ORDINANCE NO. 22525-12-2016

AN ORDINANCE AMENDING CHAPTER 35, "WATER AND SEWERS", OF THE CODE OF THE CITY OF FORT WORTH (2015)AS AMENDED, BY AMENDING ARTICLE ш "CHARGES", DIVISION 2 "WATER AND WASTEWATER IMPACT FEES", EXHIBIT A, INCORPORATED BY REFERENCE INTO SECTION 35-70.2(a); AMENDING EXHIBIT В, **INCORPORATED BY REFERENCE INTO SECTION 35-70.2(b);** AMENDING SCHEDULE 1, INCORPORATED BY REFERENCE INTO SECTIONS 35-70.3(a), 35-73(a) and 35-78(a); AMENDING 2, INCORPORATED BY REFERENCE INTO SCHEDULE SECTION 35-70.3(b), 35-73(b) and 35-78(b); AMENDING EXHIBIT C, INCORPORATED BY REFERENCE INTO SECTION 35-71(a): AMENDING EXHIBIT D, INCORPORATED BY REFERENCE INTO SECTION 35-72(a); AMENDING EXHIBIT Ε. **INCORPORATED BY REFERENCE INTO SECTION 35-76(a);** AMENDING EXHIBIT F, INCORPORATED BY REFERENCE INTO SECTION 35-77(a); MAKING THIS ORDINANCE CUMULATIVE OF PRIOR ORDINANCES AND REPEALING ALL ORDINANCES AND PROVISIONS OF THE CODE OF THE CITY OF FORT WORTH IN CONFLICT HEREWITH; PROVIDING A SEVERABILITY CLAUSE; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, Section 395.052(a) of Chapter 395 of the Texas Local Government Code requires the City to review and update its current Land Use Assumptions, Capital Improvements Plans and Impact Fees related to water and wastewater facilities at least every five (5) years; and

WHEREAS, in January of 2016, the City began the process to amend the Land Use Assumptions, Capital Improvements Plans and Impact Fees in compliance with the statutory requirements of Chapter 395; and

WHEREAS, the Capital Improvement Advisory Committee, established pursuant to Section 395.058 of Chapter 395, convened on April 14, June 8, July 7, August 15, September 14 and October 5, 2016 to discuss and review the Capital Improvement costs eligible to be included in the Impact Fee calculations, credit calculation methodology and to review and approve the Land Use Assumptions, Capital Improvements Plans and Maximum Assessable Impact Fees; and to make a recommendation on the Impact Fees the City Council should adopt for collection; and

WHEREAS on October 12, 2016, the City made available to the public, copies of the proposed amended Land Use Assumptions and Capital Improvements Plans related to water and wastewater facilities and impact fees; and

WHEREAS, as required by Section 395.050 of the Texas Local Government Code, the Capital Improvement Advisory Committee approved the Land Use Assumptions, Capital Improvements Plans and Maximum Assessable Water and Wastewater Impact Fees per service unit and submitted its written comments on the proposed amendments to the City Council on November 1, 2016; and

WHEREAS, the Capital Improvement Advisory Committee recommends adoption of 40% of the Maximum Assessable per service unit established by the Land Use Assumptions and Capital Improvements Plans report which equates to \$1,758 and \$1,044, respectively, with an annual phase-in of \$627 per equivalent unit over three (3) years to reach the 40%; and

WHEREAS, as required by Section 395.054 of the Texas Local Government Code, the City Council conducted a public hearing to discuss the proposed amendments to the Land Use Assumptions, Capital Improvements Plans and Impact Fees on November 15, 2016, to be adopted by ordinance within thirty (30) days following the public hearing; and WHEREAS, by the adoption of this ordinance, the City Council approves the amendments to the Land Use Assumptions and Capital Improvements Plans; and establishes the new Maximum Assessable Impact Fees and the schedule(s) of the amount of such Maximum Assessable Impact Fees to be collected upon issuance of a building permit.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF FORT WORTH, TEXAS:

SECTION 1.

Part II of the Code of the City of Fort Worth, Texas (2015), as amended, Chapter 35 "Water and Sewers", Article III "Charges", Division 2 "Water and Wastewater Impact Fees", Section 35-70.2(a), Exhibit A, "Land Use Assumptions for Water", incorporated by reference, is hereby amended to be as shown on <u>Exhibit A</u>, attached hereto.

SECTION 2.

Part II of the Code of the City of Fort Worth, Texas (2015), as amended, Chapter 35 "Water and Sewers", Article III "Charges", Division 2 "Water and Wastewater Impact Fees", Section 35-70.2(b), Exhibit B, "Land Use Assumptions for Wastewater", incorporated by reference is hereby amended to be as shown on **Exhibit B**, attached hereto.

SECTION 3.

Part II of the Code of the City of Fort Worth, Texas (2015), as amended, Chapter 35 "Water and Sewers", Article III "Charges", Division 2 "Water and Wastewater Impact Fees", Sections 35-70.3(a), 35-73(a) and 35-78(a) Schedule 1 incorporated by reference is hereby amended to establish the new Maximum Assessable Impact Fees for Water and Wastewater for all plats recorded on or after April 1, 2017 as shown on the amended Schedule 1 attached hereto.

SECTION 4.

Part II of the Code of the City of Fort Worth, Texas (2015), as amended, Chapter 35 "Water and Sewers", Article III "Charges", Division 2 "Water and Wastewater Impact Fees", Sections 35-70.3(b), 35-73(b) and 35-78(b) Schedule 2, incorporated by reference is hereby amended to show the discounted amount of the Maximum Assessable Impact Fees, established in Section 3, for all plats recorded on or after April 1, 2017 and, to be effective and collected at the time a building permit is issued by the schedules described and attached hereto:

- Schedule 2A shall be the discounted amount of the Maximum Assessable Impact Fees to be effective and collected for all building permits issued on or after April 1, 2017 but before April 1, 2018 and shall be titled "Collected Impact Fee for Water and Wastewater Schedule – Year 1".
- Schedule 2B shall be the discounted amount of the Maximum Assessable Impact Fees to be effective and collected for all building permits issued on or after April 1, 2018 but before April 1, 2019, and shall be titled "Collected Impact Fee for Water and Wastewater Schedule – Year 2".
- Schedule 2C shall be the discounted amount of the Maximum Assessable Impact Fees to be effective and collected for all building permits issued on or after April 1, 2019 until the adoption of new Impact Fees by the City Council in compliance with Chapter 395 of the Texas Local Government Code, and shall be titled "Collected Impact Fee for Water and Wastewater Schedule – Year 3".

SECTION 5.

Part II of the Code of the City of Fort Worth, Texas (2015), as amended, Chapter 35 "Water and Sewers", Article III "Charges", Division 2 "Water and Wastewater Impact Fees", Section 35-71(a), Exhibit C, "Water Benefit Area", incorporated by reference, is hereby amended to be as shown on **Exhibit C**, attached hereto.

SECTION 6.

Part II of the Code of the City of Fort Worth, Texas (2015), as amended, Chapter 35 "Water and Sewers", Article III "Charges", Division 2 "Water and Wastewater Impact Fees", Section 35-72(a), Exhibit D, "Water Capital Improvements Plan", incorporated by reference, is hereby amended to be as shown on **Exhibit D**, attached hereto.

SECTION 7.

Part II of the Code of the City of Fort Worth, Texas (2015), as amended, Chapter 35 "Water and Sewers", Article III "Charges", Division 2 "Water and Wastewater Impact Fees", Section 35-76(a), Exhibit E, "Wastewater Benefit Area", incorporated by reference, is hereby amended to be as shown on **Exhibit E**, attached hereto.

SECTION 8.

Part II of the Code of the City of Fort Worth, Texas (2015), as amended, Chapter 35 "Water and Sewers", Article III "Charges", Division 2 "Water and Wastewater Impact Fees", Section 35-77(a), Exhibit F, "Wastewater Capital Improvements Plan", incorporated by reference, is hereby amended to be as shown on <u>Exhibit F</u>, attached hereto.

SECTION 9.

Part II of the Code of the City of Fort Worth, Texas (2015), as amended, Chapter 35 "Water and Sewers", Article III "Charges", Division 2 "Water and Wastewater Impact Fees", Section 35-70.5(b)(1), "Computation and Collection of Impact Fee", is hereby amended to be as follows:

The amount of each Impact Fee due shall be determined by multiplying the number of service units generated by the new development by the Impact Fee due per service unit for the benefit area using the schedule then in effect.

SECTION 10.

This ordinance shall be cumulative of all provisions of ordinances and of the Code of the City of Fort Worth, Texas (2015), as amended, except where the provisions of this ordinance are in direct conflict with the provisions of such ordinances and such Code, in which event conflicting provisions of such ordinances and such Code are hereby repealed.

SECTION 11.

It is hereby declared to be the intention of the City Council that the sections, paragraphs, sentences, clauses and phrases of this ordinance are severable, and, if any phrase, clause, sentence, paragraph or section of this ordinance shall be declared unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs and section of this ordinance, since the same would have been enacted by the City Council without the incorporation in this ordinance of any such unconstitutional phrase, clause, sentence, paragraph or section.

SECTION 12.

This ordinance shall be effective on April 1, 2017.

APPROVED AS TO FORM AND LEGALITY:

Sr. Assistant City Attorney

ADOPTED: December 6, 2016

Mary Kayser, City Secretary

SCHEDULE 1

MAXIMUM ASSESSABLE IMPACT FEE FOR WATER AND WASTEWATER SCHEDULE

For all Plats Recorded on or after April 1, 2017

METER SIZE	EQUIVALENCY FACTOR	WATER IMPACT FEE	WASTEWATER IMPACT FEE \$2,609 \$3,914 \$6,523 \$13,045 \$20,872 \$56,746	
5/8" x 5/8" and 5/8" x 3/4"	1.00	\$4,395		
3/4" x 3/4"	1.50	\$6,593		
1"	2.50	\$10,988		
1-1/2"	5.00	\$21,975		
2"	8.00	\$35,160		
3"	21.75	\$95,591		
4"	37.50	\$164,813	\$97,838	
6"	80.00	\$351,600	\$208,720	
8"	140.00	\$615,300	\$365,260	
10"	210.00	\$922,950	\$547,890	

SCHEDULE 2A

THE EFFECTIVE AND COLLECTED IMPACT FEE FOR WATER AND WASTEWATER SCHEDULE – YEAR 1 Effective for all Building Permits issued on or after April 1, 2017, but before April 1, 2018

METER SIZE	EQUIVALENCY FACTOR	WATER IMPACT FEE	WASTEWATER IMPACT FEE \$577 \$865 \$1,442 \$2,883 \$4,613 \$12,542	
5/8" x 5/8" and 5/8" x 3/4"	1.00	\$971		
3/4" x 3/4"	1.50	\$1,457		
1"	2.50	\$2,428		
1-1/2"	5.00	\$4,857		
2"	8.00	\$7,771		
3"	21.75	\$21,127		
4"	37.50	\$36,426	\$21,624	
6"	80.00	\$77,709	\$46,131	
8"	140.00	\$135,991	\$80,729	
10"	210.00	\$203,987	\$121,093	

SCHEDULE 2B

THE EFFECTIVE AND COLLECTED IMPACT FEE FOR WATER AND WASTEWATER SCHEDULE – YEAR 2 Effective for all Building Permits issued on or after April 1, 2018, but before April 1, 2019

METER SIZE	EQUIVALENCY FACTOR	WATER IMPACT FEE	WASTEWATER IMPACT FEE \$810 \$1,215 \$2,025 \$4,051 \$6,482 \$17,622	
5/8" x 5/8" and 5/8" x 3/4"	1.00	\$1,365		
3/4" x 3/4"	1.50	\$2,047		
1"	2.50	\$3,412		
1-1/2"	5.00	\$6,824		
2"	8.00	\$10,918		
3"	21.75	\$29,685		
4"	37.50	\$51,180	\$30,382	
6"	80.00	\$109,185	\$64,815	
8"	140.00	\$191,073	\$113,427	
10"	210.00	\$286,610	\$170,140	

SCHEDULE 2C

THE EFFECTIVE AND COLLECTED IMPACT FEE FOR WATER AND WASTEWATER SCHEDULE – YEAR 3

Effective for all Building Permits issued on or after April 1, 2019

METER SIZE	EQUIVALENCY FACTOR	WATER IMPACT FEE	WASTEWATER IMPACT FEE \$1,044 \$1,566 \$2,609 \$5,219 \$8,350 \$22,702	
5/8" x 5/8" and 5/8" x 3/4"	1.00	\$1,758		
3/4" x 3/4"	1.50	\$2,637		
1"	2.50	\$4,396		
1-1/2"	5.00	\$8,791		
2"	8.00	\$14,066		
3"	21.75	\$38,242		
4"	37.50	\$65,934	\$39,141	
6"	80.00	\$140,660	\$83,500	
8"	140.00	\$246,155	\$146,125	
10"	210.00	\$369,233	\$219,187	

City of Fort Worth, Texas Mayor and Council Communication

COUNCIL ACTION: Approved on 12/6/2016 - Ordinance No. 22525-12-2016

DATE: Tuesday, December 6, 2016

REFERENCE NO .: G-18894

LOG NAME: 60UPDATE WTR AND WW IMPACT FEES 2016

SUBJECT:

Adopt Ordinance Amending Chapter 35 of the City Code "Water and Sewers", Article III "Charges", Division 2 "Water and Wastewater Impact Fees", Revising the Land Use Assumptions, Capital Improvements Plans and Impact Fee Schedules for Water and Wastewater Facilities (ALL COUNCIL DISTRICTS)

RECOMMENDATION:

It is recommended that the City Council adopt the attached ordinance amending Chapter 35 of the City Code "Water and Sewers" Article III "Charges", Division 2 "Water and Wastewater Impact Fees", revising the land use assumptions, capital improvements plans and impact fee schedules for water and wastewater facilities.

DISCUSSION:

Section 395.052 of the Local Government Code requires the City to amend its Land Use Assumptions (LUA), Capital Improvements Plans (CIP) and Impact Fees at least every five years and as necessary to reflect any changes in the LUA, CIP and the Impact Fee Ordinance. The LUA amendment includes amending the service area boundaries and population projections. The CIP amendment includes amending the list of impact fee eligible projects and costs for the next 10 years based on the amended LUA. The last impact fee update was in 2012. The City is further required to hold a public hearing to discuss the amendments to the LUA and CIP.

On January 12, 2016 (M&C C-27594) the City Council authorized the City Manager to execute a contract with Freese and Nichols to prepare the amendments to the Land Use Assumptions, Capital Improvements Plans and revised Maximum Assessable Impact Fee (City Secretary Contract No. 47451). City staff met with the Capital Improvements Advisory Committee (CAC), Wholesale Customers' Sub-Committee, Development Advisory Committee (DAC) representatives and Retail Rate Structure Stakeholder Group representatives on April 14, June 8, July 7, August 15, September 14 and October 5, 2016 as part of the process to complete the LUA and CIP amendment study. Through out these meetings, Freese and Nichols presented its report and the revisions to these committees.

On June 10, 2016, City staff and our consultant briefed the Wholesale Customers' Advisory Committee on the status of the LUA and CIP amendment study. On August 15 and November 14, 2016, the amendments were presented to the DAC and on October 11, 2016, to the Infrastructure & Transportation Committee of the City Council.

Pursuant to Section 395.054 of the Texas Local Government Code, on October 11, 2016, the City Council approved a resolution calling for a public hearing to consider the adoption of the recommended amendments to the LUA, CIP, Maximum Assessable Impact Fee and the Water and Wastewater Impact Fee Schedules. Also in compliance with Chapter 395, notice of the public hearing was published in various newspapers in Tarrant and surrounding counties on October 12, 2016.

The amendments have been available for public inspection since October 12, 2016, at the Downtown Fort Worth Library, City Secretary's Office and Fort Worth Water Department. The amendments were also made available on the City's website.

In accordance with Chapter 395.050 of the Local Government Code, on October 5, 2016, the CAC unanimously voted to recommend adoption of the amendments to the LUA and CIP, which established the Water and Wastewater Maximum Assessable Impact Fee to be \$7,004.00 per equivalent meter unit. By a 4 to 1 vote, the CAC recommended a yearly \$627.00 increase in impact fees for the next three years, an increase from the existing \$921.00 to \$2,802.00 per equivalent meter unit, which corresponds to 40 percent of the Maximum Assessable Impact Fee. On November 1st, the CAC's written recommendations were presented to City Council during the Council Work Session.

On November 15, 2016, the City Council conducted a public hearing in an open session at a regularly scheduled City Council meeting to consider and hear comments on the proposed amendments.

Staff recommends that the City Council approve the amended LUA, CIP and \$7,004.00 as the Water and Wastewater Maximum Assessable Impact Fee by adoption of the attached ordinance. The ordinance would establish impact fees schedules increasing the fees annually by \$627.00 over the next three years, from the existing \$921.00 to \$2,802.00 per equivalent meter to reach the CAC's recommended 40 percent of the Maximum Assessable Impact Fee by April 1, 2019.

An equivalent meter unit is a measurement applicable to a typical single-family dwelling. The proposed water and wastewater impact fees schedules would take effect on April 1, 2017.

This M&C does not request approval of a contract with a business entity.

FISCAL INFORMATION / CERTIFICATION:

The Director of Finance certifies that the Water Department is responsible for the collection and deposit of funds due to the City.

FUND IDENTIFIERS (FIDs):

Fund	Department	Account	Project	ProgramActivity	Budget	Reference #	Amount
	ID	12.000	ID		Year	(Chartfield 2)	

FROM

Fund	Department	Account Project	ProgramActivity	Budget	Reference #	Amount
1.1	ID	ID		Year	(Chartfield 2)	

CERTIFICATIONS:

Submitted for City Manager's Office by:	Jay Chapa (5804) John Carman (8246)		
Originating Department Head:			
Additional Information Contact:	Wendy Chi-Babulal (8242)		

A Resolution

NO. 4689-10-2016

A RESOLUTION SETTING A PUBLIC HEARING TO BE HELD DURING THE CITY COUNCIL MEETING BEGINNING AT 7:00 P.M. ON TUESDAY, NOVEMBER 15, 2016 IN THE CITY COUNCIL CHAMBERS OF THE CITY OF FORT WORTH, 1000 THROCKMORTON STREET, FORT WORTH, TEXAS, TO CONSIDER AMENDMENTS TO THE IMPACT FEES FOR WATER AND WASTEWATER FACILITIES

WHEREAS, in accordance with Chapter 395 of the Texas Local Government Code, a public hearing is required to consider amendments to Land Use Assumptions, Capital Improvements Plans and associated impact fees for water and wastewater facilities; and

WHEREAS, the City of Fort Worth is considering amendments to Land Use Assumptions, Capital Improvements Plans, and associated impact fees for water and wastewater facilities.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF FORT WORTH, TEXAS:

A public hearing will be held at 7:00 p.m. on Tuesday, November 15, 2016, in the City Council Chambers of the City of Fort Worth, 1000 Throckmorton, Fort Worth, Texas, for the purpose of considering amendments to the Land Use Assumptions and Capital Improvements Plan for water and wastewater facilities for which an amended impact fee may be imposed. Impact fees for each category of facilities may be used to generate revenue for funding or recouping the costs of water facilities and wastewater facilities, respectively, or the expansion of such necessitated by and which are attributable to new development. Revised impact fees will be considered at a late date.

Any member of the public may appear at the public hearing and present evidence for or against the approval of the Land Use Assumptions, Capital Improvements Plan amendments and associated impact fees.

Adopted this 11 th day of October, 2016.	FORT
ATTEST:	
marken	*
Mary J. Kayser, City Secretary	Cuana and a cannot
	<u> 1. п</u>
FORT WORTH	VI - J how - Mary
-	



October 21, 2016

The Honorable Mayor and City Council City of Fort Worth 1000 Throckmorton St. Fort Worth, TX 76102

RE: Capital Improvements Advisory Committee Recommendations

Dear Mayor Price and Members of the City Council:

The Capital Improvements Plan Advisory Committee (CAC) has been working with City staff and the consulting firm of Freese and Nichols, Inc. since January 2016 on an update to the Land Use Assumptions and Capital Improvements Plan for water and wastewater facilities, which are used to calculate Impact Fees.

The CAC is composed of the following members:

- Mr. Bob Madeja, Chairman Building Community
- Ms. Betty Mars, Neighborhood Community
- Mr. Don Little, Development Community
- Mr. Don E. Allen, Real Estate Representative
- Mr. Steve Sievers, ETJ Representative
- Mr. George Felan, Neighborhood Community

After review and discussion of these items, the CAC met on October 5, 2016 and unanimously recommends the following:

- The CAC finds that the methodology used for these determinations made by Freese and Nichols is in accordance with Chapter 395 of the Texas Local Government Code.
- The updated population and employment information is for the twenty year planning period (2017-2037). The planning period must be at least ten years per Chapter 395. These numbers are based on information provided by the City of Fort Worth Planning Department, the North Central Texas Council of Governments, and the wholesale customers' survey responses. Each wholesale customer had the opportunity to revise its forecast after the review process.
- The Capital Improvements Plan methodology for cost allocation is reasonable and only includes costs attributable to new development in the next ten years (2017-2027) per Chapter 395. The water and wastewater Capital Improvement Plan represents the new facilities required for the growth based upon the updated Land Use Assumptions.

- The equivalent meter unit is an appropriate measure for service unit determination for the next ten years (2017 – 2027) per Chapter 395, and the calculation of service units has been made accurately.
- The maximum potential impact fee is calculated by dividing the total growth related capital
 improvements project cost for the next ten years by the total projected growth in the number
 of service units for the next ten years.
- Adoption of the updated Land Use Assumptions, the Capital Improvements Plan, and \$7004 per service unit as the Maximum Allowable Impact Fee.

By a 4 to 1 vote, the CAC recommends a yearly increase of \$627 per equivalent unit for the next three years from the existing \$921 to \$2,802 per equivalent unit, which is 40 percent of the \$7,004 per equivalent unit Maximum Allowable Impact Fee. Prior to the vote, the dissenting voter reiterated their concern with rate payers subsidizing future growth.

The CAC will continue to review the on-going impact fee collection, capital improvements progress and service unit growth and provide semi-annual reports to City Council in accordance with Chapter 395.

Sincerely

Bob Madeja (Chairman, Capital Improvements Plan Advisory Committee

Don E. Allen, Real Estate Representative

Don Little, Development Community

George Daniel Felan

10/20/2016 08:35 PM GMT

George Felan, Neighborhood Community

Betty Mars, Neighborhood Community

Steve Sievers, ETJ Representative

- The equivalent meter unit is an appropriate measure for service unit determination for the next ten years (2017 – 2027) per Chapter 395, and the calculation of service units has been made accurately.
- The maximum potential impact fee is calculated by dividing the total growth related capital improvements project cost for the next ten years by the total projected growth in the number of service units for the next ten years.
- Adoption of the updated Land Use Assumptions, the Capital Improvements Plan, and \$7004 per service unit as the Maximum Allowable Impact Fee.

By a 4 to 1 vote, the CAC recommends a yearly increase of \$627 per equivalent unit for the next three years from the existing \$921 to \$2,802 per equivalent unit, which is 40 percent of the \$7,004 per equivalent unit Maximum Allowable Impact Fee. Prior to the vote, the dissenting voter reiterated their concern with rate payers subsidizing future growth.

The CAC will continue to review the on-going impact fee collection, capital improvements progress and service unit growth and provide semi-annual reports to City Council in accordance with Chapter 395.

Sincerely,

Bob Madeja Chairman, Capital Improvements Plan Advisory Committee

Don E. Allen, Real Estate Representative

George Felan, Neighborhood Community

10/24/2016 02:31 AM GMT Betty Mars, Neighborhood Community

Don Little, Development Community

Steve Sievers, ETJ Representative

- The equivalent meter unit is an appropriate measure for service unit determination for the next ten years (2017 – 2027) per Chapter 395, and the calculation of service units has been made accurately.
- The maximum potential impact fee is calculated by dividing the total growth related capital
 improvements project cost for the next ten years by the total projected growth in the number
 of service units for the next ten years.
- Adoption of the updated Land Use Assumptions, the Capital Improvements Plan, and \$7004 per service unit as the Maximum Allowable Impact Fee.

By a 4 to 1 vote, the CAC recommends a yearly increase of \$627 per equivalent unit for the next three years from the existing \$921 to \$2,802 per equivalent unit, which is 40 percent of the \$7,004 per equivalent unit Maximum Allowable Impact Fee. Prior to the vote, the dissenting voter reiterated their concern with rate payers subsidizing future growth.

The CAC will continue to review the on-going impact fee collection, capital improvements progress and service unit growth and provide semi-annual reports to City Council in accordance with Chapter 395.

Sincerely,

Bob Madeja Chairman, Capital Improvements Plan Advisory Committee

Don E. Allen, Real Estate Representative

George Felan, Neighborhood Community

Don Little, Development Community

Betty Mars, Neighborhood Community

Steve Sievers 😇 10/24/2016 01:38 PM GMT

Steve Sievers, ETJ Representative



Innovative approaches Practical results Outstanding service

Water & Wastewater Impact Fee Update

EXHIBIT A: Land Use Assumptions Water Facilities 2017-2037

Prepared for:

City of Fort Worth Water Department



FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125

October 07, 2016



Prepared for:

City of Fort Worth Water Department



Prepared by:

FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125

TABLE OF CONTENTS

FORT WORTH.

OLS

1.0	Introduction
2.0	Water Service Area
3.0	Population and Employment Projections
3.1	City of Fort Worth Projections
3.2	Wholesale Customers
3.3	Total Water Service Area

LIST OF TABLES

Table 3-1	City of Fort Worth Retail Population and Employment Projections
Table 3-2	Wholesale Customer Service Population and Employment Projections
Table 3-3	Total Water Service Area Population and Employment Projections

LIST OF FIGURES

Figure A-1	Water Service Area	3
i iguien i	Water Service In communication	

APPENDICES

Appendix A- Fort Worth Water Service Area CCN Map Appendix B- Water Wholesale Customer Surveys Appendix C- Water Wholesale Customer Population and Employment Projections

1.0 INTRODUCTION

Chapter 395 of the Texas Local Government Code requires an impact fee analysis before impact fees can be assessed. Chapter 395 defines an impact fee as "a charge or assessment imposed by a political subdivision against new development in order to generate revenue for funding or recouping the costs of capital improvements or facility expansions necessitated by and attributable to the new development." In September 2001, Senate Bill 243 amended Chapter 395, thus creating the current procedure for implementing impact fees. Chapter 395 identifies the following items as impact fee eligible costs:

FORT WORTH

- Construction contract price
- Surveying, engineering and inspection fees
- Land acquisition costs
- Cost of engineering studies
- Fees paid to the consultant preparing or updating the capital improvements plan (CIP)
- Projected interest charges and other finance costs for projects identified in the CIP

Chapter 395 also identifies items that impact fees cannot be used to pay for, such as:

- Construction, acquisition, or expansion of public facilities or assets other than those identified on the capital improvements plan
- Repair, operation or maintenance of existing or new capital improvements
- Upgrading, updating, expanding or replacing existing capital improvements to serve existing development in order to meet stricter safety, efficiency, environmental or regulatory standards
- Upgrading, updating, expanding or replacing existing capital improvements to provide better service to existing development
- Administrative and operating costs of the political subdivision
- Principal payments and interest or other finance charges on bonds or other indebtedness, except as allowed above

Exhibit A- Land Use Assumptions: Water Facilities

In January 2016, the City of Fort Worth authorized Freese and Nichols, Inc. (FNI) to perform an update to the impact fee analysis on the City's water and wastewater systems. The purpose of this report is to address the methodology used in the development of the water facilities land use assumptions. The methodology used herein satisfies the requirements of the Texas Local Government Code Section 395 for the establishment of water and wastewater impact fees.

FORT WORTH.

FREESE

The City updated its water land use assumptions and capital improvements plan in 1993, 1996, 1999, 2004, 2009 and 2012. This report updates the water facilities land use assumptions for the years 2017, 2027 and 2037. This information will be used in the update of the water impact fees.

2.0 WATER SERVICE AREA

Chapter 395 defines the service area as the area within the corporate boundaries or extraterritorial jurisdiction, as determined under Chapter 42, of the political subdivision to be served by the capital improvements or facilities expansions specified in the capital improvements plan, except roadway facilities and storm water, drainage, and flood control facilities. The service area for Fort Worth's water system is defined as the city limits, the unincorporated existing extraterritorial jurisdiction (ETJ), and wholesale customers. This service area is the area to which water service could be provided on a retail basis and to all wholesale water customers. **Figure A-1** shows the entire water service area for the City of Fort Worth.

FORT WORTH

FREESE

The City of Fort Worth provides water to 30 wholesale customers which make up the water service area. For the purposes of this study, it is assumed that the wholesale customers will remain under contract with the City for the duration of the future planning periods (2017-2037). The wholesale customers are:

•	Aledo		Haltom City		Roanoke
•	Bethesda Water Supply Corp.		Haslet	•	Saginaw
÷	Burleson	•	Hurst	٠	Sansom Park
•	Crowley	•	Keller	•	Southlake
•	D/FW Airport	•	Kennedale	•	Trinity River Authority- TCWSP
•	Dalworthington Gardens	÷	Lake Worth		Trophy Club MUD No. 1
÷	Edgecliff Village		North Richland Hills	•	Westlake
•	Everman		Northlake	•	Westover Hills
•	Forest Hill		Richland Hills		Westworth Village
•	Grand Prairie	•	River Oaks	•	White Settlement

Watauga is served by the City of Fort Worth through North Richland Hills and is not a direct wholesale customer. Fort Worth serves as an emergency provider for River Oaks and Sansom Park. River Oaks and Sansom Park are excluded from the land use assumptions and future water facilities projections.

Water & Wastewater Impact Fee Update Exhibit A- Land Use Assumptions: Water Facilities



Additionally, the City provides water service to unincorporated areas that are not included within its city limits or its wholesale customers' city limits. These areas are within Fort Worth's Certificate of Convenience and Necessity (CCN) and are included in the water service area. A map showing the CCNs within the City of Fort Worth's water service area can be found in **Appendix A**.



3.0 POPULATION AND EMPLOYMENT PROJECTIONS

Population and employment projections are important elements in the impact fee process. Water demands depend on the residential population and commercial development served by the distribution system and determine the sizing and location of system infrastructure. For the impact fee update, populations are projected for years 2017, 2027 and 2037. FNI utilized data from wholesale customer surveys, the Fort Worth Planning and Development Department and North Central Texas Council of Governments (NCTCOG) projections to determine the population and employment projections for the City of Fort Worth and its customers for the planning periods of 2017, 2027 and 2037.

FORT WORTH.

FREES

3.1 CITY OF FORT WORTH PROJECTIONS

FNI utilized NCTCOG data, along with data from the City of Fort Worth Planning and Development Department, to develop population projections for the 2017, 2027 and 2037 planning periods. **Table 3-1** shows the City's population and employment projections and annual growth rate for each 10-year period.

	Pop	Population		Employment		
Year	Amount	Annual Growth Rate*	Amount	Annual Growth Rate*		
2017	825,967	-	550,117	-		
2027	1,026,780	2.2%	679,901	2.1%		
2037	1,209,197	1.6%	809,687	1.8%		

 Table 3-1
 City of Fort Worth Retail Population and Employment Projections

*Annual Growth Rate is based on information from NCTCOG and the Fort Worth Planning and Development Department

The retail population is projected to annually increase 2.2% from 2017 to 2027 and 1.6% from 2027 to 2037. The retail employment is projected to annually increase 2.1% from 2017 to 2027 and 1.8% from 2027 to 2037.

Exhibit A- Land Use Assumptions: Water Facilities

3.2 WHOLESALE CUSTOMERS

Surveys were sent out by the City of Fort Worth to each wholesale customer to provide population and employment projections for each planning period. Wholesale customers were contacted with follow-up emails or phone calls if no survey was returned by the requested due date. If no survey was returned, FNI used projection information from NCTCOG to estimate population and employment. The wholesale customer surveys received by FNI can be found in **Appendix B**. The completed surveys were compared to NCTCOG projections to check for validity and consistency. Adjustments were made to population and employment projections where necessary. **Table 3-2** summarizes the total served wholesale customer population and employment projections.

FORT W

FREES

		THE REAL PROPERTY AND A DESCRIPTION OF A			
	Рор	oulation	Emp	loyment	
Ye <u>a</u> r	Amount	Annual Growth Rate*	Amount	Annual Growth Rate*	
2017	392,163	-	201,803	-	
2027	462,435	1.7%	245,018	2.0%	
2037	537,782	1.5%	292,729	1.8%	

Table 3-2 Wholesale Customer Service Population and Employment Projections

*Annual Growth Rate is based on information from NCTCOG, Fort Worth Wastewater Master Plan, and Wholesale Customer Surveys

The served wholesale population is projected to annually increase 1.7% from 2017 to 2027 and 1.5% from 2027 to 2037. The served wholesale employment is projected to annually increase 2.0% from 2017 to 2027 and 1.8% from 2027 to 2037. Detailed service population and employment projections broken down by each wholesale customer can be found in **Appendix C**.

Exhibit A- Land Use Assumptions: Water Facilities

3.3 TOTAL WATER SERVICE AREA

Table 3-3 shows the combined population and employment projections for the City of Fort Worth andits wholesale customer cities. The population is projected to annually increase 2.0% from 2017 to 2027and 1.6% from 2027 to 2037. The employment is projected to annually increase 2.1% from 2017 to 2027and 1.8% from 2027 to 2037.

FORT WORTH.

FREESE

	Population			Employment			
	2017	2027	2037	2017	2027	2037	
City of Fort Worth	825,967	1,026,780	1,209,197	550,117	679,901	809,687	
Wholesale Customers	392,163	462,435	537,782	201,803	245,018	292,729	
TOTAL	1,218,130	1,489,215	1,746,979	751,920	924,919	1,102,416	
Annual Growth Rate*	-	2.0%	1.6%	-	2.1%	1.8%	

Table 3-3 Total Water Service Area Population and Employment Projections

*Annual Growth Rate is based on information from NCTCOG, the Fort Worth Planning and Development Department and Wholesale Customer Surveys

FREESE AND NICHOLS, INC. Exhibit A Land Use Assumptions: Water Facilities

FREESE AND NICHOLS, INC. 4055 INTERNATIONAL PLAZA, SUITE 200 FORT WORTH, TEXAS 76109 817-735-7300

www.freese.com



Innovative approaches Practical results Outstanding service

Water & Wastewater Impact Fee Update

EXHIBIT B: Land Use Assumptions Wastewater Facilities 2017-2037

Prepared for:

City of Fort Worth Water Department



FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125

October 07, 2016



Prepared for:

City of Fort Worth Water Department



Prepared by:

FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125

Exhibit B- Land Use Assumptions: Wastewater Facilities

TABLE OF CONTENTS

FORT WORTH.

OLS

1.0	Introduction
2.0	Wastewater Service Area
3.0	Population and Employment Projections
3.1	City of Fort Worth Projections
3,2	Wholesale Customers
3.3	Total Wastewater Service Area

LIST OF TABLES

Table 3-1	City of Fort Worth Retail Service Population and Employment Projections
Table 3-2	Wholesale Customer Service Population and Employment Projections
Table 3-3	Total Wastewater Service Area Population and Employment Projections

LIST OF FIGURES

n	We show here Direct Convine Among	2.	2
Figure B-1	Wastewater Plant Service Areas	474	4

APPENDICES

Appendix A- Wastewater Wholesale Customer Surveys Appendix B- Wastewater Wholesale Customer Population and Employment Projections

Exhibit B- Land Use Assumptions: Wastewater Facilities

1.0 INTRODUCTION

Chapter 395 of the Texas Local Government Code requires an impact fee analysis before impact fees can be assessed. Chapter 395 defines an impact fee as "a charge or assessment imposed by a political subdivision against new development in order to generate revenue for funding or recouping the costs of capital improvements or facility expansions necessitated by and attributable to the new development." In September 2001, Senate Bill 243 amended Chapter 395, thus creating the current procedure for implementing impact fees. Chapter 395 identifies the following items as impact fee eligible costs:

FORT WORTH.

FREESE

- Construction contract price
- Surveying, engineering and inspection fees
- Land acquisition costs
- Cost of engineering studies
- Fees paid to the consultant preparing or updating the capital improvements plan (CIP)
- · Projected interest charges and other finance costs for projects identified in the CIP

Chapter 395 also identifies items that impact fees cannot used be to pay for, such as:

- Construction, acquisition, or expansion of public facilities or assets other than those identified on the capital improvements plan
- Repair, operation or maintenance of existing or new capital improvements
- Upgrading, updating, expanding or replacing existing capital improvements to serve existing development in order to meet stricter safety, efficiency, environmental or regulatory standards
- Upgrading, updating, expanding or replacing existing capital improvements to provide better service to existing development
- Administrative and operating costs of the political subdivision
- Principal payments and interest or other finance charges on bonds or other indebtedness, except as allowed above

Exhibit B- Land Use Assumptions: Wastewater Facilities

In January 2016, the City of Fort Worth authorized Freese and Nichols, Inc. (FNI) to perform an update to the impact fee analysis on the City's water and wastewater systems. The purpose of this report is to address the methodology used in the development of the wastewater facilities land use assumptions. The methodology used herein satisfies the requirements of the Texas Local Government Code Section 395 for the establishment of water and wastewater impact fees.

FORT WORTH

FREESE

The City updated its wastewater land use assumptions and capital improvements plan in 1993, 1996, 1999, 2004, 2009 and 2012. This report updates the wastewater facilities land use assumptions for the years 2017, 2027 and 2037. This information will be used in the update of the wastewater impact fees.

2.0 WASTEWATER SERVICE AREA

Chapter 395 defines the service area as the area within the corporate boundaries or extraterritorial jurisdiction, as determined under Chapter 42, of the political subdivision to be served by the capital improvements or facilities expansions specified in the capital improvements plan, except roadway facilities and storm water, drainage, and flood control facilities. The service area for Fort Worth's wastewater system is defined as the city limits, the unincorporated existing extraterritorial jurisdiction (ETJ), and wholesale customers. The service area is the area to which wastewater service could be provided on a retail basis and to all wholesale wastewater customers. **Figure B-1** shows the entire wastewater plant service areas for the City of Fort Worth.

FORT WORTH

The City of Fort Worth provides wastewater service to 23 wholesale customers which make up the wastewater service area. For the purposes of this study, it is assumed that the wholesale customers will remain under contract with the City for the duration of the future planning periods (2017-2037). The wholesale customers include all or part of:

٠	Benbrook Water Authority	•	Haltom City		Saginaw
÷	Bethesda Water Supply Corp.	•	Hurst	•	Sansom Park
•	Blue Mound		Kennedale		Trinity River Authority
•	Burleson		Lake Worth	•	Watauga
•	Crowley		North Richland Hills	•	Westover Hills
•	Edgecliff Village		Pantego	٠	Westworth Village
•	Everman	•	Richland Hills		White Settlement
	Forest Hill		River Oaks		

The City also provides wastewater service to unincorporated areas that are not included within its limits or wholesale customers' city limits.



And the strength of the streng
3.0 POPULATION AND EMPLOYMENT PROJECTIONS

Population and employment projections are important elements in the impact fee process. Wastewater flows depend on the residential population and commercial development served by the collection system and determine the sizing and location of collection system infrastructure. For the impact fee update, populations are projected for years 2017, 2027 and 2037. FNI utilized data from wholesale customer surveys, the Fort Worth Planning and Development Department and North Central Texas Council of Governments (NCTCOG) projections to determine the population and employment projections for the City of Fort Worth and its customers for the planning periods of 2017, 2027 and 2037.

FORT WORTH

FREESE

3.1 CITY OF FORT WORTH PROJECTIONS

FNI utilized NCTCOG data, along with data from the City of Fort Worth Planning and Development Department, to develop population projections for the 2017, 2027 and 2037 planning periods. **Table 3-1** shows the City's population and employment projections and annual growth rate for each 10-year period.

Fort Worth Wastewater Service Area					
		Population		Employment	
Year	Area	Amount	Annual Growth Rate*	Amount	Annual Growth Rate*
	Village Creek WRF	758,886	-	510,244	
117	TRA Denton Creek	42,967		21,507	
20	TRA Central	24,114		18,366	-
	Total	825,967		550,117	-
	Village Creek WRF	932,605	2.1%	625,190	2.1%
127	TRA Denton Creek	62,491	3.8%	31,055	3.7%
20	TRA Central	31,684	2.8%	23,656	2.6%
	Total	1,026,780	2.2%	679,901	2.1%
	Village Creek WRF	1,097,025	1.6%	741,037	1.7%
~	TRA Denton Creek	75,263	1.9%	39,689	2.5%
203	TRA Central	36,909	1.5%	28,961	2.0%
	Total	1,209,197	1.6%	809,687	1.8%

rable 5-1 City of rort worth Retail bervice ropulation and Employment riojections

*Annual Growth Rate is based on information from NCTCOG and the Fort Worth Planning and Development Department

Exhibit B- Land Use Assumptions: Wastewater Facilities

The Village Creek Water Reclamation Facility (WRF) retail service population is projected to annually increase 2.1% from 2017 to 2027 and 1.6% from 2027 to 2037. The Village Creek WRF retail service employment is projected to annually increase 2.1% from 2017 to 2027 and 1.7% from 2027 to 2037.

FORT WORTH.

FREESE

3.2 WHOLESALE CUSTOMERS

Surveys were sent out by the City of Fort Worth to each wholesale customer to provide population and employment projections for each planning period. Wholesale customers were contacted with follow-up emails or phone calls if no survey was returned by the requested due date. If no survey was returned, FNI used projection information from NCTCOG to estimate population and employment. The wholesale customer surveys received by FNI can be found in **Appendix A**. The completed surveys were compared to the NCTCOG projections to check for validity and consistency. Adjustments were made to population and employment projections where necessary. **Table 3-2** summarizes the sum of the wholesale customer population and employment projections within the City of Fort Worth's wastewater service area.

Fort Worth Wastewater Service Area					
		Pop	oulation	Employment	
Year	Area	Amount	Annual Growth Rate*	Amount	Annual Growth Rate*
	Village Creek WRF	336,703	-	141,614	-
117	TRA Denton Creek	2,400	-	695	
20	TRA Central				
	Total	339,103		142,309	
	Village Creek WRF	377,402	1.1%	172,705	2.0%
127	TRA Denton Creek	2,400	0.0%	817	1.6%
20	TRA Central				
	Total	379,802	1.1%	173,522	2.0%
	Village Creek WRF	422,143	1.1%	201,183	1.5%
1	TRA Denton Creek	2,400	0.0%	946	1.5%
203	TRA Central				-
	Total	424,543	1.1%	202,129	1.5%

Table 3-2 Wholesale Customer Service Population and Employment Projections

*Annual Growth Rate is based on information from NCTCOG, Fort Worth Wastewater Master Plan, and Wholesale Customer Surveys

The Village Creek WRF wholesale service population is projected to annually increase 1.1% from 2017 to 2027 and 1.1% from 2027 to 2037. The Village Creek WRF wholesale service employment is projected to annually increase 2.0% from 2017 to 2027 and 1.5% from 2027 to 2037. Detailed service population and employment projections broken down by each wholesale customer can be found in **Appendix B**.

FORT WORTH.

FREESE

3.3 TOTAL WASTEWATER SERVICE AREA

Table 3-3 shows the combined population and employment projections for the City of Fort Worth, andits wholesale customer cities. The total Village Creek WRF service population is projected to annuallyincrease 1.8% from 2017 to 2027 and 1.5% from 2027 to 2037. The total Village Creek WRF serviceemployment is projected to annually increase 2.0% from 2017 to 2027 and 1.7% from 2027 to 2037.

Fort Worth Wastewater Service Area					
		Population		Employment	
Year	Area	Amount	Annual Growth Rate*	Amount	Annual Growth Rate*
	Village Creek WRF	1,095,589		651,858	
117	TRA Denton Creek	45,367		22,202	-
20	TRA Central	24,114		18,366	
	Total	1,165,070		692,426	
	Village Creek WRF	1,310,007	1.8%	797,895	2.0%
127	TRA Denton Creek	64,891	3.6%	31,872	3.7%
20	TRA Central	31,684	2.8%	23,656	2.6%
	Total	1,406,582	1.9%	853,423	2.1%
	Village Creek WRF	1,519,168	1.5%	942,220	1.7%
5	TRA Denton Creek	77,663	1.8%	40,635	2.5%
203	TRA Central	36,909	1.5%	28,961	2.0%
	Total	1,633,740	1.5%	1,011,816	1.7%

Table 3-3 Total Wastewater Service Area Population and Employment Projections

*Annual Growth Rate is based on information from NCTCOG, the Fort Worth Planning and Development Department and Wholesale Customer Surveys

FREESE AND NICHOLS, INC. Exhibit B Land Use Assumptions: Wastewater Facilities

FREESE AND NICHOLS, INC. 4055 INTERNATIONAL PLAZA, SUITE 200 FORT WORTH, TEXAS 76109 817-735-7300

www.freese.com



Innovative approaches Practical results Outstanding service

Water & Wastewater Impact Fee Update

EXHIBIT C: Water Service Area Water Facilities 2017-2037

Prepared for:

City of Fort Worth Water Department



FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125

October 07, 2016



Prepared for:

City of Fort Worth Water Department



Prepared by:

FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125



And a second sec

FREESE AND NICHOLS, INC.

FREESE AND NICHOLS, INC. 4055 INTERNATIONAL PLAZA, SUITE 200 FORT WORTH, TEXAS 76109 817-735-7300

www.freese.com

Exhibit C: Water Service Area



Innovative approaches Practical results Outstanding service

Water & Wastewater Impact Fee Update

Exhibit D: Capital Improvement Plan Water Facilities 2017-2037

Prepared for:

City of Fort Worth Water Department



Prepared by:

FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125

October 07, 2016

Water & Wastewater Impact Fee Update

FREESE FORT WORTH.

Prepared for:

City of Fort Worth Water Department



Prepared by:

FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125

TABLE OF CONTENTS

FREESE FORT WORTH.

HOLS

1.0	INTRODUCTION1-1
2.0	EXISTING WATER DISTRIBUTION SYSTEM
2.1	Raw Water Sources and Transmission2-1
2.2	Water Treatment Plants, Pump Stations and Storage2-2
3.0	PROJECTED WATER DEMANDS
3.1	Projected Water Demands
4.0	WATER CAPITAL IMPROVEMENTS
5.0	IMPACT FEE ANALYSIS
5.1	Service Units
5.2	Maximum Allowable Impact Fee Calculation

LIST OF TABLES

Table 2-1	Water Supply Allocated to Fort Worth
Table 2-2	Raw Water Supply Facilities
Table 2-3	Water Treatment Plant Facilities
Table 3-1	Projected Water Demands
Table 4-1	Proposed Water CIP Projects
Table 5-1	2017-2027 Impact Fee Eligible
Table 5-2	AWWA Meter Equivalency Factors
Table 5-3	Development of Factors of 2017 Population and Employment by Equivalent
Meter	5-2
Table 5-4	Water Impact Fees by Meter Size5-4

LIST OF FIGURES

Figure D-1	Existing Facilities	ŕ
Figure D-2	Proposed Improvements	ĥ

APPENDICES

- Appendix A Existing Water Pumping Capacities
- Appendix B Existing Distribution System Storage
- Appendix C Water CIP Projects
- Appendix D Water Meter Summary
- Appendix E Credit Calculation Analysis

Exhibit D - Capital Improvements Plan Water Facilities

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 2012.

FORT WORTH.

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 Improvements 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 Department 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:

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

Table 2-1	Water Supply	Allocated	to Fort Worth
-----------	--------------	-----------	---------------

*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 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).

Exhibit D - Capital Improvements Plan Water Facilities



The existing raw water supply facilities are shown as follows in Table 2-2:

Unit	Capacity	
Eagle Mountain Lake	66 mgd	
Eagle Mountain Pump Station and Pipeline	105 mgd*	
Lake Worth Intake and Pipeline	127 mgd	
Clear Fork Pump Station	90 mgd*	
Cedar Creek System	136 mgd*	
Richland-Chambers System	118 mgd*	

Table 2-2	Raw Water Supply Facilities
-----------	------------------------------------

*Indicates firm capacity with largest pump out of service

2.2 Water Treatment Plants, Pump Stations and Storage

The City's distribution system consists of ten 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), Westside II (WS II), Westside III (WS III) and Westside IV (WS IV) 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** below. These plants take raw water from the TRWD reservoirs and treat it, and is then pumped into the distribution system through the high service pump stations at each treatment plant.

Water Treatment Plant	Treatment Capacity (MGD)
North Holly Plant	80
South Holly Plant	80
Rolling Hills Plant	200
Eagle Mountain Plant	108
Westside Plant	12

Table 2-3 Water Treatment Plant Facilitie	able 2-3	r Treatment Plant Facilitie	es
---	----------	-----------------------------	----

In order to provide adequate pressure to each of the City's ten pressure planes, the City operates a series of twenty-one pump stations. 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

Exhibit D – Capital Improvements Plan Water Facilities



stations are used to fill the twenty-seven 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

3.1 Projected Water Demands

Average day demands were developed for the City of Fort Worth for the on-going 2016 Water Master Plan Update. Based on historical usage, a residential and non-residential per capita was developed for each individual pressure plane, resulting in a city 2017 average day demand of 166 mgd, and a City 2027 average day demand of 210 mgd (City demands do not include wholesale demand). An average day to maximum day peaking factor was also developed for each pressure plane, resulting in a City 2017 maximum day demand of 313 mgd, and a City 2027 maximum day demand of 404 mgd.

FORT WORTH.

The wholesale customer demand was provided by the wholesale customers as part of the wholesale customer surveys. The 2017 average day demand for wholesale customers is 68 mgd, and the 2027 average day demand for the wholesale customers is 82 mgd. The 2017 maximum day demand for wholesale customers is 158 mgd, and the 2027 maximum day demand for the wholesale customers is 158 mgd, and the 2027 maximum day demand for the wholesale customers is 158 mgd.

The total 2017 average day demand for Fort Worth and its wholesale customers is 234 mgd. The total 2027 average day demand for Fort Worth and its wholesale customers is 292 mgd. The total 2017 maximum day demand for Fort Worth and its wholesale customers is 471 mgd. The total 2027 maximum day demand for Fort Worth and its wholesale customers is 589 mgd.

The 2016 Water Master Plan Update recommended a maximum day to peak hour peaking factor of 1.5, resulting in a total 2017 peak hour demand for Fort Worth and its wholesale customers of 707 mgd, and a total 2027 peak hour demand for Fort Worth and its wholesale customers of 884 mgd.



Table 3-1 summarizes the projected water demands for Fort Worth.

Entity	Planning Year	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Peak Hour Demand (MGD)
City of Fort Worth	2017	166	313	470
	2027	210	404	606
Wholesale Customers (Portion Served by Fort Worth)	2017	68	158	237
	2027	82	185	278
Total Demand	2017	234	471	707
	2027	292	589	884

4.0 WATER CAPITAL IMPROVEMENTS

This section establishes the City of Fort Worth water facilities and engineering studies that are eligible for inclusion in the calculation of the impact fee. The City's existing water model was updated by FNI staff to reflect the updated demands for the impact fee period, as well as include the recommended CIP projects for the impact fee period. Projects included in the CIP increase system capacity as a result of projected growth. Only those projects warranted by capacity needs derived from growth occurring during the study period (2017 to 2027) 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.

FORT WORTH.

Projects included in the impact fee study are TRWD supply projects, raw water supply and transmission, 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 2017-2027 study period. The 2017 percent utilization is the portion of a project's capacity required to serve existing development. It is not included in the impact fee analysis. The 2017-2027 percent utilization is the portion of the project's capacity that will be required to serve development projected to occur from 2017 to 2027. The portion of a project's total cost that is used to serve development projected to occur from 2017 through 2027 is calculated as the total cost multiplied by the 2017-2027 percent utilization. Only this portion of the cost is used in the impact fee analysis.

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 2017-2027 planning period. The purpose of each project, the portion that is allocated to growth and the current status is also included.



Table 4-1 Water Capital Improvement Projects 2017 - 2027

FORT WORTH.

Project	Participan -		Initial Project	Andport Street, inc. (Sp. 2)	-	Completion	Added	N Allocated be Estitling 2017	Cast Allocated to	2017-2027	Cast Allocated to	Albertal St.	Col Alicente In Tessal Pro-
0			TARRA	NT REGIONAL WAT	ER DISTINC	T (TRWD) PRO	DIECTS			- Contraction of the local division of the l		- And - Contraction	and the second
- ÷	Eagle Mountain Connection Raw Water Une & Pump Station	Covert	5138,867,054	\$138,867,058	2006	2009	47 6450	99.0%	554,158,153	13.0%	Output ter 1	48.0%	564.655.188
1.28	Integrated Pipeline & Pemp Statutes	COMU	\$1.076.947,000	\$1,075,947,000	2009	2020	167 5 MAGD	0.0%	50	24.2%	CONNECTOR IN	75.8%	5815 829 961
-	Hiddewi-Chemiers Westands	Gand	541,003,000	\$61,000,000	1999	2013	BUS MGD	35.18	\$21,399,267	64.5%	8 7/2	0.0%	50
		TOTAL	RND PROIECTS	51,276,814 (056)	AND THE A	TRAFFAIT BLANC	10		THWD PROJECT	S LINGIBLE COST	\$118.776.4591		
W3-854	Warschilder WTP - Preside J RD-52 645(0)	1 Int	54.977 175	44 873 135	2008	2008	13	1 an rei	CO ATT THE	20.09	-	0.00	10
W3-LSA	Westshile WTP - Phase 1 (0-12 Militi)	Cana	546.842 759	545.847.758	3009	3033	17 BALLET	80.0%	527,479,353	30/6	- Contract	0.0%	50
17-6A	Engle Mountaint Cenarauli 81.	Free & Corres	52.968.844	52 052 544	2011	2214	25.645	1 20.0%	5583 772	60.0%	State of the state	30.0%	1445 335
W3-158	Westside WTP Expansion 12 MGD to 35 MGD - Membrane Rack	Compt	\$1,000,000	\$1,055,500	2016	2017	3 NACO	0.0%	50	100.0%		0.0%	50
W3-15C	Westskie WIP Expension 15 MGD to 18 MGD - Membrane Rock	Const	\$1,000,000	\$1,055,500	2010	2020	3 MILLO	0.0%	50	11.0%	This area	19.0%	5301 645
	Clearfork Raw Water Pump Station Farallel Pipeline to Holly WTP	Eng	\$639,000	\$674.455	2020	2020		0.0%	30	32.0%	COLUMN TWO	58.0%	5,458,636
	Clearflock Raw Water Pump Station Patallel Pipeline to Holly WIP	Const	\$6,386,000	\$6,740,423	2021	2022	50 6403	0.0%	50	32.0%	St. Law Joyne	68.0%	54,583,485
NU-188	Typand Second Eagle Mountain Raw Water P5 Imm 35 MGD to 70 MGD	fry	\$306,000	\$217.433	2020	2021		0.0%	50	40.0%	204.075	60.0%	\$130,460
NZ-180	Expend Second Eagle Mountain Raw Water P5 from 35 MGD to 70 MGD	Come	\$2,060,000	\$2,174,330	.M21	2033	35 MGD	0.0%	50	40.0%	7.600 (7.6	80.0%	51.304.598
N3-18A	Engle Alsuntain WTP Expansion from 105 MGD to 140 MGD	Trie .	\$3,000,000	\$5.277.500	1030	2021		6.0%	50	40.0%	CONTRACT OF	10/21 (2/14	\$3,166,500
H2-TBA	Eaglet Mountain WTP Expansion from 105 MIGO to 340 MIGD	OM	\$2,778,000	52,932,179	2021	2023		0.0%	50	40.0%	STATE ATE	60.0%	\$1,758,307
N2-18A	Fagle Mountain W7P Explansion from 105 MGD to 140 MGD	Const	\$48,690,000	551.392.295	2021	2023	35 MGD	0.0%	50	40.0%	A REPORT OF	60.0%	\$30,435.377
	TOTAL RAW WATER SUPPLY	AND WATER TREA	TNENT PLANTS	\$126,308-153	-	RASE INA	TES SUPPLY A	NO WATER TRU	ATMENT PLAN	T ELIGIBLE COST.	541,225,873		
			REGIO	NAL TRANSMISSION	N LINES AN	D PLIMP STAT	NOMS						
53-53	McCart Pump Station Expansion to X5 MiGD	Tig & Const	\$563.375	\$563,275	201.5	2013	10 MGD	0.0%	50	15.0%	Distant of the	14.0%	\$78,873
W5-1	3 MGD Westslide V Pump Station at Walsh Ranch Tank	Ing	\$173,000	\$182,602	3015	2086		0.0%	50	68.0%	MALE IN	32.0%	\$58,432
W5-1	3 MGD Wessslide V Pump Station at Walsh Ranch Tank	Const	51,729.845	\$1,815,683	2016	2017	3 MGD	11.0%	50	68.0N	\$1,041.414	E2.0%	\$564,718
N2-8	Expansion of the Northside Purns Station to 10 MSD	Ing & Contt	51,294,391	51.566.230	2018	2019	12 MGD	11 UN	50	33.0%	PARTICULAR DE LA COMPANY	67.0%	\$915.374
54-5	3 MISD Southelde IV Pamp Station at Sun Country Tank	THE	\$124,000	\$110,882	2019	2030	- 10	8.0%	50	5.0%	Since a pair service	95.0%	\$174,338
54.5	3 ARGD Southinde /V Pump Station at Sun Country Zank	Const	51,236,000	\$1,304,598	3020	2021	3 MGD	0.0%	50	5.0%	San Upp	95.0%	\$1,239,368
W4.3	A MISD Winitside IV Pump Stalion	Eng	\$166,000	\$175,213	3626	2071		(1:0%)	50	79.0%	2010	32.0%	\$36.547
104.3	4 NASD Westside IV Pump Station	Covert	51,645,000	\$1,739,464	2021	2022	4.660	0.0%	50	28.0%	11 M 1 M	32.0%	\$101,640
	HST All-Inch Transmission Une Phase II	Eng & Const	\$34,134,816	\$40,467,198	2015	2017		0.0%	50	35.0%	A BARAMANNA	\$5.0%	\$76,1001.558
-	TOTAL REGIONAL TRANSMI	SSIDN CINES AND P	UMP STATIONS	\$47,750,4441	-	REGIONAL	TRANSMISSI	IN LINES AND	PUMP STATION	P ETIQUETE ED/21	558,028,051		
				STOR	USE TANKS	-							
HQ-01	Sendera Ranch Ground Sourage Tank & Punto Station**	Eng II Const	54,284,791	\$4,284,791	3005	2008	3 MG	\$1.0%	52,695,438	29.0%	12280	R.ON	\$\$42,783
No 28	3.0 AAG Northuide IV Elevated Storage Tank on Hwy 387	Ing	5672,115	5672.125	3014	2015	-	17.0%	5114,280	55.0%	ALCONT. SHE	28.054	\$188,197
N4-25	1.0 MG Northeide IV Deveted Storage Tank on Hwy. 207 & Lood Purchase	Const & Land	54,068,083	\$4,004,000	2014	2015	1 MG	17.0N	5681,570	55.0%	10 10 4W	28.0%	\$1,139,057
N2-10	S 0 MG Northside II Genund Storage Tank at the Caylor Tank See	ing	5621,728	\$601 724	2054	2015	· ·	5.0%	\$10,986	40.0%		\$5.0%	3330.951
N2-10	5.0 MG Northulde II Ground Storage Tank st the Caylor Tank Ste	Const	\$4,879,440	\$4,879,440	5012	7016	S MG	5.0%	\$243,972	40.0%	ELFIL CHI	\$5.0%	\$2,663,692
W5-3	1.0 MG Westside V Elevated Scorage Task North of Medo Road	UNK .	\$575,000	5606.913	2016	2017		0.0%	50	\$1.0%	Anna Ala	59.0%	\$438,775
W5-3	1.0 MG Westside V Elevered Seorage Tank Nurth of Alesis Road	Const	\$2,575,000	\$2,717,913	2018	2015	1 MG	0.0%	50	31 0%	The Lot B	69.0%	SL875,360
W4 10	1.0 MG Wetthile IV Devated Storage Tank	Dig & Land	\$\$75,000	\$606,913	2050	2021		0.0%	50	47.0%	100.00	53.0%	\$371,65A
W4-10	1.0 MAG Westslide IV Elevated Storage Tank	Const	\$2,575,000	\$2,717,913	2071	21722	1MG	0.0%	50	47.0%	ALL PRICE P	53.0%	\$1,440,494
W9-4	2.5 MAG Westside III Ground Storage Tank South of tH-20	101	\$1,000,000	\$1,055,500	2020	2023		0.0%	50	35.0%	P.F. BORN	64.0%	\$675,520
W3-4	2.5 M/G Westshile III Ground Storage Tank South of 24-20	Const	\$2,100,000	\$2,718,550	2021	2022	2.5 MG	0.6%	50	36.0%		54.0%	51,418.392
52-75	5.0 MG Southside II Ground Storage Cantras the McCart Pump Station	7.08	5 FN0 000	5348.315	2023	2024	-	0.0%	90	25 0%		75.078	\$391,736
\$2-78	In the Southsade in Ground Storinger Tank at the McCart Pump Station	Cont	51.300.000	34 483,130	2024	2013	3 MQ	0.0%	30	200	AVAILABLE IN COL	13.05%	57.617.363
N3-13	2.0 MG Northude IV Lievelied Storage Tans	Eng.	3330.000	\$348.315	JULI	ROLL	-	0.0%	90	4000	100 M	54.0%	\$188,090
10-13	ALL BOD POPULIANS IN DEVELOP SCOTING TAVE	Cover	53,800,000	\$3,483,150	5014	80	2 100	0.05	30	A PATRONAL CONT	ALL CANADA	24124	-Lancous
-		TOTALS	CONSIGE FAMILS	ENGINEE	ING STUD	B		1. Contra 1.	the second second	a reconstructor	110-000,000	-	
1.1	2004 Waster Manaer Plan 2005-2023	Study 1	\$1,360,385	\$1.367.386	2001	2005		60.0%	5816 232	40 0%	Sintain	0.0%	50
-	7013 Water Master Flat 2013-2019	STUDY	\$768,168	\$768,168	2013	2016		20.0%	5353,634	50.0%	ROOM INTO	30.0%	\$3.90,450
	Impact Fee Study - 2017-2027	Study	5117,967	\$117,967	2015	2016		8.0%	50	100.0%	SALL NOV	0.0%	50
		TOTAL INCINE	LING STUDIES	\$2,246,541	-	-	-	ENGIN	ERING STUDIE	S ELIGIBLE COST	\$1,040,225		

2014 Wester Datters Minister Plan, France & Michaels

Ul-year CP Benda 2016-2026, Terrare Regional Weber District

April Milanth Milater Dependentett, Capital Insperienzeni Fridgrien 2015-2019 1918 Bacture of 5,58% wand to Johann events from 2015 Bibliots to 2017 dedices on increased project

"City of Fors Warsh care perificien

5.0 IMPACT FEE ANALYSIS

 Table 5-1 summarizes the impact fee eligible costs for projects. Table 4-1 shows the detail development

 of the costs and capacities of the eligible facilities.

FREESE FORT WORTH.

CIP Category	Total Growth Related Cost	% Allocated to 2017-2027 Impact Fees	2017-2027 Growth Related Cost
TRWD Projects	\$1,276,814,058	25.0%	\$318,776,489
Raw Water/ Treatment Plants	\$126,308,153	32.6%	\$41,225,877
Transmission Lines/ Pump Stations	\$47,750,444	37.8%	\$18,028,053
Storage Tanks	\$32,090,765	39.1%	\$12,533,795
Engineering Studies	\$2,246,541	46.6%	\$1,046,225
	IMPACT FEE	CIP SUBTOTAL	\$391,610,439
FINANCING COSTS		\$233,431,318	
Т	OTAL IMPACT FEE	ELIGIBLE COST	\$625,041,757

Table 5-1 2017-2027 Impact Fee Eligible Costs

5.1 Service Units

The different costs between customer types are allocated through the application of the equivalent meter concept. 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) Standard C700-02, Cold-Water Meters – Displacement Type, Bronze Main Case and AWWA Standard C701-07, Cold-Water Meters – Turbine Type for Customer Service.

Meter Size	5/8" x 3/4" Equivalency Eactor
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

FREESE

FORT WORTH.

Appendix D contains the 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 2017 information.

Inte		
Description	Residential	Non-Residential
City of F	ort Worth	
Number of Equivalent Meters	299,889	117,005
Population / Employment	825,967	550,117
Population per Equivalent Meter	2.75	
Employment per Equivalent Meter		4.70
Wholesale	Customers	
Number of Equivalent Meters	157,108	62,912
Population / Employment	392,163	201,803
Population per Equivalent Meter	2.50	
Employment per Equivalent Meter		3.21

Table 5-3 Development of Factors of 2017 Population and Employment by Equivalent Meter

FNI did not receive meter count information from five 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

Exhibit D - Capital Improvements Plan Water Facilities

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.

FORT WORTH.

FREESE

The projected increase in equivalent meters between 2017 and 2027 uses the ratios in **Table 5-3** and the population and employment projections for 2017 and 2027 in *Exhibit A- Water Land Use Assumptions report*. The calculation is shown below.

City of Fort Worth

Residential	= Population Change / Population per Equivalent Meter = (1,026,780 – 825,967) / 2.75 = 73,023
Non- Residential	= Employment Change / Employment per Equivalent Meter = (679,901 – 550,117) / 4.70 = 27,614
Fort Worth Total	= Residential + Non-Residential = 73,023 + 27,614 = 100,637
Wholesale Customers	
Residential	= Population Change / Population per Equivalent Meter = (462,435 – 392,163) / 2.50 = 28,109
Non- Residential	= Employment Change / Employment per Equivalent Meter = (245,018 – 201,803) / 3.21 = 13,463
Wholesale Total	= Residential + Non-Residential = 28,109 + 13,463 = 41,572
Grand Total	= Fort Worth Total + Wholesale Total = 100,637 + 41,572 = 142,209

5.2 Maximum Allowable Impact Fee Calculation

This report is based on a credit equal to 50% of the total projected cost of implementing the capital improvements plan, as specified in Chapter 395 of the Texas Local Government Code. Should the City choose to adopt an impact fee of greater than 50% of the total projected cost, a detailed credit calculation analysis is included in **Appendix E**.

Exhibit D - Capital Improvements Plan Water Facilities

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

FREESE FORT WORTH.

Maximum Water Impact Fee	= Cost of Expansion / Increase in Equivalent Meters
	= \$625,041,757 / 142,209
	= \$4,395 per 5/8" x 3/4" equivalent meter

The water impact fees for meters other than $5/8" \times 3/4"$ are the product of the fee per $5/8" \times 3/4"$ equivalent meter multiplied by the respective equivalent meter factor from **Table 5-2**. The maximum allowable water impact fees are provided in **Table 5-4**, as well as the resulting impact fee at a 50% collection rate.

Meter Size	5/8" x 3/4" Equivalency Factor	Maximum Allowable Impact Fee	Impact Fee (Collected at 50%)
5/8" x 3/4"	1.00	\$4,395	\$2,197
3/4"	1.50	\$6,593	\$3,296
1″	2.50	\$10,988	\$5,493
1-1/2"	5.00	\$21,975	\$10,985
2″	8.00	\$35,160	\$17,576
3″	21.75	\$95,591	\$47,785
4″	37.50	\$164,813	\$82,388
6"	80.00	\$351,600	\$175,760
8"	140.00	\$615,300	\$307,580
10"	210.00	\$922,950	\$461,370

Table 5-4 Water Impact Fees by Meter Size



Control F1W/14125 Location HW, WW PLANE/NO/Finel Report(Fours_D1)-Etitisting, Water FactBare(11x17) Invol Updated History October 07, 2015 Updated History Control Final Report(Fours_D1)-Etitisting, Water FactBare(11x17) Invol Updated History Control Final Report(Fours_D1)-Etitisting, Water FactBare(11x17) Invol



Densing by Presses and Activation, Inc. 2019 No. : FTVTP 2019 Location: 1149 VMV FLUXANNAR Has Jone (Report (Figure D2)-Venter _Proposed _Facilities _CHP(11x17) mod Jopanian / Markan / Octioner 07, 2016

FREESE AND NICHOLS, INC. Exhibit D Capital Improvement Plan: Water Facilities

FREESE AND NICHOLS, INC. 4055 INTERNATIONAL PLAZA, SUITE 200 FORT WORTH, TEXAS 76109 817-735-7300

www.freese.com



Innovative approaches Practical results Outstanding service

Water & Wastewater Impact Fee Update

EXHIBIT E: Wastewater Service Area Water Facilities 2017-2037

Prepared for:

City of Fort Worth Water Department



FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125

October 07, 2016



Prepared for:

City of Fort Worth Water Department



Prepared by:

FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125



Martin Part of Source 1.

FREESE AND NICHOLS, INC.

Exhibit E: Wastewater Service Area

FREESE AND NICHOLS, INC. 4055 INTERNATIONAL PLAZA, SUITE 200 FORT WORTH, TEXAS 76109 817-735-7300

www.freese.com



Innovative approaches Practical results Outstanding service

Water & Wastewater Impact Fee Update

Exhibit F: Capital Improvements Plan Wastewater Facilities 2017-2037

Prepared for:

City of Fort Worth Water Department



Prepared by:

FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125

October 07, 2016



Water & Wastewater Impact Fee Update

Prepared for:

City of Fort Worth Water Department



Prepared by:

FREESE AND NICHOLS, INC. 4055 International Plaza, Suite 200 Fort Worth, Texas 76109 817-735-7300

FTW16125



Exhibit F - Capital Improvements Plan: Wastewater Facilities

TABLE OF CONTENTS

1.0	INTRODUCTION
2.0	EXISTING WASTEWATER COLLECTION SYSTEM
2.1	Wastewater Treatment Plants
2.2	Lift Stations and Force Mains
3.0	PROJECTED WASTEWATER FLOWS AND MODEL UPDATE
3.1	Projected Wastewater Flows
4.0	WASTEWATER CAPITAL IMPROVEMENTS
5.0	IMPACT FEE ANALYSIS
5.1	Service Units
5.2	Maximum Allowable Impact Fee Calculation

TABLE OF TABLES

Table 3-1	Projected Wastewater Flows
Table 4-1	Proposed Wastewater CIP Projects
Table 5-1	2017-2027 Impact Fee Eligible Costs
Table 5-2	AWWA Meter Equivalency Factors
Table 5-3	Development of Factors of 2017 Population and Employment by Equivalent
Meter	5-2
Table 5-4	Wastewater Impact Fees by Meter Size5-4

TABLE OF FIGURES

Figure F - 1	Existing Wastewater Facilities	5
Figure F - 2	Proposed Wastewater Facilities Capital Improvements Plan5-	6

APPENDICES

Appendix A – Existing Wastewater Lift Station Capacities

Appendix B – Wastewater CIP Projects

Appendix C – Water Meter Summary

Appendix D - Credit Calculation Analysis



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. This report establishes the engineering basis for the fee schedule, updating the previous study completed in 2012.

FORT WORTH

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

The report describes the basis for establishing which City of Fort Worth wastewater 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 WASTEWATER COLLECTION SYSTEM

2.1 Wastewater Treatment Plants

The City of Fort Worth provides wastewater service to retail customers within the city and to 23 wholesale customers in the surrounding counties. The Fort Worth wastewater collection system is primarily a gravity flow system that follows the major drainage features of the service area. The City's collection system consists of 12 sewer basins. There are currently three major wastewater treatment facilities serving the study area: the Village Creek Water Reclamation Facility (WRF), which is owned and operated by the City of Fort Worth, and the Denton Creek Wastewater Treatment Plant (WWTP) and the Central Regional WWTP, which are both owned and operated by the Trinity River Authority (TRA). The Village Creek WRF serves the majority of the population within the study area. The TRA Basin is served by the TRA Central WWTP, and the Denton Creek Basin is served by the TRA Denton Creek WWTP.

2.2 Lift Stations and Force Mains

The City of Fort Worth currently operates 30 lift stations, which pump wastewater into gravity sewers. The City has made a conscious effort to limit the number of lift stations in the collection system. These lift stations are required because of local topographical constraints or to pump flows across sewer basins. **Appendix A** summarizes the existing lift station capacities.



3.0 PROJECTED WASTEWATER FLOWS AND MODEL UPDATE

3.1 Projected Wastewater Flows

The Texas Commission on Environmental Quality (TCEQ) recommends a minimum of 100 gallons per capita per day (gpcd) for municipal base flow. The 2012 master plan determined that the existing loading for the City of Fort Worth and its wholesale customers is 91 gpcd based on flow monitoring data. The 2012 master plan recommends using 110 gpcd and an additional 10 gpcd to account for groundwater infiltration (GWI), resulting in a total per capita for future growth of 120 gpcd. The 2012 master plan determined that the current usage per employee per day for the City of Fort Worth is 37 gallons per employee per day. Additionally, the master plan recommends using 40 gped for future commercial growth.

In order to calculate the annual average day wastewater flows, the population and employment growth projections were taken from *Exhibit B: Land Use Assumptions- Wastewater Facilities*.

The 2012 Wastewater System Master Plan did not use a straight average flow to peak flow peaking factor because the City utilized an extended period simulation model to determine the projected peak flows. The model used the RTK method, which calculates a different peaking factor for each scenario dependent on amount of rainfall, peaking time, and recession time. From the 2012 Wastewater System Master Plan, the historical annual average flow to peak hour flow ratio is 3.03 and was used to calculate the peak flows. Table 3-1 summarizes the projected wastewater flows for the City of Fort Worth and its wholesale customers.

Table 3-1 Projected Wastewater Flows						
Planning Year	Residential Average Day Flow (MGD)	Non- Residential Average Day Flow (MGD)	Total Average Day Flow (MGD)	Peak Wet Weather Flow (MGD)		
2017	121	26	147	445		
2027	150	32	182	552		


4.0 WASTEWATER CAPITAL IMPROVEMENTS

This section establishes the City of Fort Worth wastewater facilities and engineering studies that are eligible for inclusion in the calculation of the impact fee. The City's existing wastewater model was updated by FNI staff to reflect the updated flows for the impact fee period, as well as include the recommended CIP projects for the impact fee period. Projects included in the CIP increase system capacity as a result of projected growth. Only those projects warranted by capacity needs derived from growth occurring during the study period (2017 to 2027) 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. Facilities included in the impact fee study are TRA projects, wastewater treatment facilities, lift stations, interceptors and engineering studies.

Table 4-1 provides a summary of each wastewater CIP project cost and allocation for the 2017-2027 study period. The 2017 percent utilization is the portion of a project's capacity required to serve existing development. It is not included in the impact fee analysis. The 2017-2027 percent utilization is the portion of the project's capacity that will be required to serve development projected to occur from 2017 to 2027. The portion of a project's total cost that is used to serve development projected to occur from 2017 through 2027 is calculated as the total cost multiplied by the 2017-2027 percent utilization. Only this portion of the cost is used in the impact fee analysis.

Figures F-1 and **F-2**, show existing and proposed facilities, respectively, for the impact fee study period. **Appendix B** describes each wastewater CIP project for the 2017-2027 planning period. The purpose of each project, the portion that are allocated to growth and the current status is also included.



FORT WORTH.

-		-	WI Download	Earl Weeth		Tanan and	Aur	-	-	All and	1.11	S Married	Carri	//cont	NB		-
				TRIMITY RIVER ALI	THORITY PERMIT		-		-		-	-			-		States and
	Denton Creek WWITP Equipment	Const	587 595,000	\$18 179 250		\$26,177,250	2008	2010	SSHED	55 2%	\$14.197,488	30 0%		· Bart	Sec. 1	13.0h	23.936,588
2011/1.2	Cb-3 80-arch Parallel Inder Intercestor	Contil	\$3.317,548	\$2,924,681		\$3,006,930	3033	2014	1	0.0%	50	13 0%				88.178	\$2,716,513
3826.842	25HC Relief Imt. (7w0H 440H) LZ.500 UF	Land	\$1.241,000	5682,150	-	\$720,432	2016	2012		0.0%	50	50.0%		-		50.0%	\$160.318
7678.643	23HD 1 MINH W. (7HOH - HACH) 17,500 17	Dense	314,362,000	\$7,803,650	-	50,734,081	2016	503.7		0.0%	50	50.08	-	A DESCRIPTION OF		50 (76	S4, 188, D4
1279 644	CHC 3 RENE IN 12200 IN 2001 13 LOD IN	Land	\$1,795,000	5907,250		\$1.042,042	2018	2017		0.0%	50	100.0%				0.0%	50
4424 302	Zonic -3 Remarkani, (112208 to 28009 13.100 UF	Comt	515,904,000	56,767.200		\$9,212,670	3016	5032		0.0%	50	300.0%	100			0.0%	50
6879 303	Part a balance in the later of the part of the later of t	100	5755,000	5470,150		3444,301	2018	2018	-	0.0%	30	100.0%	-			0.0%	50
3678,2054	Two Alternate Distributes 14 AdVI Rummi	Int	5962.000	1001.051	-	5563 344	1014	1018	-	0.00		50.0%	-			Lors	7160.041
BEPE.2004	Tour Alternate Gentlemen 14 MGD Roman	Count	54 341 000	63.303.550	-	CLAIR LIN	200.0	3071		0.0%	37	50.00				30.0%	5/90.904
3479.2012	Peak / Iou Starge	1%	34,858,000	\$2 671,900		52,820,190	2018	2018		0.0%	30	50.05				50.00	SLAID OF
3828.3017	Peak Flave Staruge	Caret	\$10,560,000	\$16,608,000		\$17.740,844	2014	2021		0.0%	50	-50.0%	-	Cr.A	100	50.0%	58.670.42
6825.643	25HC-2 Railefline (2050H ta: 1H0H) 4.400 (J	tig.	\$1,007,000	\$551,850		5584.589	2020	3031		0.0%	50	15.05	1			#1.0%	\$478.537
	TOTAL TRISITY RIVE	IS MUTHORITY PRINECTS	\$18.917.544	\$21 (112 60)	No. of Concession, Name	57R.031350	1000	-	BINITY BIV	IR AUTHOR	TY PROJECTS	LIGHT COST	1	6.475.6	1000		- Series -
				TREATMEN	T PACILITIES		-	-				-	-				
WANTH-OUS	Mary's Crysti WHE Sta Selection and Load Parthese	Land		-	SA.998 USP	54.8501.900	2011	2011		0.0%	50	41.7%	1	State of the local division in which the local division in the loc	1	80.0%	\$2,570,000
	Deep Bed Nedia Filters 1:20 Vicibilitations	Desgr	-		\$1,032,750	\$1,033,750	3011	2016		50.0%	5619.850	4017%	1			0.0%	50
- 14	Deep Bet Made Filters 5-20 Modifications	CM/,IMp		1 1 A 1 A 1	\$995,000	\$495,000	2011	2016	100 C	\$6.0%	5597,006	40.0%	(i i i i i i i i i i i i i i i i i i i			0.0%	\$0
-	Deep bed Media Filiars 1-20 Modificaciona	Contra			\$16.889.298	\$16,605.798	2011	2014	BO NHGO	51.0%	\$10,133,579	40.0%	1			0.0%	50
WW/17P-0/25	WOWW Pask (New Diversion Structure Classification Series For Pase Hows)	Ou/VCarat			\$30,921,046	\$30,821,046	2017	2016	100 MIS	15.0%	54,138,157	85.0%				0.0%	\$9
ANATE 012-1	UCSAMU Replace Primary Clariflans 1-12 & Snt System (Prase 29 of 193 MGD expansion)	StudyMing			\$3,785,000	\$4,194,816	2016	2019		0.0%	54	\$2.0%				12.0%	\$502,890
1-100-47M/H	Mary's Creek Societte /fuel (Adl-053)	Perinkting\line			\$4,853,000	\$3,875,255	2017	2021	-	6.0%	50	40.0%	1000			96,0%	\$3,225,151
WW1P 012 2	WCMMU Replace Primary Clariflem 3: 12 B Grid System (Phase 28 of 191 MGD expansion)	CMConst			\$10,574,070	\$11.719.242	2018	3020	25 6450	0.0%	50	88.0%	_			12.0%	\$1,406,301
W17-012-3	WWW Regisce Primary Cantlers 1-12 & Grit System (Prime 28-of 171 MICS approace)	Curyowe		-	\$10,574,070	511,718,242	2021	2021		0.0%	50	A8.0%	1.00			12.0%	51,404,80
WWTP-OUD Z	Mary's Creek Schellis Place (MP-053)	Const	-		556,350,000	582.731,045	2023	2025	5 MGD -	40%		40.0%	1000	A REAL PROPERTY AND		60.0%	\$37,358,62
MARKING AND	and an and here and a set of the	and the second se			61 mm 444	di can ben	and a				44		-				41.00
WWTP-013	VCMM South Influent Lift Sudden (N-3)	Ing	+	1.1.1	\$1.000,000	\$1,008.000	2023	2024		4.0%	\$0	10.01				12.0%	\$132,996
WWTP-013 WWTP-013	VCWMP South Influent Life Ladon (V-3) VCWMP South Influent Life Station (V-3) Drit212 0019311 X031	Cirini.	. +		\$1.001.000 \$5.000.000	\$1,008.500 55.541.500	9023 2021	2024 2024	-	2.0%	50 54	88.0%		TANK I	-	12,0%	\$132,996 \$564.580
WWTP-013 WWTP-013	VCMP South Influent Lift Salden (V-3) VCMP South Influent Lift Salden (V-3) Fridde VDSFLIXES	Eng Carat Sta wait a Marton a Calvar		INNAL UET STATE	\$1.000.000 \$5.000.000 \$5.000.000	51,008.000 53,544.500 1004.522.500	9023 2001	2024 2024	WASHING	8.0% 2.0%	50 52 2011 - 24 - 24 - 24 - 24 - 24 - 24 - 24 -	BALON ALON ANGUNA AND	1	-		12.0%	\$132,996 \$864.580
WWIP-013	VCMV Septement (II) Sadow (V-3) VCMV Septement (II) Sadow (V-3) VCMV Septement (II) Sadow (V-3) Econo Based (II) Satow and Face Man	Eng Carat Const Co	Re	INONAL LIFT STATE	\$1.001.000 \$5.001.000 \$700.000 \$700.000 \$100.000 \$100.000 \$1.001.000 \$1.0000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.00000 \$1.000000 \$1.0000000 \$1.000000000000000000000000000000000000	51,008,000 53,541,500 1006,502,5001 RS 5430,830	9023 2001 2011	2024 2024	WASH ON S	8.0% 2.0% 1/1 10141/5	50 50 101 204515	10.0%		14010		12,0%	\$132,996 \$864,980
WWTP-013 WWTP-013 WWTP-013	VCMP South Influence (UP Stations (No.) VCMP South Influence (UP Stations (No.)) Scanse Based, Duff Stations are Affred Aster Cannon Based, VCMP Stations and Station Stations	Eng Carat ECG of ETHERED ETHERET Eng Carat	R	NOMAL LIFT STATE	\$1.000.000 15.000.000 15.000.000 15.000.000 15.000.000 54.00.000 54.00.000 54.00.000 54.00.000	\$1,008.505 55.541.500 140015177.501 Rts 5430.830 5430.830	2023 2021 2021 2013 2013	2024 2024 2017 2017	01962	8.0% 2.0% 1/1 1/1 1/1	50 52 53 54 54 50	182.0% 482.0% 182.0% 182.0%				12.0%	\$132,996 \$864,580 \$64,628 \$64,628
WWTP-013 WWTP-013 WWTP-013 WWTP-013 WWTP-013 WWTP-013 WWTP-013	ValeY San Hunes II (salan, (x)). (ValeY San Hunes (x)) (ValeY Salar (x)) (ValeY	Eng Const Const Const Eng Eng	R	NONAL LIFT STATE	\$1.000.000 (3.000.000 (32.000.000 (32.000.000 (4.00.000 (4.00.000 (4.00.000 (52.000.000 (52.000.000	\$1,008.805 53.541,500 HUV 5177,501 RIS 5410,850 5410,850 5410,850 5105,512	9023 2001 2013 2013 2013 2015	2024 2024 2024 2017 2016	019164	6.0% 2.0% 0.0% 0.0% 0.0%	50 52 54 50 50 50	16.0% 41.0% 15.0% 15.0% 15.0% 50.0%		a post of		12.0% 12.0% 15.0% 15.0%	\$133,996 \$864,500 \$664,600 \$664,600 \$664,600 \$664,600
WWTP-013 WWTP-013 WWTP-013 WWTP-013 WWTP-013 WWTP-013 WWTP-013 WWTP-013	Visitif yang in human un laaten (v): Visitif yang in human un laaten (v): Casan band un fi sansa een fanze Man Osana band uit fi sansa een fanze Man Dawr Canat Sanch Nana Man Dawr Canat Sanch Nana Man	Ung Const Const Const Ung Const Eng Const	RB	NONAL LIFT STATE	\$1.000,000 \$5.000,000 \$260,927,941 ONS & INTERCEPTO \$430,850 \$2,872,338 \$2,872,338 \$2,882,400	\$1,008.005 25.341.500 21.04.572.577 RGI 5410.850 52.872.520 53.05.512 57.862.580	9023 2001 2001 2013 2013 2015 2015	2024 2024 2017 2017 2016 2016 2018	D I MGD	6.0% 12.0% 17.6 1.6 1.6 0.0% 0.0% 0.0% 0.0%	50 52 51 7 6 7 15 50 50 50	16.0% 41.0% 15.0% 15.0% 15.0% 50.0% 50.0%				12.0% 12.0% 15.0% 50.0% 50.0%	\$133,996 \$864,500 \$664,500 \$64,623 \$430,500 \$139,754 \$1,507,754
WWTP-013 WWTP-013 WWWTP-013 WWWTP-0 WWWTP-0 WWWTP-013 WWWTP-013 WWWTP-013 WWWTP-013 WWWTP-013 WWWTP-013 WWWTP-013	Vicial 2 and instant (A) labels (A). Vicial 2 and a structure (A) in the second of th	Ung Clant 20 TH LANGE UNALLY Ung Clant Eng Clant Ing	NO	NONAL LIFT STATU	\$1.001,000 15.000,000 1720,223,921 005,4,000 1430,850 1430,850 1430,850 152,872,388 1578,290 1578,200 1578,000	\$1,008.000 \$5,544,500 ED7.5325.53 \$410,850 \$410,850 \$410,850 \$4287,230 \$317,6312 \$2,862,560 \$477,055	9023 2001 2001 2013 2015 2015 2015 2015 2017	2024 2024 2024 2024 2017 2016 2016 2016 2018	COMIN	8.0% 2.0% 11.0% 0.0% 0.0% 0.0% 0.0%	50 50 51 7 6 7 6 7 6 7 50 50 50 50	18.0% 43.0% 15.0% 15.0% 15.0% 50.0% 50.0% 50.0%				12.0% 11.0% 15.0% 15.0% 50.0% 50.0%	\$132,996 \$664,500 \$664,500 \$139,756 \$139,756 \$1,57,96
WW7P-013 WW7P-013 WW7P-013 WW7P-013 WW7P-013 WW7P-013 WW7P-013 WW7P-013 WW7P-013 WW7P-013 WW7P-013 WW7P-013 WW7P-013 WW7P-013	Visit y sam informat un laterne (J-1) Visit y sam informat un laterne (J-1) Cause band Urf Yassen einer Jahre Man Damer Cause bands (J-1) Waterne Man Damer Cause Jahren Man Damer Cause Jahren Man Damer Cause Jahren Man Tarteten Arguna (J-1) Standa Tarteten Arguna (J-1) Standa (J-1) Tarteten Arguna (J-1) Standa (J-1) Tarteten Arguna (J-1) Standa (J-1) Tarteten Arguna (J-1) Standa (J-1) Standa (J-1)	Unit Canat Canat Canat Canat Eng Canat Eng Canat Ing Canat		INONAL LIFT STATU	\$1.000,000 \$5.000,000 \$75.0721821 OMS & INTERCEPTIC \$435.050 \$2.872,338 \$788,390 \$3.802,400 \$3.508,000 \$3.508,000	51,008.000 53,941,500 1007 512,500 8410,630 5410,630 5410,630 5410,630 5410,512 53,75,65 53,776,750	9023 2001 2001 2001 2005 2005 2005 2005 2007	2024 2024 2024 2017 2016 2018 2018 2018	01401041 0119620	4.0% 2.0% 17.1 2.1 2.1 0 0.0% 0.0% 0.0% 0.0% 0.0%	50 50 50 50 50 50 50 50 50 50 50	12.5% 42.5% 12.5% 12.5% 12.5% 12.5% 12.5% 13.5% 13.5% 13.5%				12,0% 11,0% 15,0% 15,0% 50,0% 50,0% 55,0%	\$132,996 \$644,820 \$644,820 \$139,754 \$139,754 \$1,575,901 \$1,575,901
WW7P-013 WW7	Vicing Yang Housen, Lin Haame, A.S., Vicing Yang, Hanner, M. Haame, A.S., Katana Mandi, H.S. Hanner, Katana Katana Mandi, H.S. Hanner, and Katana Katana Mandi, K.S. Hanner, and Katana Katana Mandi, K.S. Hanner, K.S. Hannel Tandran Magnati, K.S. Hanner, S.S. Sayand Tandrana Magnati, K.S. Hanner, K.S. Hannel Tandrana Mangata, K.S. Hanner, K.S. Ha	Unit Canat Canat En south Angel Canat Eng Canat Eng Canat Eng Canat Eng Canat Eng Canat		INCINAL LIFT STATI	\$1.000,000 35.000,000 3520,523,911 CMS & INTERCEPTO \$450,850 \$2,872,800 \$2,872,800 \$3,802,400 \$3,802,400 \$3,800,000 \$400,000	\$1,008.000 \$5,94,500 \$100.5725577 \$200.5725577 \$200.572 \$200.572 \$200.572 \$200.572 \$200.5 \$277,025 \$277,025 \$277,056 \$277,060	9023 2001 2001 2001 2001 20015 20015 20015 20015 20017 20017 20017	2024 2024 2017 2016 2016 2016 2016 2018 2018 2018	01 MGD	4.0% 2.0% 77 2.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%	50 50 50 50 50 50 50 50 50 50	18.0% 48.0% 18.0% 19.0% 19.0% 19.0% 19.0% 19.0% 19.0% 19.0%				12.0% 12.0% 15.0% 55.0% 55.0% 55.0% 55.0%	\$132,996 \$664,500 \$664,500 \$139,754 \$139,754 \$139,754 \$139,754 \$139,754 \$139,754 \$139,754 \$139,754 \$139,754 \$139,754 \$139,755 \$159,7555 \$159,7555 \$159,7555 \$159,75555 \$159,7555 \$159,755555 \$159,7555555 \$159,755
WWTF-013 WWTF-013 WWWTF-013 WWWTF-013 WWWFF-0 WWWFF-0 WWWFF-0 WWWFF-0 WWWFF-0 WWWFF-0 US-0 15-0 15-0 15-0	Vietar Synchronia (M. Landon 193). Vietar Space Annuel A. Landon (H. S.	Ing Const ED Model Not EXAMPLE Const Log Cons	NO CONTRACTOR	IKOMAL LIFT STATU	\$1.000,000 \$5.000,000 \$500,000 \$500,000 \$200,000 \$2,872,588 \$278,280 \$278,280 \$278,280 \$278,280 \$288,280 \$310,000 \$200,000 \$200,000 \$2,000,000,000 \$2,000,000 \$2,000,0000,000 \$2,000,	\$1,008.005 \$5,541,500 1004 \$172,510 8400,500 \$2,277,520 \$1076,512 \$1,2872,520 \$2,277,025 \$3,778,780 \$2,171,680 \$1,277,680	3023 2021 2021 2021 2023 2015 2015 2015 2015 2017 2017 2017 2017 2017 2017	2024 2024 2024 2017 2016 2016 2016 2016 2018 2018 2018 2011 2011	011 MGD 11 MGD 12 MGD 11 MGD	4.0% 2.0% 774 TALAIN 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%	59 52 51 50 50 50 50 50 50 50 50 50	182,0% 282,0% 253,0% 25				12.0% 12.0% 13.0% 15.0% 50.0% 50.0% 55.0% 55.0% 55.0% 55.0%	\$132,996 \$64,629 \$64,629 \$430,390 \$139,794 \$1,51,975 \$151,975 \$152,975 \$155
WWTF-013 WWTF-013 WWWTF-013 WWWTF-013 WWWFF-0 WWWFF-0 WWWFF-0 WWWFF-0 WWWFF-0 WWWFF-0 US-14 US-14 US-14	Vietar 2 and inclusion 1.0 Laboration 2.0. Vietar 2 and 2 a	Int Conn Conn Et al. (Alternation Eng Count Eng Count Fig Count Fig Count Trg	R	NOMAL LIFT STATE	\$1.000,000 \$5.000,000 \$250,527,541 ONS & INTERCEPTO \$450,500 \$2,872,088 \$284,290 \$2,872,080 \$2,822,000 \$3,000,000 \$3,000,000 \$3,000,000	51,008,805 35,341,300 2006,872,501 2006,872,501 2006,872,501 3176,312 3176,312 3176,312 3176,312 3176,312 3177,005 3177,005 3172,006 31,327,400 3271,660	9023 2001 2001 2001 2005 2005 2005 2005 2005	2024 2024 2024 2017 2016 2018 2018 2018 2018 2018 2019 2019 2011 2011 2011	011 MGD	4.0% 2.0% 7/4 14144/5 0.0% 0.0% 0.0% 0.0% 0.0%	59 52 53 50 50 50 50 50 50 50 50 50 50 50	182,098 282,098 253,00				12.0% 12.0% 13.0% 15.0% 50.0% 50.0% 50.0% 55.0% 50.0% 20.0%	\$132,996 \$844,580 \$44,580 \$139,754 \$139,754 \$157,751 \$157
WWTF-013 WWTF-013 WWTF-013 WWWTF-013 WWWTF-013 WWWF-013 WWWF-013 WWWF-013 WWWF-013 WWWF-013 WWWF-013 WWWF-013 WWWF-013 WWTF-013 W	View 2 part in short of it laters (>1). View 2 part in short () it laters (>1). Catch Read	Ing Cons Cons Cons Cons Cons Cons Cons Cons		INONAL LIFT STATU	11.000,000 35.000,000 34.500,731.4711 0005 & UNTERCENT 5405.050 52.071,100 53.802,800 53.802,800 53.800,000 57.000,000 57.000,000 51.000,000 51.000,000	\$1,000.805 \$3,341,500 Hord States \$400,850 \$1,872,520 \$3,175,520 \$3,175,520 \$3,770,780 \$3,770,780 \$3,771,660 \$3,437,680 \$2,21,660 \$4,437,680	9823 2023 2023 2023 2023 2023 2023 2023 2	2024 2024 2024 2024 2017 2016 2018 2018 2018 2018 2018 2018 2018 2013 2023	0.1 MGD 12 MGD 1 MGD 2 MGD	4.0% 2.0% 7/ 12/216 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%	50 52 53 50 50 50 50 50 50 50 50 50 50 50 50	182,5% (22,0%) (23,0%) (25,0%)				12,0% 11,0% 15,0% 15,0% 50,0% 50,0% 55,0% 55,0% 55,0% 25,0% 26,0% 28,0%	\$132,096 \$664,520 \$64,620 \$139,754 \$6,071,780 \$152,091 \$5,529,523 \$24,333 \$24,335 \$24,335 \$24,335 \$24,335 \$24,335 \$24,335 \$24,335 \$24,335 \$24,355 \$24,454
WWTP-013 WWTP-013 WWWTP-013 WWWWP-9 WWWWP-9 Undum 31 US-4 US-4 US-4 US-4 US-4 US-4 US-4 US-18	Vietar Span Holmann, Hall Hallow (1-3). Vietar Span Holmann, Hall Hallow (1-3). Catalon March (1-4) Hallow (1-4). Catalon March (1-4) Hallow (1-4). Catalon March (1-4) Hallow (1-4). Catalon March (1-4). Catalon Mar	Ing Conn Conn Conn Conn Conn Eng Conn Frg Conn Frg Conn Frg Conn Frg Conn Frg		INCINAL LIFT STATE	\$1.000.000 \$1.000.000 \$100.727.741 \$100.727.741 \$100.850 \$2.87.7351 \$2.97.7351 \$2.97.7551 \$2.9	51,008,808 25,94,500 4109,472,527 983 54,0030 54,000 54	9823 2023 2023 2023 2023 2023 2023 2025 2025	2024 2024 2024 2017 2016 2018 2018 2018 2018 2018 2018 2011 2011	0.1 MGD 1. MGD 1. MGD 1. MGD	2.0% 2.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%	599 542 543 543 543 543 543 543 543 543 543 543	182,000 (21,000 (21,000) (21,0				12.0% 11.0% 13.0% 15.0% 50.0% 50.0% 55.0% 55.0% 20.0% 28.0% 28.0% 28.0%	\$132,996 \$964,829 \$64,829 \$319,754 \$1,971,780 \$15,2,081 \$44,833 \$20,085 \$42,085
WWTP-013 WWTP-013 WWWTP-013 WWWWP-01 US-0 US-0 US-0 US-0 US-0 US-0 US-0 US-0	View 2 years include 1.0 Salaco 0.5 Si View 2 years include 1.0 Salaco 0.5 Si Casab March Life Salaco 0.5 Si Casab March 1.5 Si Casab March 1.	Ing Const Et Turk Blanco Kindset Eng Const Eng Const Eng Const Eng Const Fra Const Fra Const Tra Const Tra Const Tra Const Tra Const Tra Const C	Re 	IQNAL LIFT STATE	31.000.000 31.000.000 31.000.21.27.21 31.000.21.27.21 32.07.2.21 53.000 53.000 53.0000 53.0000 53.00000 53.00000 53.00000 53.00000 53.00000 53.000000000000000000000000000000000000	51,008,000 55,143,000 54,006,125,000 54,006,125,000 54,006,000 54,006,000 54,006,000 54,006,000 54,006,000 54,006,000 54,006 54,006 54,006 54,006 54,006 54,006 54,006 54,006 54,006 54,006 54,006 54,006 54,006 54,006 54,006 54,006 54,007	9823 2001 2001 9883 2005 2005 2005 2005 2005 2005 2005 200	2024 2024 2024 2017 2017 2016 2018 2018 2018 2018 2018 2013 2023 2023	01 860 11 860 12 860 1 860 1 860 2 860	4.0% 1.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0	50 52 53 54 54 54 54 54 50 50 50 50 50 50 50 50 50 50 50 50 50	982,598 482,099 150 Pt 400,00 150,095 150,005 150,00				12,0% 11,0% 13,0% 55,0%	\$132,996 \$644,820 \$444,820 \$139,754 \$1,97,764\$1,97,764\$1,97,764\$1,97,764\$1,97,764\$1,97,764\$1,97,764\$1,97,764\$1,97,974\$1,97
WWTF-013 WWWTF-013 WWWTF-013 WWWWF-9 WWWWF-9 WWWWF-9 WWWWF-9 US-0 US-0 US-0 US-0 US-0 US-0 US-0 US-0	Vietal 2 and inclused un listen to 201 Vietal 2 and 2	Ing Canut Constant Constant Ing Constant Ing Constant Ing Const Const Ing Const Ing Const Ing Const Ing Const Ing Const Ing Const Ing Const Ing Const Const Ing Const Ing Const		ICHAL UFT STATA	31.000.009 35.000.009 312.00.009 312.0092.8441 342.0092.8441 342.0092 342.0092 342.0092 342.0092 342.000 35.000.000 35.000.000 35.000.000 31.000 31.0000 31.0000 31.0000 31.0000 31.0000 31.0000 31.0000 31.0000 31.00000 31.00000 31.00000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.000000 31.00000000 31.00000000 31.000000000000000000000000000000000000	51,08,000 52,941,000 53,941,000 54,00,050 54,000 5	9823 2003 2003 2003 2005 2005 2005 2005 20	2024 2024 2024 2017 2017 2018 2018 2018 2018 2018 2019 2013 2003 2003 2003 2003 2003 2003	0.1 MGD 11 MGD 12 MGD 1 MGD 2 MGD 2 MGD	4.0% 2.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0	59 54 54 55 50 50 50 50 50 50 50 50 50 50 50 50	 18.5% 15.5% 16.5% 16.5% 16.5% 16.5% 16.5% 16.5% 16.5% 16.5% 17.5% 17.5% 17.5% 17.5% 17.5% 17.5% 17.5% 17.5% 17.5% 16.5% <l< td=""><td></td><td></td><td></td><td>12.0% 11.0% 15.0% 55.0% 50.0% 55.0% 55.0% 55.0% 26.0% 28.0% 28.0% 28.0% 28.0% 28.0% 28.0% 28.0%</td><td>\$122,996 564,800 \$44,800 \$125,900 \$125,900 \$125,900 \$125,900 \$40,9000\$400 \$40,900 \$40,900\$40,900\$400\$400\$4000\$400\$4000\$400</td></l<>				12.0% 11.0% 15.0% 55.0% 50.0% 55.0% 55.0% 55.0% 26.0% 28.0% 28.0% 28.0% 28.0% 28.0% 28.0% 28.0%	\$122,996 564,800 \$44,800 \$125,900 \$125,900 \$125,900 \$125,900 \$40,9000\$400 \$40,900 \$40,900\$40,900\$400\$400\$4000\$400\$4000\$400
WWTP-013 WWWTP-013 WWWTP-013 WWWWF9 WWWWF9 WWWWF9 WWWWF9 UNAWF-32 US4 US4 US4 US4 US4 US4 US4 US4 US4 US4	Viet III Search and Annual Ann	Const Const	No.		31.000.009 31.000.009 32.000.009 32.000.22.42.42 34.000.22.42.42 34.000.009 35.000 35.0000 35.00000 35.00000 35.00000 35.00000 35.00000 35.000000 35.0000000 35.000000000000000000000000000000000000	51,00,000 23,24,000 2006,02650 84,00,000 54,000 54,0000 54,000 54,000 54,0000 54,0000 54,000 54	9823 2023 2023 2023 2025 2025 2025 2025 20	2024 2014 2017 2017 2016 2016 2016 2018 2018 2018 2018 2013 2023 2023 2023 2023 2023 2023 2025 2025	0.1 MGD 1.1 MGD 1.1 MGD 1.1 MGD 2.1 MGD 2.1 MGD 2.1 MGD	4.0% 2.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0	99 54 54 54 54 54 54 54 54 54 55 55 55 55	は.5% は.0% は.0% は.0% は.0% は.0% は.0% は.0% は.0% は.0% 和の時 の の の の				12.0% 11.0% 15.5% 50.0% 50.0% 55.0% 55.0% 55.0% 55.0% 28.0% 28.0% 28.0% 28.0%	\$132,996 \$644,500 \$444,500 \$109,754 \$109,755 \$109,754 \$109,755 \$100,7555 \$100,7555\$100,7555\$100,7555\$100,7555\$100,7555\$1
WWTP-013 WWWTP-013 WWWTP-013 WWWWP-9 WWWWP-9 WWWWP-90 WWWWP-900 US-4 US-4 US-4 US-4 US-4 US-4 US-4 US-4	Vietal 2 and inclusion 18 inclusion 0.51. Vietal 2 Annue 7 An	Pro- Construction of the second secon		KNAL UFT STATA	31.000.009 35.000.009 35.00.009 35.2.8.72.8.72.8 36.2.8.72.88 36.2.8.72.88 36.2.8.72.88 36.2.8.72.88 37.2.8.72.88 37.2.8.72.88 37.00.000 37.00.000 37.00.000 37.00.000 31.0000 31.00000 31.00000 31.00000 31.00000 31.00000 31.00000 31.00000 31.00000 31.00000 31.00000 31.00000 31.00000 31.000000 31.000000 31.00000000 31.000000000000000000000000000000000000	51,00,000 52,941,000 81078,004 8400,0000 8400,0000 8400,0000 8400,0000	9823 2003 2003 2003 2005 2005 2005 2005 20	2024 2014 2014 2017 2016 2015 2016 2015 2015 2015 2013 2023 2023 2023 2023 2023 2023 2023	0.1 MGD 1.1 MGD 1.1 MGD 1.1 MGD 2.1 MGD 2.1 MGD	6.0% 12.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%	59 54 54 54 54 54 54 54 55 55 55 55 55 55	 10.0% 11.0% 12.0% 13.0% 13.0% 13.0% 13.0% 13.0% 13.0% 10.0% 10.0% 10.0% 				12,2% 11,0% 15,0% 15,0% 50,0% 50,0% 55,0% 55,0% 70,0% 28,0% 20,0%	\$132,996 \$644,800 \$444,800 \$109,704 \$100,704\$100,704\$10
WWTP-013 WWWTP-013 WWWTP-013 WWWWP-9 WWWWP-9 WWWWP-9 US-5 US-5 US-6 US-6 US-6 US-6 US-6 US-18 US	Vietar 2 part in structure 18 i Salante (e 31). Vietar 2 part and annue 18 i Salante (e 31). Vietar 2 part 2 par	Pre- Control C			31.000.000 31.000.000 32.000.22.2.2.2.2 54.00.000 32.5.7.2.2.000 54.00.000 55.7.2.000 55.7.2.000 55.7.2.000 55.7.2.000 55.7.000 55.7.000 55.7.5.400 55.7.5.4000 55.7.5.4000 55.7.5.4000 55.7.5.4000 55.7.5.4000 55.7.5.4000 55.7.5.4000 55.7.5.4000 55.7.5.40000 55.7.5.40000 55.7.5.400000000000000000000000000000000	51,00,800 32,343,007 32,343,007 32,004,332,553 34,004,332,553 34,004,332,553 34,004,332 34,004,332 34,004,332 34,004 34,004 34,00434,004 34,004 34,00434,004 34,004 34,00434,0	9823 2003 2003 2003 2005 2005 2005 2005 20	2024 2014 2014 2014 2017 2016 2018 2018 2018 2018 2018 2018 2013 2013 2013 2013 2013 2013 2013 2013	0.1 MGD 1.1 MGD 1.3 MGD 1.4600 3.4460 3.12 4460	6.0% 2074 20.0% 6.0% 6.0% 6.0% 6.0% 6.0% 6.0% 6.0%	99 90 101 - 2010 90 90 90 90 90 90 90 90 90 9	84.5% 44.0% 47.7% 47.7% 47.7% 47.7% 47.7% 47.7% 47.7% 77.7% 77.7% 77.7% 72.2% 44.5% 44.5% 100.0% 50.5% 5				12,28% 12,0% 15,0% 15,0% 50,0% 55,0% 55,0% 55,0% 26,0% 26,0% 36,0% 36,0% 36,0% 36,0% 36,0% 36,0%	\$132,996 \$644,800 \$444,800 \$487,860 \$119,794 \$4,577,991 \$4,577,991 \$4,577,991 \$4,577,991 \$4,577,991 \$4,575,991 \$4,575,991 \$4,575,991 \$5,576,972 \$5,576,972
WWTP-013 WWTP-013 WWWTP-013 WWWWP-9 WWWW-9 WWWW-9 US-0 US-0 US-0 US-0 US-0 US-0 US-0 US-0	Vietar Syn Amerikaan (U.S. Baaren (U.S.) Vietar Syn Amerikaan (U.S.) Canada Baard (U.S. Sanasa (U.S.) Canada Baard (U.S. Sanasa (U.S. Sanasa Sanasa Sanasa (U.S. Sanasa (U.S. Sanasa (U.S. Sanasa Sanasa Sanasa (U.S. Sanasa (U.S. Sanasa (U.S. Sanasa Sanasa Sanasa (U.S. Sanasa (U.S. Sanasa (U.S. Sanasa (U.S. Sanasa Sanasa Sanasa (U.S. Sanasa (U.S. Sanasa (U.S. Sanasa (U.S. Sanasa Sanasa Sanasa (U.S. Sanasa (U.S. Sanasa (U.S. Sanasa (U.S. Sanasa (U.S. Sanasa Sanasa Sanasa (U.S. Sanasa	Pre- Construction Construction Construction Const Cons		SICMAL LIFT STATE	11.000.005 13.000.005 13.000.007 14.000.721,231 14.000.721,231 14.000.721,231 14.000.721,231 14.000.107 14.000.107 14.000.007 15.000.007 15.000.007 15.000.007 15.175.860 14.000.007 15.175.860 14.000.007 15.175.860 14.000.007 15.175.860 15.014.460 15	51,00,000 35,94,300 10,000,302,500 54,000,300 54,0	9823 2003 30013 30013 2005 2005 2005 2005 2005 2000 2000 200	2024 2014 2014 2014 2014 2015 2015 2015 2015 2013 2023 2023 2023 2023 2023 2023 2023	0151600 91800 12460 1460 2460 3460 3460	6.0% 2.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0	99 50 50 50 50 50 50 50 50 50 50 50 50 50	84.0% 84.0% 84.0% 85.0% 85.0% 85.0% 85.0% 85.0% 85.0% 86.0% 77.0% 77.0% 77.0% 77.0% 72.0% 84				12,2% 12,0% 13,0% 15,0% 55,0% 55,0% 55,0% 55,0% 20,0% 20,0% 20,0% 20,0% 20,0% 20,0% 20,0% 20,0% 20,0%	\$132,996 \$564,820 \$544,820 \$5153,754 \$5352,961 \$5352,961 \$542,005 \$542,005 \$542,005 \$542,005 \$542,005 \$542,005 \$542,005 \$542,005 \$542,005 \$513,005 \$515,005 \$515,005\$
WWTF-013 WWTF-013 WWTF-013 WWTF-013 WWTF-013 WWTF-013 WWTF-013 US-14 US-14 US-14 US-14 US-16 US-16 US-14 US-14 US-14 US-16 US-16 US-16	Viet III Search and Annual Ann	Pre- Control C			31.000.000 31.000.000 32.000.222,92,92 54.000,000 55.000,000 55.0000,000 55.0000 55.0000,000 55.0000,000 55.0000,000 55.0000,000 55.0000,000 55.0000,0000 55.0000,000 55.0000,0000 55.0000,0000 55.0000,0000 55.0000,0000 55.0000,0000 55.0000,0000 55.0000,0000 55.0000000000000000000000000000000	51,00,000 132,94,305,51 132,94,305,51 132,94,305,51 134,51,55 134,51,55 134,51,55 134,51,55 134,74,76 134,74,76 134,74,76 134,74,76 135,146 135	9823 2003 2003 2003 2005 2005 2005 2005 20	2024 2014 2014 2017 2017 2016 2018 2018 2018 2018 2018 2018 2018 2018	0154641 01862 12860 1460 2460 3460 3460 312860 21960	6.0% 20% 20% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0	999 50 50 50 50 50 50 50 50 50 50 50 50 50	84,0% 84,0% 85,0% 85,0% 85,0% 85,0% 85,0% 85,0% 86,0% 80,0% 72,0% 84,0% 84,0% 72,0% 84,0%84,0% 84,0%84,0% 84,0% 84,0% 84,0%84,0% 84,0% 84,0%84,0% 84,0% 84,0%84,0% 84,0% 84,0%84,0% 84,0% 84,0%84,0%84,0% 84,0%84,0%84,0%				12,2% 12,2% 15,2% 15,2% 50,2% 50,2% 50,2% 50,2% 50,2% 50,2% 70,0%	\$132,996 \$64,820 \$45,820 \$45,840 \$45,8400 \$45,8400 \$45,8400 \$45,8400 \$45,8400 \$45,8400 \$45,8400 \$45,
WW/7F-013 WW/7F-013 WW/7F-013 WW/WF-7 WW/AW-31 US-1 US-1 US-1 US-1 US-1 US-1 US-1 US-	Viet 29 Jan Andre 18 Janne 19 Ji Viet 20 Janne Andre 18 Janne 19 Ji Zahn March Life Spanse and Farre Man Canne March Life Spanse and Farre Man Canne March 20 States and Farre Man Dame Data (20 States and Farre Man Dame Data (20 States and Farre Man Dates Tagged 21 Farres Man Dates Dates (21 States and 19 States) March 20 States (21 States and 21 States) Mar	Deg Construction Construction Const	100	IRMAL LIFT STATE	11.000.005 31.000.005 13.000.005 14.500.721.231 54.80.721.231 54.80.721.231 54.87.205 54.87.	51,00,000 52,541,500 52,541,500 52,542,500 53,542,500 54,00,300 54,00,300 54,00,300 54,00,300 54,00,300 54,00,300 54,00,300 54,00,300 54,00,000 54,000 55,0000 55,000	9823 2001 3001 9005 2005 2005 2005 2005 2005 2005 2005	2024 2014 2014 2017 2017 2016 2018 2018 2018 2018 2018 2019 2023 2023 2023 2023 2023 2023 2023 202	11 MGD 11 MGD 12 MGD 1 MGD 1 MGD 1 MGD 1 MGD 1 MGD 1 MGD 1 1 MGD 1	4.0% 2.0% 2.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0	99 50 50 51 50 50 50 50 50 50 50 50 50 50 50 50 50	18.0% 48.0% 48.0% 45.0% 45.0% 45.0% 45.0% 45.0% 45.0% 45.0% 45.0% 72.0% 72.0% 72.0% 72.0% 72.0% 72.0% 500.0% 500.0% 500.0% 500.0%				12,285 13,0% 55,0% 55,0% 55,0% 55,0% 55,0% 55,0% 55,0% 55,0% 55,0% 55,0% 55,0% 55,0% 55,0% 55,0% 55,0% 56,0%	\$122,996 \$44,800 \$44,800 \$518,744 \$518,744 \$518,744 \$518,744 \$518,744 \$518,744 \$518,744 \$518,744 \$518,744 \$518,744 \$518,744 \$518,744 \$52,065 \$
WW7F-013 WW7F-013 WW7F-013 WW7F-013 WW7F-013 WW7F-013 WW7F-013 US4 US4 US4 US4 US4 US4 US4 US4 US4 US4	Viet II gene have a failed and taken (e. 1). Cancel March 2014 and 2014 (Cancel Pail) Cancel March 2014 (Cancel Pail) Cancel Marc	Pre- Construction Construction Teg Const Teg Const Teg Const Teg Const Teg Const Teg Const Teg Const Teg Const Con	N	INCRAL LIET STATE	11.000.005 13.000.005 13.000.005 14.944, 22.7,24 14.053, 64, 141712(15774) 14.053, 64, 141712(15774) 15.053, 64, 1172(15774) 15.054, 005 15.054, 005 15.	51,002,000 12,141,500 12,141,500 12,141,500 12,140,8325,570 14,150,8325,570 14,150,1512 15,278,780 15,2780 15,2780 15,2780 15,2780 15,2780 15,2780 1	9823 2003 3003 2005 2005 2005 2005 2005 20	2024 2014 2014 2017 2017 2018 2018 2018 2018 2018 2018 2018 2019 2013 2023 2023 2023 2023 2023 2023 2023	0.1 MGD 1.1 MGD 1.1 MGD 1.1 MGD 2.1 MGD 2.1 MGD 2.1 MGD 2.1 MGD 2.1 MGD 2.1 MGD 2.1 MGD	6.0% 6.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0.0%	99 50 50 50 50 50 50 50 50 50 50 50 50 50	84,0% 84,0% 84,0% 85,0% 85,0% 85,0% 85,0% 85,0% 85,0% 85,0% 85,0% 85,0% 80,0% 80,0% 84,0% 84,0% 80,0% 80,0% 80,0% 80,0% 84				12.0% 12.0% 15.0% 56.0% 55.0% 55.0% 55.0% 56.0% 36.0% 36.0% 36.0% 36.0% 40.0% 40.0% 40.0% 40.0%	1122,995 544,520 544,520 544,520 544,520 544,520 544,520 542,520,301 544,520 544,530 544,530 544,530 544,540 540,540 550,540
WWTP-013 WWTP-013 WWTP-013 WWWTP-013 WWWTP-013 WWWWP-013 WWWWP-013 US-1 US-1 US-1 US-1 US-1 US-1 US-1 US-1	Viet 2 years have 1 with a latence (r > 1) Carton based Link Section 1 was a latence (r > 1) Carton based Link Section 2 was a latence (r > 1) Carton based Link Section 2 was a latence (r > 1) Carton 2 was a latence (r > 1) C	Pre- Control C	No.	NORAL UFT STATE	1.000,000 15.000,000 14.000,727,74 14.000,727,74 14.000,727,74 14.000,727,74 14.000,727,74 14.000,727,74 14.000,720 15.740,000 15.740,000 15.940,0000 15.940,000	141,002,005 151,443,001 151,443,001 151,443,001 151,443,001 151,443,001 151,443,001 151,440,000 151,440,000 151,4	9823 9001 9001 9001 9005 9005 9005 9005 9005	2024 2015 2017 2017 2017 2017 2017 2018 2018 2018 2018 2019 2019 2019 2019 2019 2019 2019 2019	013 MGD 11 MGD 12 MGD 1 MGD 2 MGD 2 MGD 2 MGD 2 1 MGD 21 MGD 21 MGD 3 MGD 3 MGD 3 MGD	6.0% 2.0% 2.0% 0.2% 0.2% 0.2% 0.2% 0.2% 0	99 50 50 51 51 52 50 50 50 50 50 50 50 50 50 50 50 50 50	84.0% 44.0% 45.0% 85.9% 50.9% 50.9% 50.9% 50.9% 50.9% 72.0%				12,2% 13,2% 56,0% 56,0% 56,0% 55,0% 55,0% 55,0% 78,0%78,0% 78,0% 78,0% 78,0% 78,0% 78,0%78,0% 78,0% 78,0% 78,0%78,0% 78,0% 78,0% 78,0%78,0% 78,0% 78,0% 78,0%78,0% 78,0% 78,0%78,0% 78,0% 78,0%79,0% 79,0% 70,0% 70,0%70,0% 70,0% 70,0% 70,0%70,0% 70,0%	\$132,985 544,820 544,820 548,820 518,745 518,745 518,745 515,747 515,747 515,747 517,747 517,747 517,747 517,747,747,747 517,747,747,747 517,747,747,747,747,747,747,747,747,747,7
WWTP-013 WWTP-013 WWTP-013 WWATP-013 WWATP-013 WWATP-013 US-01 US-	Viet V part have 1 viet 1 dates 0 k1 Viet V part have 1 viet 1 dates 0 k1 Viet Viet Viet Viet Viet Viet Viet Viet	Pre- Construction Construction Traj Const Const Con	1	ICHAL UP STATE	1.000.005 31.000.005 32.000.225.736 35.000.225.736 35.000.225.736 35.000.255.735 35.000.005 35.0000 35.0000 35.0000 35.0000 35.0000 35.0000 35.00000 35.000000000000000000000000000000000000	51,002,000 12,141,300 12,141,300 12,141,300 12,140,872,579 14,140,872,579 14,140,872,579 15,178,581 15,278,780 15,278,780 15,278,780 15,278,780 15,278,580 15,278	94823 9403	2024 2017 2017 2017 2017 2018 2017 2014 2018 2019 2019 2019 2019 2019 2019 2019 2019	0.1 M60 12 M60 1.460 2 M60 3 M60 3 M60 3 M60 3 M60 3 M60 3 M60 3 M60 3 M60	6.0% 2.0% 2.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0	90 50 50 50 50 50 50 50 50 50 50 50 50 50	84.0% 44.0% 45.0% 15.0%				12.2% 12.2% 15.2% 15.2% 15.2% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0%	1332,996 544,520 544,520 544,520 544,520 544,520 542,52,301 542,52,301 542,523,521 544,132 544,132 544,132 544,132 544,134 544,135 547,135 547,135 547,135 547,135 547,135 547,135 547,135 547,135 547,1455 547,145555555555555555555555555555555555
WWT-013 WWT-013 WWT-013 WWH/F-013 WWH/F-013 WWH/F-013 WWH/F-013 WWH/F-013 WWH/F-013 WWH/F-013 US-14 US-14 US-14 US-14 US-14 US-14 US-14 US-14 US-14 US-15 US	Viet 29 Jahr Industrie 18 Jahren 1931 Viet 2014 Start Street 1931 Careho March 1941 Starts and France 1931 Careho March 1941 Starts and Tarte Man Careho March 1942 Starts Annuel Starts March 1942 Starts Annuel Starts March 1942 Starts Annuel Starts March 1942 Starts Annuel Starts March 1943 Starts Annuel Starts March 1944 Starts March 1944	Pre- Construction Construction (Construction) (Cons		ICHAL LIFT STATE	11-00.000 13-00.000 13-00.200 13-00.200 14-00.272-91 14-00.0000 14-00.0000 14-00.000 14-00.0000 14-00.0000 14-00.0000 14-00.0000 14-00.0000 14-00.0000 14-00.0000 14-00.0000 14-00.0000 14-00.0000 14-00.0000 14-00.0000 14-00.0000 14-0	51,244,250 1216,475,571 1216,475,571 1216,475,571 1216,475,571 1216,475,571 1216,475,571 1216,475,571 1214,121 1214,1	9823 2021 3021 3021 3023 2023 2023 2023 20	2024 2024 2024 2027 2027 2027 2027 2028 2028 2028 2029 2023 2023 2023 2023 2023 2023 2023	0.1 MGD 1.1 MGD 1.1 MGD 1.1 MGD 2.4 MGD 2.1 MGD 2.1 1.1 MGD 2.1 MGD 1.1 MGD	4.6% 2.0% 2.0% 0.3% 0.3% 0.3% 0.3% 0.3% 0.3% 0.3% 0	90 50 50 50 50 50 50 50 50 50 50 50 50 50	Ballow Ballow dat. On dat. On dat. On <td< td=""><td></td><td></td><td></td><td>12.0% 12.0% 13.50% 15.50% 15.50% 15.50% 15.50% 15.50% 15.50% 12.5</td><td>1332,986 544,820 544,820 548,820 558,820 548,820 558,820,820 558,820,820 558,820,820 558,820,820 558,820,820,820,820,820,820,820,820,820,82</td></td<>				12.0% 12.0% 13.50% 15.50% 15.50% 15.50% 15.50% 15.50% 15.50% 12.5	1332,986 544,820 544,820 548,820 558,820 548,820 558,820,820 558,820,820 558,820,820 558,820,820 558,820,820,820,820,820,820,820,820,820,82
WWTP-003 WWTP-003 WWTP-003 WWWWP-9 WWWWP-9 WWWWP-9 WWWWP-9 US-1 S-1 S-1 S-1 S-1 S-1 S-1 S-1 S-1 S-1	Viet W Jan Kohnell (K. Kannell (K. J.)) Care March Kohnell (K. K. Kannell (K. J.)) Care March Kohnell (K. K. K	Pre- Construction	the second s		11:00:000 13:00:000 14:00:27:24:1 14:00:000 14:00:000 14:00:000 14:00:000 15:000 15:0000 15:0000 15:000 15:0000 15:0000 15:0000 15:0000	51,628,808 53,642,809 1266,475,671 464,628 464,628 464,628 464,628 464,628 464,628 464,628 464,628 464,628 474,628 4	983 2011 2011 2011 2015 2015 2015 2015 2015	2024 2024 2017 2016 2017 2016 2018 2018 2018 2019 2017 2017 2017 2017 2013 2013 2013 2013 2013 2013 2013 2013	011 MGD 11 MGD 12 MGD 1 MGD 2	6.0% 2.0% 2.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0	90 50 50 50 50 50 50 50 50 50 50 50 50 50	88.0% 48.0% 10 - 2 - 2 - 2 - 2 - 2 10 - 2 - 2 - 2 - 2 10 - 2 - 2 10 - 2				1.1.0% 1.1.0% 1.1.0% 1.5.0% 1.5.0% 1.5.0% 1.5.0% 1.5.0% 1.5.0% 2.6.0% 2.	\$122,996, 544,890 544,890 544,890 544,890 544,890 544,890 5152,997 542
WWT-0.03 WWT-0.03 WWWT-0.03 WWWT-0.03 WWWT-0.03 WWWT-0.03 State 15.1 State 15	Vield Y and induced Life Lasen (e. 15). Card Mark Share (K. 1999). Card Mark Share (De Des Constantes de la constante de la constante de la constante de la constante de la constante de la constante de la constante de la constante de la constante de la constante de la constante de la constante de la constante de la constante de la consta		IRIKAL UPT STATI	11:00:00 12:00:02 12:00:	51,228,280 52,542,550 126,677,591 52,542,550 126,677,591 54,522,50 54,525,50 54,525,50 54,525,50 54,525,50 54,525,50 54,525,50 54,525,50 54,525,50 54,525,50 54,555,50 54,555,50 54,5	9823 2021 2021 2021 2025 2025 2025 2025 2026 2020 2020 2020	2024 2242 2017 2016 2016 2016 2016 2016 2016 2016 2016	911 MGD 11 MGD 11 MGD 11 MGD 11 MGD 11 MGD 21 MGD 11 MGD 11 MGD 11 MGD	6.0% 2.0% 2.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0	90 90 92 90 90 90 90 90 90 90 90 90 90 90 90 90	14.00. 43.0% 15.0% 15.0% 15.0% 15.0% 15.0% 15.0% 15.0% 15.0% 17.0% 17.0% 17.0% 17.0% 17.0% 17.0% 17.0% 17.0% 17.0% 17.0% 15.0%				LL09 LL09 LL09 LL09 LL09 S009	1132,995 544,800 544,800 5919,704 64,87,989 5919,704 64,87,989 5919,704 64,87,989 5919,704 64,87,989 5919,704 542,305 542,305 542,305 542,305 542,305 542,305 542,305 542,305 544,805 544,805 544,805 545,905,
WWTP-033 WWTP-033 WWTP-033 WWTP-033 WWTP-033 WWTP-033 WWTP-033 WWTP-033 US-03	View Y and induced and itaken (bit) (Card March Andron (B) Haave (bit) Card March Andron (B) Haave (bit) March March March (bit) March March March (bit) March March March (bit) March March (bit)	Drg COM COM Erg Comd Trg Comd Erg Comd Trg Comd Erg Comd Erg Comd Erg Comd Erg Comd Erg Cond Erg Cond<	10	IRMAL OF STATE	11:00:00 13:00:00 14:00:00 14:00:00 14:00:00 14:00 14:00 14:00 14:00 14:00 15:00 15:00 15	51,628,000 53,628,000 106,672,671 540,030 106,672,671 540,030 107,040	983 9031 9031 9031 9053 9055 9055 9055 9055 9056 9056 9056 9056	2024 2024 2024 2024 2025 2025 2025 2025	12 MGD 13 MGD 14 MGD 14 MGD 24 MGD 24 MGD 24 MGD 25 MGD 25 MGD 25 MGD 34 MGD 34 MGD 34 MGD 34 MGD 34 MGD	6.0% 2.0% 2.0% 0.0% 0.0% 0.0% 0.0% 0.0% 0	50 50 50 50 50 50 50 50 50 50 50 50 50 5	84.0% 48.0% 48.0% 10 - 2 - 2 - 2 - 2 - 1 10 - 2 - 2 - 2 - 2 10 - 2 2				11.0% 11.0% 11.0% 11.0% 11.0% 11.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0%	1012,998 544,820 544,820 548,820 5519,744 61,820,200 5513,74 61,820,200 5513,74 61,820,200 5513,74 54,820,200 552,200
WWTP-003 WWTP-003 WWTP-003 WARM-9 WARM-9 WARM-9 WARM-9 WARM-9 USA USA USA USA USA USA USA USA USA USA	Viet V part have in Viet in Viet States (Viet Viet Viet Viet Viet Viet Viet Viet	Drg. Control Control Control		IRIGAL UPT STATIS	11:00:00 12:00:02 12:00:	51,628,800 52,542,500 126,675,501 54,6200 54,6200 54,6200 54,6200 54,6200 54,6200 54,6200 54,6200 54,6200 54,7500 50,75000 50,75000	9823 2021 9823 9824 9825 9825 9825 9825 9825 9825 9825 9825	2024 2024 2017 2016 2017 2016 2018 2018 2018 2019 2013 2013 2013 2013 2013 2013 2013 2013	0.1 MGD 1.1 MGD 1.4600 1.4600 2.131460 2.131460 2.131460 3.1460 3.1460 3.1460 3.1460 3.1460	6.0% 2.0% 2.0% 0.0%	50 50 50 50 50 50 50 50 50 50 50 50 50 5	Ballow Ballow 48.0% 48.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0% 10.0%				1.1.0% 1.1.0%	10.02,996 544,800 544,800 544,800 549,900 5199,794 549,900 549,900 549,900 549,900 549,900 544,300 544,400

Table 4-1

Harrison and American Statements



5.0 IMPACT FEE ANALYSIS

 Table 5-1 summarizes impact fee eligible costs for projects.
 Table 4-1 shows the detailed development

 of the costs and capacities of the eligible facilities.

CIP Category	Total Growth Related Cost	% Allocated to 2017-2027 Impact Fees	2017-2027 Growth Related Cost		
TRA Projects	\$78,039,930	50.6%	\$39,478,688		
Treatment Plants	\$156,677,593	59.4%	\$93,041,443		
Lift Stations/ Interceptors	\$101,724,832	61.7%	\$62,719,329		
Engineering Studies	\$4,274,837	31.9%	\$1,365,042		
	\$196,604,503				
	\$135,735,324				
т	\$332,339,827				

Table 5-1 2017-2027 Impact Fee Eligible Costs

5.1 Service Units

The different costs between customer types are allocated through the application of the equivalent meter concept. 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) Standard C700-02, Cold-Water Meters – Displacement Type, Bronze Main Case and AWWA Standard C701-07, Cold-Water Meters – Turbine Type, for Customer Service.



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

Table 5-2 AWWA Meter Equivalency Factors

Appendix C contains the 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 2017 information.

Table 5-3 Development of Factors of 2017 Population and Employment by Equivalent Meter

Description	Residential	Non-Residential
City of Fo	ort Worth	
Number of Equivalent Meters	299,889	117,005
Population / Employment	825,967	550,117
Population per Equivalent Meter	2.75	
Employment per Equivalent Meter	÷	4.70
Wholesale	Customers	
Number of Equivalent Meters	137,139	46,818
Population / Employment	339,103	142,309
Population per Equivalent Meter	2.47	**
Employment per Equivalent Meter	14-1	3.04

FNI did not receive meter count information from four of Fort Worth's wholesale wastewater 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 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 2017 and 2027 uses the ratios in **Table 5-3** and the population and employment projections for 2017 and 2027 from *Exhibit B: Land Use Assumptions-Wastewater Facilities* report. The calculation is shown below:

City of Fort Worth	
Residential	= Population Change / Population per Equivalent Meter = (1,026,780 – 825,967) / 2.75 = 73,023
Non- Residential	= Employment Change / Employment per Equivalent Meter = (679,901 – 550,117) / 4.70 = 27,614
Fort Worth Total	= Residential + Non-Residential = 73,023 + 27,614 = 100,637
Wholesale Customers	
Residential	= Population Change / Population per Equivalent Meter = (379,802 – 339,103) / 2.47 = 16,477
Non- Residential	= Employment Change / Employment per Equivalent Meter = (173,522 – 142,309) / 3.04 = 10,267
Wholesale Total	= Residential + Non-Residential = 16,477 + 10,267 = 26,744
Grand Total	= Fort Worth Total + Wholesale Total = 100,637 + 26,744 = 127,381
Grand Total	= 16,477 + 10,287 = 26,744 = Fort Worth Total + Wholesale Total = 100,637 + 26,744 = 127,381

5.2 Maximum Allowable Impact Fee Calculation

This report is based on a credit equal to 50% of the total projected cost of implementing the capital improvements plan, as specified in Chapter 395 of the Texas Local Government Code. Should the City

Water & Wastewater Impact Fee Update



Exhibit F - Capital Improvements Plan: Wastewater Facilities

choose to adopt an impact fee of greater than 50% of the total projected cost, a detailed credit calculation analysis is included in Appendix D.

Impact fees are the quotient of the total cost of expansion for the study period from Table 5-1 divided by the increase in equivalent meters. This fee equals the maximum wastewater impact fee for a $5/8'' \times 3/4''$ water meter size.

Maximum Wastewater Impact Fee	= Cost of Expansion / Increase in Equivalent Meters
	= \$332,339,827/ 127,381
	= \$2,609 per 5/8" x 3/4" equivalent meter

The wastewater impact fees for meters other than $5/8'' \ge 3/4''$ are the product of the fee per $5/8'' \ge 3/4''$ equivalent meter multiplied by the respective equivalent meter factor from **Table 5-2**. The maximum allowable wastewater impact fees are provided in **Table 5-4**, as well as the resulting impact fee at a 50% collection rate.

Meter Size	5/8" x 3/4" Equivalency Factor	Maximum Allowable Impact Fee	Impact Fee (Collected at 50%)		
5/8" x 3/4"	1.00	\$2,609	\$1,304		
3/4"	1.50	\$3,914	\$1,956		
1"	2.50	\$6,523	\$3,260		
1-1/2"	5.00	\$13,045	\$6,520		
2″	8.00	\$20,872	\$10,432		
3″	21.75	\$56,746	\$28,362		
4"	37.50	\$97,838	\$48,900		
6"	80.00	\$208,720	\$104,320		
8"	140.00	\$365,260	\$182,560		
10"	210.00	\$547,890	\$273,840		

Table 5-4 Wastewater Impact Fees by Meter Size





FREESE AND NICHOLS, INC. Exhibit F Capital Improvement Plan: Wastewater Facilities

FREESE AND NICHOLS, INC. 4055 INTERNATIONAL PLAZA, SUITE 200 FORT WORTH, TEXAS 76109 817-735-7300

www.freese.com