	3	3	5
1"	2.50	4	4	10
1-1/2"	5.00	0	0	0
2"	8.00	7	7	56
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	1	1	80
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**15**	**15**	**151**

Wholesale Customer: **City of Everman (Emergency Use Only)** **% of Water Demands Served by FTW (2020):** **0%**

Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	1,817	0	0
1"	2.50	0	0	0
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**1,817**	**0**	**0**
Non-Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	156	0	0
1"	2.50	14	0	0
1-1/2"	5.00	5	0	0
2"	8.00	11	0	0
3"	21.75	3	0	0
4"	37.50	1	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**190**	**0**	**0**

Appendix E
Water Meter Summary

Wholesale Customer: **City of Forest Hill** **% of Water Demands Served by FTW (2020):** **100%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	4,559	4,559	6,839
1"	2.50	10	10	25
1-1/2"	5.00	38	38	190
2"	8.00	55	55	440
3"	21.75	1	1	22
4"	37.50	1	1	38
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**4,664**	**4,664**	**7,554**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	10	10	15
1"	2.50	7	7	18
1-1/2"	5.00	2	2	10
2"	8.00	6	6	48
3"	21.75	1	1	22
4"	37.50	1	1	38
6"	80.00	1	1	80
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**28**	**28**	**231**

Wholesale Customer: **City of Grand Prairie** **% of Water Demands Served by FTW (2020):** **10%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	45,494	4,549	4,549
3/4"	1.50	0	0	0
1"	2.50	443	44	110
1-1/2"	5.00	155	16	80
2"	8.00	672	67	536
3"	21.75	13	1	22
4"	37.50	13	1	38
6"	80.00	39	4	320
8"	140.00	7	1	140
10"	210.00	0	0	0
	TOTAL	**46,836**	**4,683**	**5,795**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	1380	138	138
3/4"	1.50	0	0	0
1"	2.50	939	94	235
1-1/2"	5.00	611	61	305
2"	8.00	1458	146	1,168
3"	21.75	87	9	196
4"	37.50	72	7	263
6"	80.00	18	2	160
8"	140.00	18	2	280
10"	210.00	4	0	0
	TOTAL	**4,587**	**459**	**2,745**

Appendix E
Water Meter Summary

Wholesale Customer: **City of Haltom City** **% of Water Demands Served by FTW (2020):** **100%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	11,369	11,369	11,369
3/4"	1.50	0	0	0
1"	2.50	4	4	10
1-1/2"	5.00	0	0	0
2"	8.00	37	37	296
3"	21.75	1	1	22
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**11,411**	**11,411**	**11,697**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	1584	1,584	1,584
3/4"	1.50	0	0	0
1"	2.50	5	5	13
1-1/2"	5.00	0	0	0
2"	8.00	18	18	144
3"	21.75	1	1	22
4"	37.50	1	1	38
6"	80.00	2	2	160
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**1,611**	**1,611**	**1,961**

Wholesale Customer: **City of Haslet** **% of Water Demands Served by FTW (2020):** **99%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	741	734	734
3/4"	1.50	7	7	11
1"	2.50	13	13	33
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**761**	**754**	**778**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	38	38	38
3/4"	1.50	2	2	3
1"	2.50	23	23	58
1-1/2"	5.00	6	6	30
2"	8.00	47	47	376
3"	21.75	11	11	239
4"	37.50	3	3	113
6"	80.00	2	2	160
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**132**	**132**	**1,017**

Appendix E
Water Meter Summary

Wholesale Customer: **City of Hudson Oaks** **% of Water Demands Served by FTW (2020):** **80%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	846	677	1,016
1"	2.50	11	9	23
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**857**	**686**	**1,039**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	0	0	0
1"	2.50	8	6	15
1-1/2"	5.00	2	2	10
2"	8.00	4	3	24
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**14**	**11**	**49**

Wholesale Customer: **City of Hurst** **% of Water Demands Served by FTW (2020):** **99%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	9,454	9,359	9,359
3/4"	1.50	1	1	2
1"	2.50	1,517	1,502	3,755
1-1/2"	5.00	33	33	165
2"	8.00	4	4	32
3"	21.75	0	0	0
4"	37.50	1	1	38
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**11,010**	**10,900**	**13,351**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	465	460	460
3/4"	1.50	0	0	0
1"	2.50	367	363	908
1-1/2"	5.00	251	248	1,240
2"	8.00	239	237	1,896
3"	21.75	32	32	696
4"	37.50	18	18	675
6"	80.00	4	4	320
8"	140.00	1	1	140
10"	210.00	0	0	0
	TOTAL	**1,377**	**1,363**	**6,335**

Appendix E
Water Meter Summary

Wholesale Customer: **City of Keller** **% of Water Demands Served by FTW (2020): 100%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	82	82	82
3/4"	1.50	14,311	14,311	21,467
1"	2.50	331	331	828
1-1/2"	5.00	7	7	35
2"	8.00	10	10	80
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**14,741**	**14,741**	**22,492**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	370	370	370
3/4"	1.50	44	44	66
1"	2.50	370	370	925
1-1/2"	5.00	93	93	465
2"	8.00	288	288	2,304
3"	21.75	59	59	1,283
4"	37.50	7	7	263
6"	80.00	0	0	0
8"	140.00	3	3	420
10"	210.00	0	0	0
	TOTAL	**1,234**	**1,234**	**6,096**

Wholesale Customer: **City of Kennedale** **% of Water Demands Served by FTW (2020): 20%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	2,543	509	764
1"	2.50	313	63	158
1-1/2"	5.00	5	1	5
2"	8.00	4	1	8
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**2,865**	**574**	**935**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	229	46	69
1"	2.50	57	11	28
1-1/2"	5.00	13	3	15
2"	8.00	38	8	64
3"	21.75	44	9	196
4"	37.50	3	1	38
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**384**	**78**	**410**

Appendix E
Water Meter Summary

Wholesale Customer: **Lake Worth** **% of Water Demands Served by FTW (2020):** **81%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	1,663	1,347	2,021
1"	2.50	171	139	348
1-1/2"	5.00	0	0	0
2"	8.00	1	1	8
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**1,835**	**1,487**	**2,377**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	123	100	150
1"	2.50	129	104	260
1-1/2"	5.00	46	37	185
2"	8.00	108	87	696
3"	21.75	15	12	261
4"	37.50	7	6	225
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**428**	**346**	**1,777**

Wholesale Customer: **City of North Richland Hills** **% of Water Demands Served by FTW (2020):** **58%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	19,429	11,269	16,904
1"	2.50	960	557	1,393
1-1/2"	5.00	8	5	25
2"	8.00	17	10	80
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**20,414**	**11,841**	**18,402**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	683	396	594
1"	2.50	404	234	585
1-1/2"	5.00	64	37	185
2"	8.00	827	480	3,840
3"	21.75	29	17	370
4"	37.50	18	10	375
6"	80.00	4	2	160
8"	140.00	2	1	140
10"	210.00	0	0	0
	TOTAL	**2,031**	**1,177**	**6,249**

Appendix E
Water Meter Summary

Wholesale Customer: **Town of Northlake** **% of Water Demands Served by FTW (2020):** **30%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	2,931	879	1,319
1"	2.50	96	29	73
1-1/2"	5.00	11	3	15
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**3,038**	**911**	**1,407**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	0	0	0
1"	2.50	0	0	0
1-1/2"	5.00	0	0	0
2"	8.00	113	34	272
3"	21.75	99	30	653
4"	37.50	1	0	0
6"	80.00	1	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**214**	**64**	**925**

Wholesale Customer: **City of Richland Hills** **% of Water Demands Served by FTW (2020):** **75%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	2	2	2
3/4"	1.50	2,778	2,084	3,126
1"	2.50	79	59	148
1-1/2"	5.00	17	13	65
2"	8.00	11	8	64
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**2,887**	**2,166**	**3,405**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	165	124	186
1"	2.50	85	64	160
1-1/2"	5.00	31	23	115
2"	8.00	42	32	256
3"	21.75	3	2	44
4"	37.50	2	2	75
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**328**	**247**	**836**

Appendix E
Water Meter Summary

Wholesale Customer: **City of River Oaks (Emergency Use Only)** **% of Water Demands Served by FTW (2020): 0%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	0	0	0
1"	2.50	0	0	0
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**0**	**0**	**0**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	0	0	0
1"	2.50	0	0	0
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**0**	**0**	**0**

Wholesale Customer: **City of Roanoke** **% of Water Demands Served by FTW (2020): 100%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	2,322	2,322	3,483
1"	2.50	101	101	253
1-1/2"	5.00	1	1	5
2"	8.00	2	2	16
3"	21.75	0	0	0
4"	37.50	1	1	38
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**2,427**	**2,427**	**3,795**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	239	239	359
1"	2.50	167	167	418
1-1/2"	5.00	56	56	280
2"	8.00	271	271	2,168
3"	21.75	44	44	957
4"	37.50	44	44	1,650
6"	80.00	4	4	320
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**825**	**825**	**6,152**

Appendix E
Water Meter Summary

Wholesale Customer: **City of Saginaw** **% of Water Demands Served by FTW (2020):** **100%**

Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	7,950	7,950	7,950
3/4"	1.50	0	0	0
1"	2.50	0	0	0
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**7,950**	**7,950**	**7,950**
Non-Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	333	333	333
3/4"	1.50	0	0	0
1"	2.50	0	0	0
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**333**	**333**	**333**

Wholesale Customer: **Sansom Park (Emergency Use Only)** **% of Water Demands Served by FTW (2020):** **0%**

Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	1,413	0	0
3/4"	1.50	0	0	0
1"	2.50	0	0	0
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**1,413**	**0**	**0**
Non-Residential Meters				
Meter Size	**Service Unit Equivalency Factor**	**Number of Meters**	**Number of Meters Served by Ft. Worth**	**SUE Meters Served by Ft. Worth**
5/8" x 3-4"	1.00	110	0	0
3/4"	1.50	0	0	0
1"	2.50	1	0	0
1-1/2"	5.00	0	0	0
2"	8.00	1	0	0
3"	21.75	4	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**116**	**0**	**0**

Appendix E
Water Meter Summary

Wholesale Customer: **City of Southlake** **% of Water Demands Served by FTW (2020):** **100%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	969	969	969
3/4"	1.50	0	0	0
1"	2.50	8,544	8,544	21,360
1-1/2"	5.00	0	0	0
2"	8.00	23	23	184
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**9,536**	**9,536**	**22,513**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	48	48	48
3/4"	1.50	0	0	0
1"	2.50	849	849	2,123
1-1/2"	5.00	0	0	0
2"	8.00	533	533	4,264
3"	21.75	56	56	1,218
4"	37.50	38	38	1,425
6"	80.00	7	7	560
8"	140.00	2	2	280
10"	210.00	0	0	0
	TOTAL	**1,533**	**1,533**	**9,918**

Wholesale Customer: **Trinity River Authority (Emergency Use Only)** **% of Water Demands Served by FTW (2020):** **0%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	0	0	0
1"	2.50	0	0	0
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**0**	**0**	**0**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	0	0	0
1"	2.50	0	0	0
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**0**	**0**	**0**

Appendix E
Water Meter Summary

Wholesale Customer: **Trophy Club Municipal Utility District No. 1** **% of Water Demands Served by FTW (2020): 95%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	2,467	2,344	2,344
3/4"	1.50	0	0	0
1"	2.50	2,054	1,951	4,878
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**4,521**	**4,295**	**7,222**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	37	35	35
3/4"	1.50	0	0	0
1"	2.50	41	39	98
1-1/2"	5.00	31	29	145
2"	8.00	105	100	800
3"	21.75	21	20	435
4"	37.50	12	11	413
6"	80.00	2	2	160
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**249**	**236**	**2,086**

Wholesale Customer: **Town of Westlake** **% of Water Demands Served by FTW (2020): 100%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	137	137	206
1"	2.50	449	449	1,123
1-1/2"	5.00	34	34	170
2"	8.00	10	10	80
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**630**	**630**	**1,579**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	40	40	60
1"	2.50	41	41	103
1-1/2"	5.00	12	12	60
2"	8.00	74	74	592
3"	21.75	4	4	87
4"	37.50	9	9	338
6"	80.00	2	2	160
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**182**	**182**	**1,400**

Appendix E
Water Meter Summary

Wholesale Customer: **Town of Westover Hills** **% of Water Demands Served by FTW (2020):** **100%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	7	7	11
1"	2.50	110	110	275
1-1/2"	5.00	149	149	745
2"	8.00	41	41	328
3"	21.75	2	2	44
4"	37.50	1	1	38
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**310**	**310**	**1,441**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	2	2	2
3/4"	1.50	0	0	0
1"	2.50	0	0	0
1-1/2"	5.00	1	1	5
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**3**	**3**	**7**

Wholesale Customer: **City of Westworth Village** **% of Water Demands Served by FTW (2020):** **100%**

*Meter count information not received. Meter counts estimated based on previous IF study.

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	543	543	815
1"	2.50	6	6	15
1-1/2"	5.00	0	0	0
2"	8.00	3	3	24
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**552**	**552**	**854**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	0	0	0
3/4"	1.50	3	3	5
1"	2.50	15	15	38
1-1/2"	5.00	6	6	30
2"	8.00	18	18	144
3"	21.75	2	2	44
4"	37.50	1	1	38
6"	80.00	1	1	80
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**46**	**46**	**379**

Appendix E
Water Meter Summary

Wholesale Customer: **City of White Settlement** **% of Water Demands Served by FTW (2020):** **55%**

*Meter count information not received. Meter counts estimated based on previous IF study.

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	5,156	2,836	2,836
3/4"	1.50	0	0	0
1"	2.50	0	0	0
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**5,156**	**2,836**	**2,836**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	236	130	130
3/4"	1.50	0	0	0
1"	2.50	74	41	103
1-1/2"	5.00	46	25	125
2"	8.00	113	62	496
3"	21.75	13	7	152
4"	37.50	4	2	75
6"	80.00	1	1	80
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**487**	**268**	**1,161**

Wholesale Customer: **City of Willow Park** **% of Water Demands Served by FTW (2020):** **0%**

Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	1,841	0	0
3/4"	1.50	3	0	0
1"	2.50	1	0	0
1-1/2"	5.00	0	0	0
2"	8.00	0	0	0
3"	21.75	0	0	0
4"	37.50	0	0	0
6"	80.00	0	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**1,845**	**0**	**0**
Non-Residential Meters				
Meter Size	Service Unit Equivalency Factor	Number of Meters	Number of Meters Served by Ft. Worth	SUE Meters Served by Ft. Worth
5/8" x 3-4"	1.00	75	0	0
3/4"	1.50	7	0	0
1"	2.50	38	0	0
1-1/2"	5.00	17	0	0
2"	8.00	26	0	0
3"	21.75	5	0	0
4"	37.50	4	0	0
6"	80.00	4	0	0
8"	140.00	0	0	0
10"	210.00	0	0	0
	TOTAL	**176**	**0**	**0**

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