Draft Water and Wastewater Impact Fee Update

June 2025

Prepared for:

CITY OF DENTON

Prepared by:

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

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INTRODUCTION

Impact Fees are a mechanism for funding the public infrastructure necessitated by new development. Across the country, they are used to fund police and fire facilities, parks, schools, roads, and utilities. In Texas, the legislature has allowed their use for roadway, drainage, water, and wastewater facilities. In 2023, the City of Denton began an update to the Water and Wastewater Impact Fees last updated in 2019.

In the most basic terms, Impact Fees are meant to recover the incremental cost of the impact of each new unit of development towards new infrastructure needs. Impact Fees are a mathematical calculation that determine a maximum fee that would be equivalent to growth paying for growth. This study's purpose is to calculate the maximum impact fee per service unit of new growth.

The Maximum Impact Fee is considered an appropriate measure of the impacts generated by a new unit of development on a City's infrastructure system. An impact fee program is anticipated to be designed so that it is **predictable** for both the development community and City. An impact fee program is **transparent**. This report describes in detail how the fee is calculated and how the Capital Improvements Advisory Committee (CIAC) monitors the Impact Fee program. An impact fee program is **flexible** in that funds can be used on priority projects and not just on projects adjacent to a specific development. An impact fee program is both **equitable** and **proportional** in that every new development pays an equal fee that is directly related to its systemwide impact.

IMPACT FEE BASICS

Service Areas

A Service Area is a geographic area within which a unique maximum impact fee is determined. All fees collected within the Service Area must be spent on eligible improvements within the same Service Area. For Water and Wastewater Impact Fees, a Service Area can be defined for both water and wastewater facilities that consists of the City Limits and extends throughout the Extraterritorial Jurisdiction (ETJ). Denton's water Impact Fees are distributed across three (3) services areas. Denton's current wastewater Impact Fees are distributed across a single service area. Due to the need for two additional wastewater treatment plants the City will move to three (3) wastewater services areas.

Land Use Assumptions

The Impact Fee determination is required to be based on the projected growth and corresponding capacity needs in a 10-year window. This study considers the years 2024-2034 for the projected 10-year growth. Population growth during that period is projected to increase by approximately 114,000. This projection along with associated non-residential development set the basis for determining water demands and wastewater flows to serve new growth.

Service Units

The "service unit" is a measure of consumption or use of the capital facilities by new development. In other words, it is the unit of measure used to quantify the supply and demand for utilities in the City. Service units are attributable to an individual unit of development and utilized to calculate the maximum impact fee of a development.

The service unit for water and wastewater Impact Fees is based on the size of the individual water meters used to serve growth related development. The base water service unit is the water demand associated with the smallest water meter issued for a new residential unit. The base wastewater service unit is the wastewater flow associated with the smallest water meter issued for a new residential unit. The smallest water meter issued for a new residential unit in the City of Denton is a 5/8-inch x 3/4-inch meter.

Capital Improvement Plans

The City has identified the water and wastewater projects needed to accommodate the projected growth over the next ten (10) years. These projects include existing, proposed, and recently completed projects that were determined based on their current or anticipated impact on each defined service area.

Water Impact Fee Capital Improvements Plan

The Water Impact Fee Capital Improvements Plan was developed based on recommended capital improvements outlined in the 2024 Water Master Plan, input from City Staff, and the population growth projections shown in the Land Use Assumptions. The recommended improvements will provide the required capacity and reliability to meet projected water demand through 2034. Elements of the water system, including treatment facilities, storage facilities, pumping facilities, transmission and distribution network were evaluated against industry standards as outlined in the Design Criteria sections of Water Impact Fee Chapter.

A total of nineteen (19) existing projects, thirty-one (31) proposed projects, and the Water Impact Fee Study were identified to develop the Water Impact Fee Capital Improvements Plan. The total project cost (*not* impact fee eligible cost) to be evaluated is $1,003,063,455.

Wastewater Impact Fee Capital Improvements Plan

Similar to the Water Impact Fee Capital Improvements Plan, the Wastewater Impact Fee Capital Improvements Plan was developed to address system improvements driven by growth. Elements of the wastewater system, including treatment, gravity pipes, force mains, and lift stations were evaluated against industry standards as outlined in the Design Criteria section of the Wastewater Impact Fee Chapter of this Report.

Seventeen (17) existing, forty-seven (47) proposed projects, and the Wastewater Impact Fee Study were identified to develop the Wastewater Impact Fee Capital Improvements Plan. The total project cost (*not* impact fee eligible cost) to be evaluated is $1,222,435,449.

Recoverable Project Costs

Impact Fees are a one-time fee meant to recover the incremental cost of the impact of each new unit of development creating new infrastructure needs within a ten-year window. With this consideration, the maximum assessable impact fee does not specifically cover the entire cost of a water or wastewater project. The calculations that determine the percentage of a project's cost that is impact fee eligible are defined as the project's recoverable cost.

Water Recoverable Project Costs

The recoverable costs for water projects are calculated by determining the increase in water demand due to growth over the 10-year window. The City's current and future water demand were utilized to calculate the percent utilization of each identified impact fee eligible project. The change in utilization of each project is multiplied by the total project cost to determine total recoverable project cost. The total recoverable costs for the water distribution system are $535,273,791 (pre-finance).

Wastewater Recoverable Project Costs

The recoverable costs for wastewater projects are calculated by determining the increase in wastewater flows due to growth over the 10-year window. The City's current and future flow projections were utilized to calculate the percent utilization of each identified impact fee eligible project. The change in utilization of each project is multiplied by the total project cost to determine total recoverable project cost. The total recoverable costs for the wastewater collection system are $636,342,861 (pre-finance).

Maximum Assessable Impact Fee Calculation

In simplest terms, the maximum impact fee allowable by law is calculated by dividing the recoverable cost of the Capital Improvement Plans by the number of new service units of development. In accordance with state law, both the cost of the Capital Improvement Plan and the number of new service units of development

used in the equation are based on the growth and corresponding capacity needs projected to occur within a 10-year window.

In practice, there are many factors that complicate this calculation. The 2025 maximum impact fee allowable by law for each service area is shown in the following table:

Water Maximum Impact Fee by Service Areas		
Service Area 1A	Service Area 1B	Service Area 2
$1,820	$10,745	$12,139

Wastewater Maximum Impact Fee by Service Areas		
Pecan Creek Service Area	Hickory Creek Service Area	Clear Creek Service Area
$11,615	$12,791	$17,916

Adoption Process

Chapter 395 of the Texas Local Government Code stipulates a specific process for the adoption of Impact Fees. A Capital Improvements Advisory Committee (CIAC) is required to review the Land Use Assumptions and the Impact Fee Capital Improvements Plan used in calculating the maximum fee, and to provide the Committee's findings for consideration by the City Council. This CIAC also reviews the calculation and resulting maximum fees and provides its findings to the City Council. The composition of the CIAC is required to have adequate representation of the building and development communities. In Denton, the CIAC members include real estate, development, and building industry professionals including an ETJ representative. The City Council then conducts a public hearing on the Land Use Assumptions, Impact Fee Capital Improvements Plan, and Impact Fee Ordinance.

Following policy adoption, the CIAC is tasked with advising the City Council of the need to update the Land Use Assumptions or the Impact Fee Capital Improvements Plan at any time within five years of adoption. Finally, the CIAC oversees the proper administration of the Impact Fee, once in place, and advises the Council as necessary.

Chapter 395 of the Texas Local Government Code requires a minimum of one (1) public hearing before Council to amend an existing impact fee program.

CHAPTER 1

LAND USE ASSUMPTIONS

1.1 INTRODUCTION

Chapter 395 of the Texas Local Government Code describes the procedure Texas cities must follow in order to create and implement Impact Fees. Senate Bill 243 (SB 243) amended Chapter 395 to define 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."

Chapter 395 mandates that Impact Fees be reviewed and updated at least every five (5) years. The City of Denton's Water and Wastewater Impact Fee Program was last updated in 2019. The City of Denton has initiated a review of its Land Use Assumptions, Impact Fee Capital Improvements Plan, and Impact Fees. The City has retained Kimley-Horn and Associates, Inc. to provide professional services for the update to the adopted 2025 Water and Wastewater Impact Fee Study. The Land Use Assumptions, which include population and service unit projections, form the basis for the development of the Impact Fee Capital Improvements Plans for water and wastewater facilities.

In order to assess an impact fee, Land Use Assumptions must be developed to provide the basis for population and associated service unit growth projections within a political subdivision. As defined by Chapter 395 of the Texas Local Government Code, these assumptions include a description of changes in land uses, densities, and service units in the service areas. In addition, these assumptions are useful in assisting the City of Denton in determining the need and timing of capital improvements to serve future development.

In accordance with Chapter 395, information from the following sources was compiled to complete the Land Use Assumptions:

- City of Denton's 2040 Comprehensive Plan;
- 2023 Wastewater Master Plan;
- 2024 Water Master Plan;
- City of Denton Planning and Development Services.

1.2 COMPONENTS OF THE LAND USE ASSUMPTIONS CHAPTER

The Land Use Assumptions include the following components

METHODOLOGY AND 10-YEAR GROWTH ASSUMPTIONS

An overview of the general methodology used to generate the land use assumptions and walk through of the growth projections for 2024-2034.

IMPACT FEE STUDY AREAS

Explanation of the distribution of service areas within Denton for water and wastewater facilities.

LAND USE ASSUMPTIONS SUMMARY

A synopsis of the land use assumptions.

1.3 METHODOLOGY AND 10-YEAR GROWTH ASSUMPTIONS

The population growth projections formulated in this report were done using reasonable and generally accepted planning principles. The following documents and factors were considered in developing these projections:

- Character, type, density, location and quantity of existing development.
- Probable future developments.
- Availability of land for future expansion.
- The Future Land Use Plan illustrated in the 2040 Comprehensive Plan.
- Population Projections (from the 2023 Wastewater Master Plan and 2024 Water Master Plan).

The City provided land use type, density, and phasing (if available) for incoming developments, including large multi-phase developments. Developers provided land use type, density, and phasing for any incoming Municipal Utility Districts (MUDs) identified with the Extra Territorial Jurisdiction (ETJ). Known developments are shown on **Exhibit 1.1**. The phasing information of the larger multi-phase developments and MUDs is listed in **Table 1.1**.

Table 1.1 Probable Future Developments

	Development	Residential Units	
		5-Year	10-Year
Multi-Phase Development	Hunter-Cole	3,899	7,400
	Legends	1,820	1,836
	Hickory Creek	1,423	2,923
MUD	Rosebrook[1,2]	1,621	1,621
	Churchill	525	1,400
	Meadows	1,330	1,830
	Ponder Farms	525	592
	Sanctuary	1,000	2,500
	Rockwood[3]	0	0
	Stonehill	0	0
	Tabor Ranch	2,220	2,820
	Webster Meadows	405	405
	Young Tracts	0	0

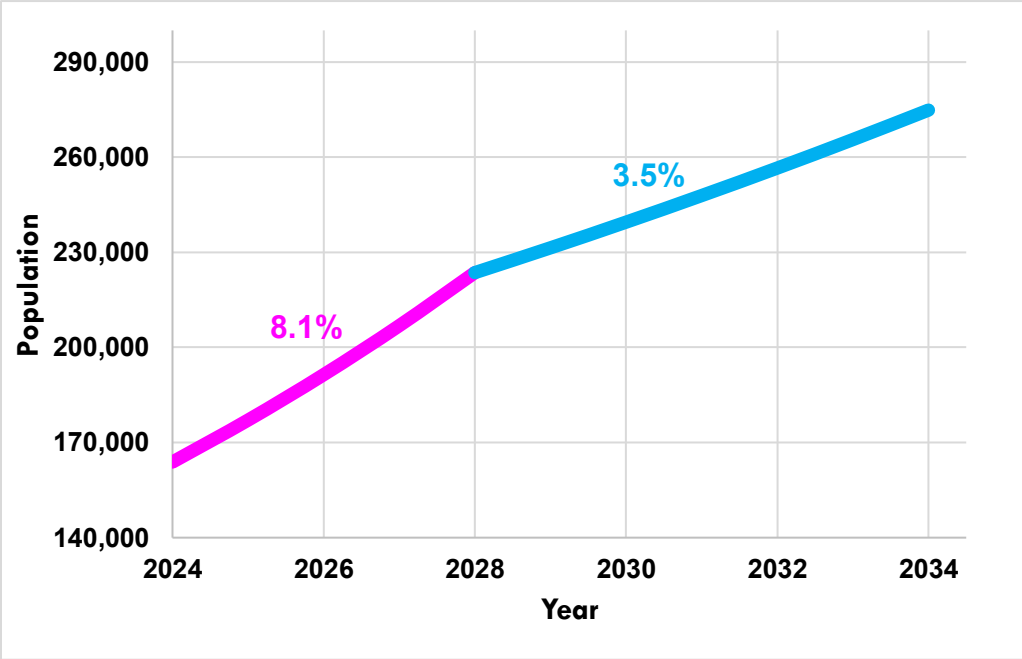
[1]Phasing updated from 2023 Wastewater Master Plan (WWMP) based on most recent data provided by developer

[2]The 2023 WWMP refers to Rosebrook as Astra

[3]The 2023 WWMP refers to Rockwood as Sherwood

Growth projections detailed in Denton's Water and Wastewater Master Plans established growth trendlines based on the information from Table 1.1 and the results are illustrated on **Figure 1.1**. Average annual growth projections of 8.1% and 3.5% are shown for the next 5 and 10-year planning periods.

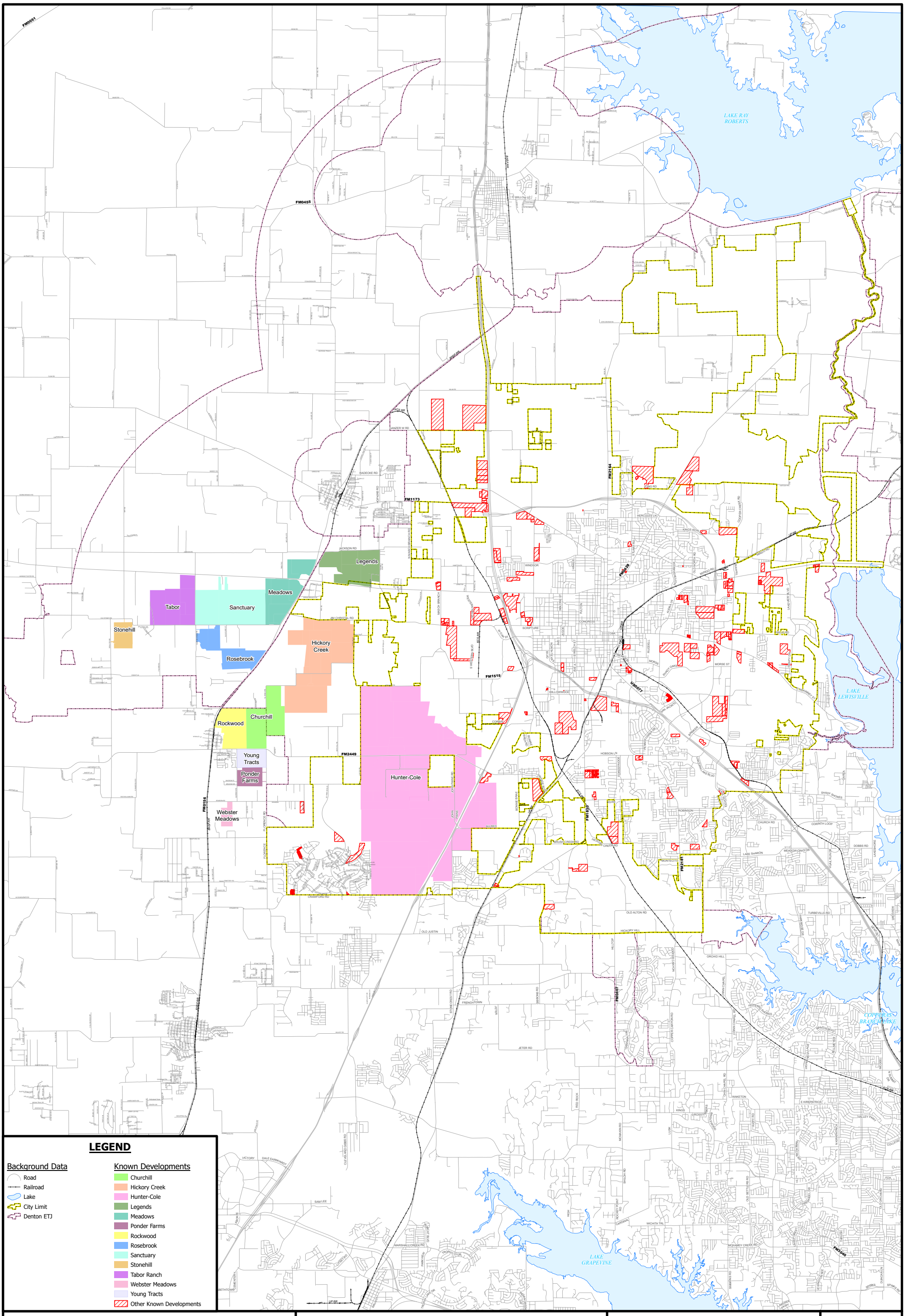
Figure 1.1 City of Denton Growth Assumptions

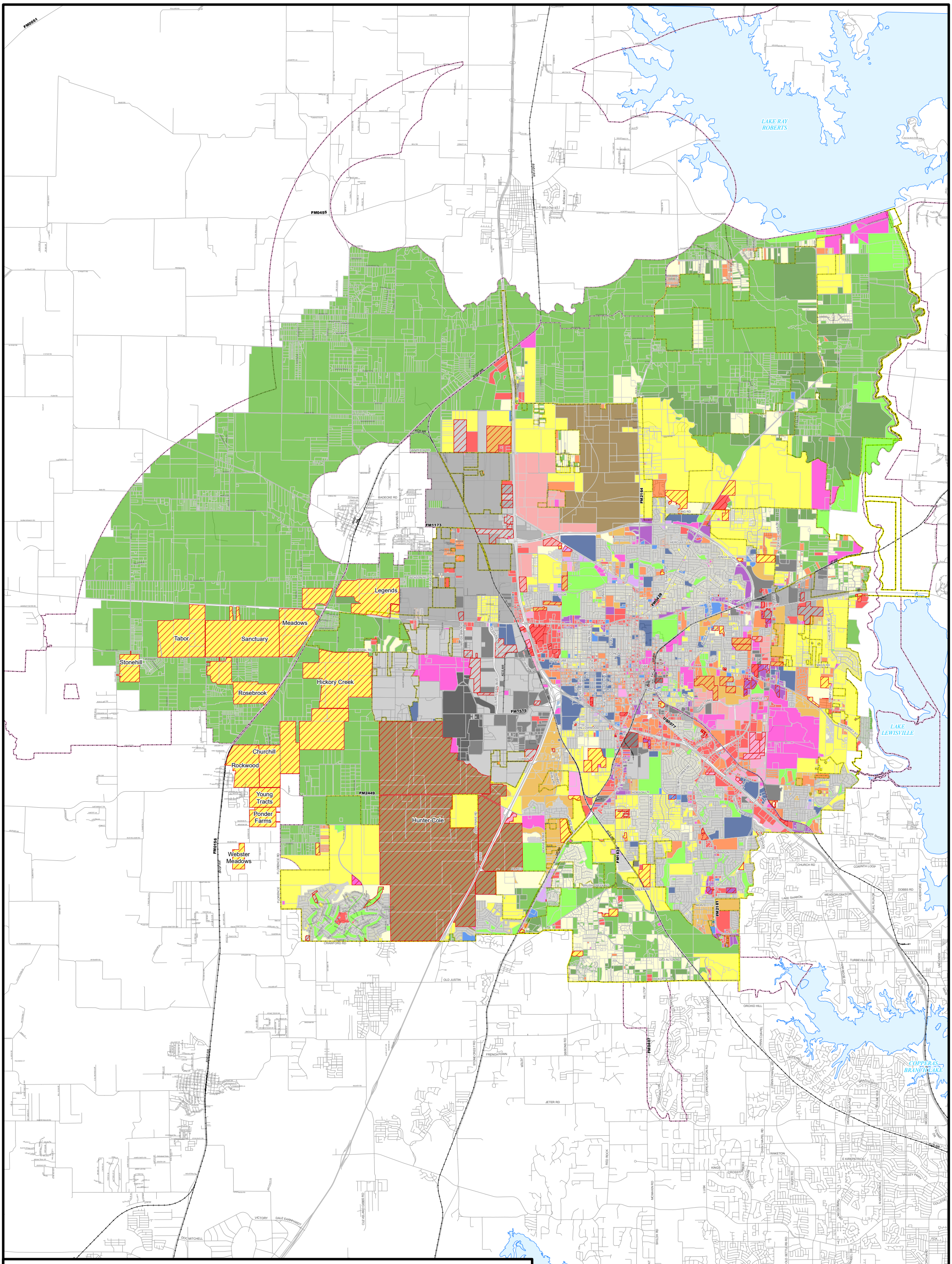


Based on the 10-year growth projections, summarizing population and service units from 2023 to 2033, are projected to be:

- Population Growth = 114,000
- Water Service Unit Growth = 52,774
- Wastewater Service Unit Growth = 52,276

Future growth by land use type is based on the Future Land Use Plan (**See Exhibit 1.2**) shown in the 2040 Comprehensive Plan.


LAKE RAY ROBERTS
LAKE LEWISVILLE
LAKE GRAPEVINE
COPPERAS BRANCH LAKE
FM0051
FM0455
FM1173
FM2164
FM428
FM1515
US0077
FM2449
FM0156
FM1830
FM2181
FM3040
FM0407
Legends
Meadows
Tabor
Sanctuary
Stonehill
Rosebrook
Hickory Creek
Rockwood
Churchill
Young Tracts
Ponder Farms
Hunter-Cole
Webster Meadows
LEGEND
Background Data
Road
Railroad
Lake
City Limit
Denton ETJ
Known Developments
Churchill
Hickory Creek
Hunter-Cole
Legends
Meadows
Ponder Farms
Rockwood
Rosebrook
Sanctuary
Stonehill
Tabor Ranch
Webster Meadows
Young Tracts
Other Known Developments
CITY OF DENTON
CITY OF DENTON
KNOWN DEVELOPMENTS
1 IN = 5,000 FT
January 2025
Kimley»Horn
This map product is for information purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.
EXHIBIT
1.1



LEGEND

Background Data
- Road
- Railroad
- Lake
- City Limit
- Denton ETJ
- Known Developments

Existing Land Use
- Agriculture
- Rural
- Parks and Open Space
- Residential - Single-Family
- Residential - Multi-Family
- Commercial
- Government
- Public
- Institutional
- Religious
- Airport
- Industrial

Future Land Use
- Community Mixed Use
- Regional Mixed Use
- Neighborhood Mixed Use
- Business Innovation
- Downtown Denton
- Master Plan Community
- Low Residential (4 units per acre)
- Moderate Residential (10 units per acre)
- Industrial Commerce
- Neighborhood / University Compatibility Area
- Light Industrial

CITY OF DENTON

CITY OF DENTON
FUTURE LAND USE

1 IN = 5,000 FT

January 2025

Kimley»Horn

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EXHIBIT 1.2

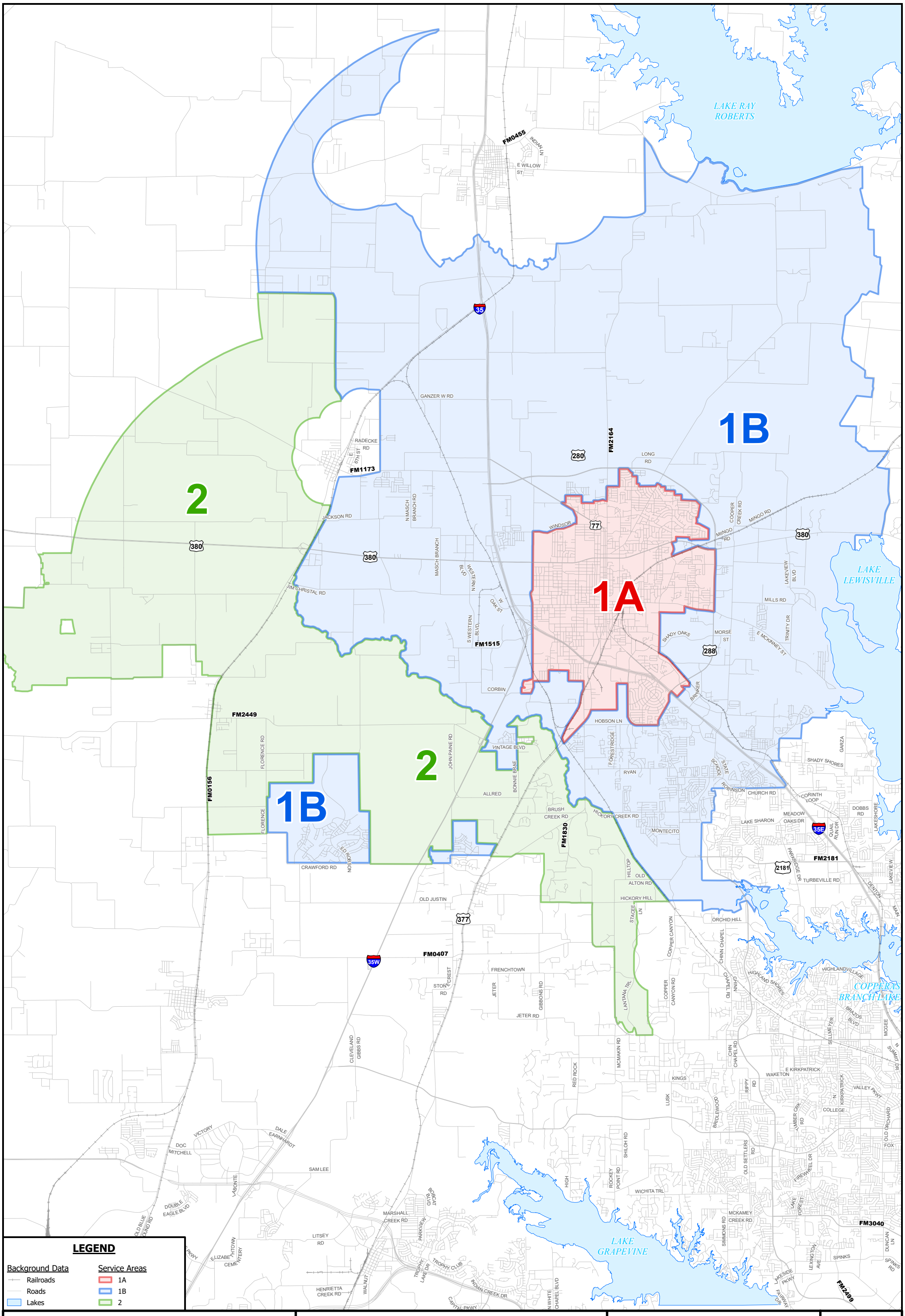
1.4 IMPACT FEE SERVICE AREAS

SERVICE AREA DEFINITION

According to Chapter 395 of the Local Government Code, a Service Area refers to the area within the corporate boundaries or extraterritorial jurisdiction of the political subdivision to be served by the capital improvement or facilities specified in the Capital Improvement Plan. Funds collected in the specific service areas must be spent in the service area collected.

WATER AND WASTEWATER IMPACT FEE SERVICE AREAS

The geographic boundary of the proposed water and wastewater impact fee service areas for water and wastewater facilities is shown in **Exhibit 1.3** and **Exhibit 1.4,** respectively. The water and wastewater impact fee service areas include the City Limits and extends throughout the ETJ.



LEGEND

Background Data	Service Areas
Railroads	1A
Roads	1B
Lakes	2

CITY OF DENTON

CITY OF DENTON
WATER IMPACT FEE
SERVICE AREAS

1 IN = 5,000 FT

January 2025

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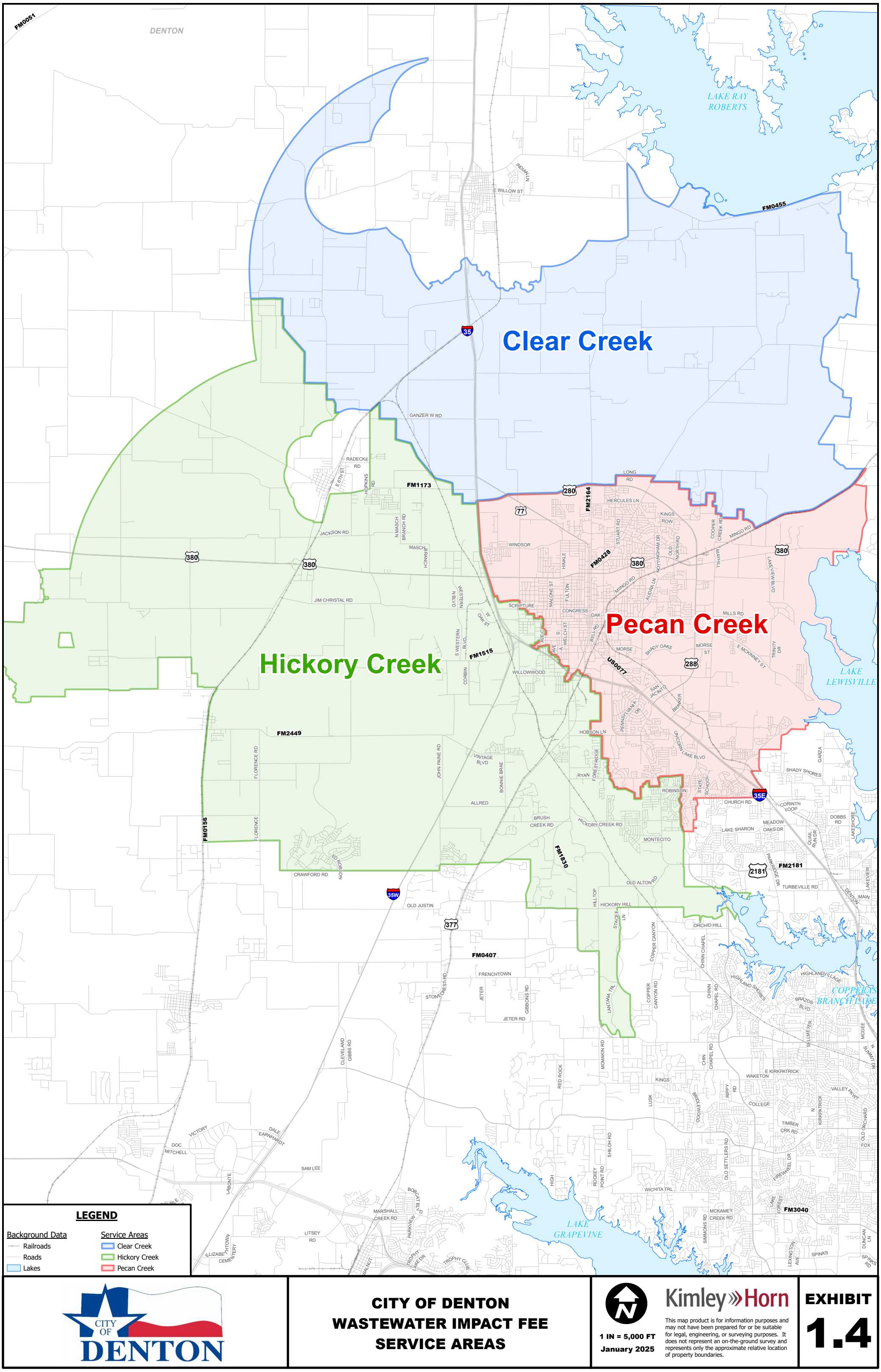
EXHIBIT 1.3



CITY OF DENTON

CITY OF DENTON
WASTEWATER IMPACT FEE
SERVICE AREAS

1 IN = 5,000 FT

January 2025

Kimley»Horn

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EXHIBIT

1.4

1.5 DATA FORMAT

The population and service unit estimates were all compiled in accordance with the following categories and format:

IMPACT FEE SERVICE AREAS:

Large zones, which correspond to the water and wastewater facilities service area (as described in the previous section).

SERVICE UNITS:

Number of water and wastewater connections based on existing and proposed in the next 10-years.

1.6 SUMMARY

The following is the land use assumptions summary for the City of Denton utilized in the impact fee development. Base growth projections for the City of Denton, summarizing connections from 2023 to 2033, are projected to be:

- Water Service Area 1A = 1,616 Connections
- Water Service Area 1B = 29,427 Connections
- Water Service Area 2 = 21,731 Connections
- Wastewater Service Area Pecan Creek = 7,616 Connections
- Wastewater Service Hickory Creek = 35,412 Connections
- Wastewater Service Area Clear Creek = 9,248 Connections

CHAPTER 2

WATER IMPACT FEE STUDY

2.1 INTRODUCTION

The City of Denton retained the services of Kimley-Horn and Associates, Inc., for the purpose of updating the Impact Fees for water system improvements required to serve new development.

The purpose of this report is to satisfy the requirements of the law and provide the City with an impact fee capital improvements plan and associated Impact Fees.

For convenience and reference, the following is excerpted from Chapter 395 of the code:

(a) *The political subdivision shall use qualified professionals to prepare the capital improvements plan and to calculate the impact fee. The capital improvements plan must contain specific enumeration of the following items:*

(1) *a description of the existing capital improvements within the service area and the costs to upgrade, update, improve, expand, or replace the improvements to meet existing needs and usage and stricter safety, efficiency, environmental, or regulatory standards, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;*

(2) *an analysis of the total capacity, the level of current usage, and commitments for usage of capacity of the existing capital improvements, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;*

(3) *a description of all or the parts of the capital improvements or facility expansions and their costs necessitated by and attributable to new development in the service area based on the approved land use assumptions, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;*

(4) *a definitive table establishing the specific level or quantity of use, consumption, generation, or discharge of a service unit for each category of capital improvements or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including but not limited to residential, commercial, and industrial;*

(5) *the total number of projected service units necessitated by and attributable to new development within the service area based on the approved land use assumptions and calculated in accordance with generally accepted engineering or planning criteria;*

(6) *the projected demand for capital improvements or facility expansions required by new service units projected over a reasonable period of time, not to exceed 10 years; and*

(7) *plan for awarding:*

(A) a credit for the portion of ad valorem tax and utility service revenues generated by new service units during the program period that is used for the payment of improvements, including the payment of debt, that are included in the capital improvements plan; or

(B) in the alternative, a credit equal to 50 percent of the total project cost of implementing the capital improvements plan.

The impact fee study includes information from the 2024 Water System Master Plan being completed at this time. The Impact Fees are based on recommended capital improvements outlined in the Draft Water System Master Plan, input from City Staff, and the growth projections shown in the Land Use Assumptions Chapter of this report.

The study process was comprised of four tasks:

Land Use Assumptions

The land use assumptions used for this report were created by Kimley-Horn with input provided by the City of Denton and the Denton 2040 Comprehensive Plan. The development of land use assumptions included the following:

- Establishing impact fee service areas;
- Collection/determination of service units service area; and
- Projection of the ten-year service units by service area.

A detailed discussion is outlined in the Land Use Assumptions Chapter of this report.

Evaluation of Water System Master Plan

This task involved reviewing the 2024 Water System Master Plan and its growth projection compatibility with the Land Use Assumptions. The water demand projections were then used to determine the additional service units.

Impact Fee Capital Improvements Plan

This task involved reviewing the impact fee water capital improvements plan outlined in 2019 Impact Fee Study and the 2024 Water Master Plan. Discussions were also held with City Utility staff to identify projects that will be constructed in the 10-year planning window and meet the design criteria.

Impact Fee Analysis and Report

This task included calculating the additional service units, and credit reduction. These values were then used to determine the impact fee per service unit and the maximum assessable water impact fee by meter size.

2.2 DESIGN CRITERIA

In accordance with Chapter 290 of the Texas Administrative Code (Public Drinking Water) and the design criteria in the 2024 Water Master Plan, the following design criteria is followed when planning for future water infrastructure.

WATER LINES

Water distribution and transmission lines shall be sized to maintain a minimum of 35 pounds per square inch (psi) throughout the system during peak hour demands conditions. In addition to this, the transmission lines shall be designed for a maximum 3.0 feet per second.

STORAGE TANKS

(a) Elevated Storage Tanks

Elevated storage serves three purposes:

- Functionally, elevated storage equalizes the pumping rate to compensate for daily variations in demand and to maintain a fairly constant pumping rate (usually referred to as operational storage), or a pumping rate that conforms to the requirements of the electrical rate structure.
- Provides pressure maintenance and protection against surges created by instantaneous demand, such as fire flow and main breaks, and instantaneous change in supply, such as pumps turning on and off.
- Maintains a reserve capacity for fire protection and pressure maintenance in case of power failure to one or more pump stations. Sufficient storage should be maintained to provide four hours of fire flow demand during a loss of power to the pump station.

City criterion for elevated storage is provide sufficient capacity to satisfy ISO Fire Rating plus city wide maximum day demand.

Suggested storage capacity established by the TCEQ is adequate operational storage established by determining the required volume to equalize the daily fluctuations in flow during the maximum day demand, plus the reserve volume required for fire protection.

The minimum requirements for storage, according to Chapter 290 of the Texas Administrative Code, are as follows:

- Total Storage - Equal to 200 gallons per connection.
- Elevated Storage - Equal to 100 gallons per connection; or
- Elevated Storage – Equal to 200 gallons per connection for a firm pumping capacity reduction from 2.0 gallons per connection to 0.6 gallons per connection.

(b) Ground Storage Tanks

Ground storage serves two functions:

- Equalization for differing feed rates between the water supply and pumping to the system; and
- Emergency capacity in the event of temporary loss of water supply.

Generally, ground storage facilities are located at water supply points or at each pump station within the water distribution system. The design criteria recommended to size ground storage tank capacity within each pressure plane is to provide adequate storage volume to meet 8 hours of maximum day demand. In addition to these criteria for elevated and ground storage, the City must also meet TCEQ total storage capacity requirements of 200 gallons per connection.

PUMP STATIONS

Pumping capacities must provide the maximum demand, or the peak hour demand required by the water system or the suggested capacities established by the TCEQ. Pumping capacity should supply the maximum demand with sufficient redundancy to allow for the largest pump at the pump station to be out of service. This is known as firm pumping capacity.

Each pump station or pressure plane must have two or more pumps that have a total capacity of 2.0 gallons per minute per connection, or have a total capacity of at least 1,000 gallons per minute and the ability to meet peak hour demand with the largest pump out of service, whichever is less. If the system provides elevated storage capacity of 200 gallons per connection, two service pumps with a minimum combined capacity of 0.6 gpm per connection are required.

2.3 IMPACT FEE CAPITAL IMPROVEMENTS PLAN

The purpose of the Water Master Plan is to provide the City with a logical strategy for upgrading and expanding its water distribution system to accommodate future growth and for addressing existing system deficiencies. The Water Master Plan and the recommended system improvements are developed to accommodate growth through the 25-year planning period. The Impact Fee Capital Improvements Plan is developed using projects identified during the master planning process and through discussions with utility staff. State law only allows cost recovery associated with eligible projects in a ten (10) year planning window from the time of the impact fee study. The following details the projects and the eligible recoverable cost.

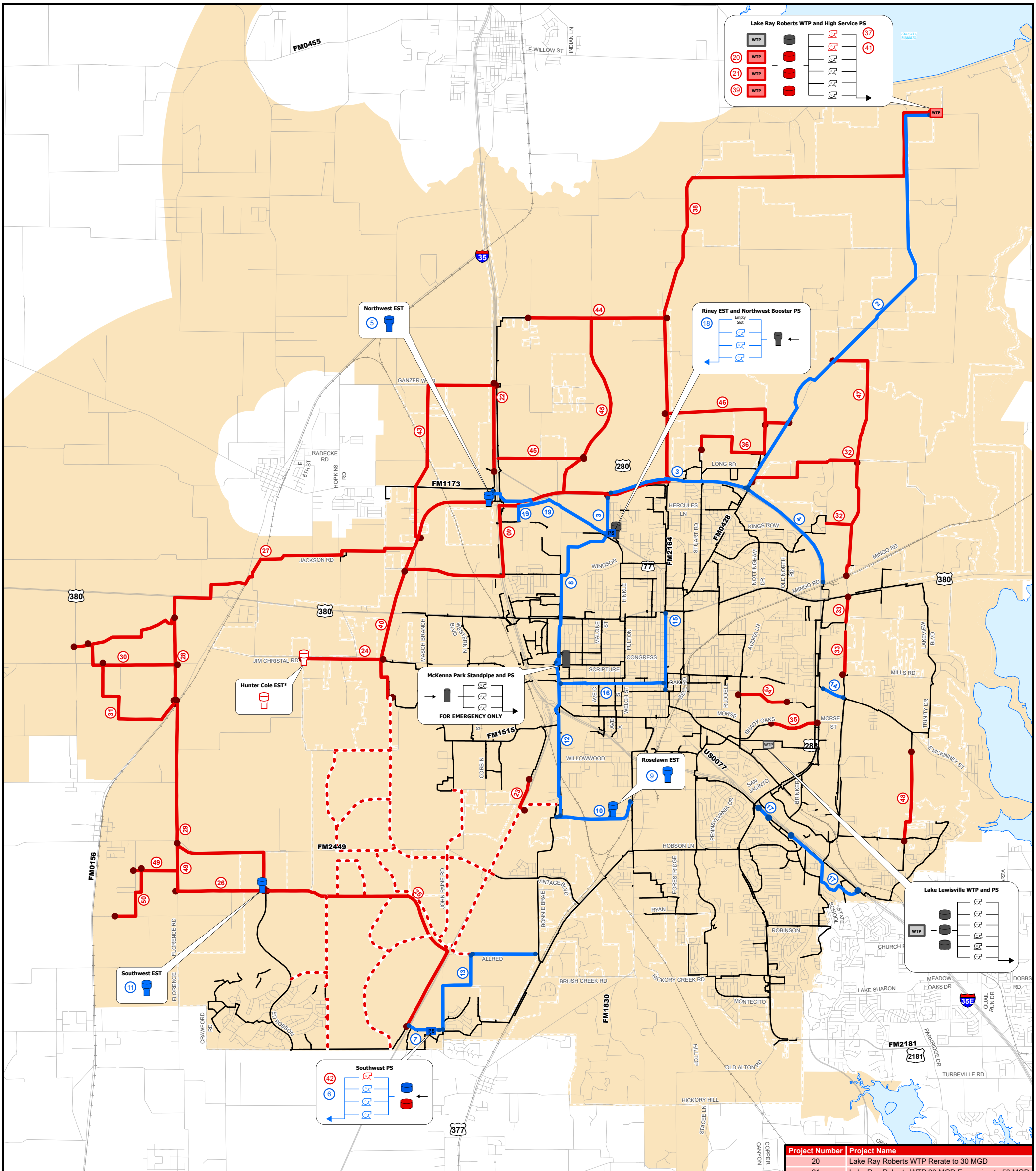
Nineteen (19) existing projects, thirty-one (31) proposed projects, and the Water Impact Fee Study are determined eligible for recoverable cost through impact fees over the next 10 years. The total cost of these projects is **$1,003,063,455**. The projected total recoverable through impact fees is **$535,273,791**. After debt service costs are added and the credit reduction calculation is complete, **$582,923,277** is

recoverable through Impact Fees serving the 10-year system needs. These impact fee capital improvements are shown in **Table 2.1** and illustrated in **Exhibit 2.1**.

Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

Project #	Description	2023 Required Capacity *(Percent Utilization)*	2033 Required Capacity *(Percent Utilization)*	2023-2033 Required Capacity *(Percent Utilization)*	2033 Projected Recoverable Cost	Total Project Cost
EXISTING						
1	Lake Ray Roberts	90%	100%	10%	$15,330,616	$153,306,163
2	54" Finished Water Transmission Line	43%	100%	57%	$5,467,370	$9,590,299
3	Loop 288 Water Main - Sherman to UNT	35%	100%	65%	$2,835,202	$4,361,849
4	Loop 288 Water Main - Sherman to Hwy 380	43%	43%	0%	$0	$3,518,352
5	Northwest Elevated Storage Tank	55%	58%	2%	$58,500	$2,339,988
6	Southwest Pump Station	50%	100%	50%	$2,956,001	$5,912,002
7	Southwest PS Oversize Discharge Line (30" to 36")	32%	73%	41%	$116,426	$284,477
8	North-South Water Line Phase I	41%	51%	10%	$603,860	$6,038,601
9	Roselawn Elevated Storage Tank	73%	100%	27%	$1,679,851	$6,299,440
10	Roselawn Water Line	47%	57%	10%	$179,736	$1,797,363
11	Southwest Elevated Storage Tank	55%	58%	2%	$135,257	$5,410,280
12	North-South Water Line	26%	36%	10%	$1,087,030	$10,870,300
13	Allred Road / John Paine Road Water Lines	21%	56%	34%	$2,033,143	$5,930,000
14	McKinney Water Line	14%	21%	7%	$85,757	$1,200,600
15	Locust Water Line Upsize	9%	11%	3%	$36,622	$1,281,776
16	Hickory Water Line Upsize	19%	20%	1%	$7,121	$498,444
17	I-35E Frontage Water Line	21%	29%	7%	$72,894	$1,020,510
18	Northwest Booster Pump Station	15%	100%	85%	$12,331,809	$14,573,956
19	36" Northwest Water Line	12%	75%	63%	$9,383,078	$14,785,456
				Existing Subtotal	**$54,400,271**	**$249,019,855**
PROPOSED						
20	Lake Ray Roberts WTP Rerate to 30 MGD	0%	100%	100%	$40,000,000	$40,000,000
21	Lake Ray Roberts WTP 20 MGD Expansion to 50 MGD	0%	100%	100%	$195,845,000	$195,845,000
22	16" Northwest I-35 Frontage Rd Water Line	0%	54%	54%	$2,442,960	$4,524,000
23	16" I-35W/Corbin Water Line	0%	22%	22%	$598,862	$2,722,100
24	42" Jim Christal EST Transmission Main Oversize	0%	81%	81%	$10,030,313	$12,345,000
25	24/30" West Allred Rd Transmission Main Oversize	0%	100%	100%	$742,000	$742,000
26	16" Ponder Water Line	0%	52%	52%	$2,249,520	$4,326,000
27	24/30" Rosebrook/Sanctuary Transmission Main	0%	63%	63%	$37,811,267	$59,702,000
28	24" Rosebrook Transmission Main	0%	60%	60%	$5,658,000	$9,430,000
29	24" North/South Transmission Main	0%	87%	87%	$20,291,267	$23,413,000
30	12" Old Stoney Rd Water Line	0%	26%	26%	$994,240	$3,824,000
31	12" Rosebrook Water Line	0%	32%	32%	$1,494,080	$4,669,000
32	12" Cooper Creek Rd Water Line	0%	30%	30%	$4,464,900	$14,883,000
33	12" N Mayhill Rd Water Line	0%	22%	22%	$959,860	$4,363,000
34	12" Duchess Dr Water Line	0%	30%	30%	$655,500	$2,185,000

Project #	Description	2023 Required Capacity *(Percent Utilization)*	2033 Required Capacity *(Percent Utilization)*	2023-2033 Required Capacity *(Percent Utilization)*	2033 Projected Recoverable Cost	Total Project Cost
35	12" Shady Oaks Dr Water Line	0%	36%	36%	$1,097,280	$3,048,000
36	12" Stuart Ridge Water Line	0%	46%	46%	$2,219,960	$4,826,000
37	Lake Ray Roberts HSPS Improvements Phase 1	0%	100%	100%	$5,530,000	$5,530,000
38	Lake Ray Roberts WTP 54/60" Transmission Main	0%	58%	58%	$68,973,551	$117,964,000
39	Lake Ray Roberts WTP 10 MGD Expansion to 60 MGD	0%	10%	10%	$9,792,250	$97,922,500
40	24"/48" Loop 288 Transmission Main	0%	58%	58%	$40,406,863	$69,107,000
41	Lake Ray Roberts HSPS Improvements Phase 2	0%	35%	35%	$1,908,764	$5,530,000
42	Southwest PS Improvements	0%	25%	25%	$2,505,703	$10,087,000
43	12" Northwest Water Line	0%	30%	30%	$3,970,500	$13,235,000
44	16" Milam Rd Water Line	0%	58%	58%	$5,769,260	$9,947,000
45	16" North Central Water Line	0%	30%	30%	$3,656,400	$12,188,000
46	12" N Locust Rd to E Sherman Dr Water Line	0%	30%	30%	$1,187,700	$3,959,000
47	12" North Cooper Creek Rd Water Line	0%	36%	36%	$2,982,960	$8,286,000
48	12" Swisher Rd Water Line	0%	16%	16%	$534,560	$3,341,000
49	20" Ponder Farms Transmission Main	0%	100%	100%	$4,500,000	$4,500,000
50	12" Webster Meadows Transmission Main	0%	100%	100%	$1,500,000	$1,500,000
51	Water Impact Fees	0%	100%	100%	$100,000	$100,000
				Proposed Subtotal	**$480,873,520**	**$754,043,600**
				Total	**$535,273,791**	**$1,003,063,455**



Project Number	Project Name
1	Lake Ray Roberts
2	54" Finished Water Transmission Line
3	Loop 288 Water Main - Sherman to UNT
4	Loop 288 Water Main - Sherman to Hwy 380
5	Northwest Elevated Storage Tank
6	Southwest Pump Station
7	Southwest PS Oversize Discharge Line (30" to 36")
8	North-South Water Line Phase I
9	Roselawn Elevated Storage Tank
10	Roselawn Water Line
11	Southwest Elevated Storage Tank
12	North-South Water Line
13	Allred Road / John Paine Road Water Lines
14	McKinney Water Line
15	Locust Water Line Upsize
16	Hickory Water Line Upsize
17	I-35E Frontage Water Line
18	Northwest Booster Pump Station
19	36" Northwest Water Line

Project Number	Project Name
20	Lake Ray Roberts WTP Rerate to 30 MGD
21	Lake Ray Roberts WTP 20 MGD Expansion to 50 MGD
22	16" Northwest I-35 Frontage Rd Water Line
23	16" I-35W/Corbin Water Line
24	42" Jim Christal EST Transmission Main
25	24/30" West Allred Rd Transmission Main Oversize
26	16" Ponder Water Line
27	24/30" Rosebrook/Sanctuary Transmission Main
28	24" Rosebrook Transmission Main
29	24" North/South Transmission Main
30	12" Old Stoney Rd Water Line
31	12" Rosebrook Water Line
32	12" Cooper Creek Rd Water Line
33	12" N Mayhill Rd Water Line
34	12" Duchess Dr Water Line
35	12" Shady Oaks Dr Water Line
36	12" Stuart Ridge Water Line
37	Lake Ray Roberts HSPS Improvements Phase 1
38	Lake Ray Roberts WTP 54/60" Transmission Main
39	Lake Ray Roberts WTP 10 MGD Expansion to 60 MGD
40	24/48" Loop 288 Transmission Main
41	Lake Ray Roberts HSPS Improvements Phase 2
42	Southwest PS Improvements
43	12" Northwest Water Line
44	16" Milam Rd Water Line
45	16" North Central Water Line
46	12" N Locust Rd to E Sherman Dr Water Line
47	12" North Cooper Creek Rd Water Line
48	12" Swisher Rd Water Line
49	20" Ponder Farms Transmission Main
50	12" Webster Meadows Transmission Main
51	Water Impact Fees

LEGEND

Background Data
- Railroads
- Roads
- Lakes
- Denton City Limits
- Denton Impact Fee Service Area

Existing Infrastructure
- Water Treatment Plant (WTP)
- Existing Elevated Storage Tank (EST)
- Existing Ground Storage Tank (GST)
- Existing Standpipe
- Existing Water Line (12" or Greater)

Impact Fee CIP Projects
- Proposed Water Treatment Plant Expansion
- Existing Elevated Storage Tank
- Hunter-Cole Elevated Storage Tank
  *Future Jim Christal 3.0 MG EST
- Existing Pump Station
- Existing Water Line
- Proposed Water Line
- Hunter-Cole Water Line

CITY OF DENTON

CITY OF DENTON
WATER IMPACT FEE
CAPITAL IMPROVEMENTS PLAN

1 IN = 4,000 FT

January 2025

Kimley»Horn

This map product is for information purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

EXHIBIT 2.1

2.4 WATER IMPACT FEE CALCULATION

SERVICE UNITS

Chapter 395 of the Local Government Code defines a service unit as follows, "Service Unit means a standardized measure of consumption attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards and based on historical data and trends applicable to the political subdivision in which the individual unit of development is located during the previous 10 years."

SERVICE UNIT CALCULATION

A single service unit for Denton's water Impact Fees is the 5/8-inch x 3/4-inch meter. A service unit is the water demand of flow associated with the 5/8-inch x 3/4-inch meter, which is typically used by a single-family residence. All meters greater than 5/8-inch x 3/4-inch have a service unit multiplier determined by the ratio of each larger meter's capacity to the capacity of the 5/8-inch x 3/4-inch meter. The current service unit multipliers (service units/meter) are shown in **Table 2.2**.

Table 2.2 Meter Capacity Ratios

Meter Size	Service Units/ Meter[1]
5/8"x3/4"	1
1"	2.5
1-1/2"	5
2"	8
3"	22.5
4"	50
6"	100
8"	200
10"	325

Multiplying the number of existing connections for each meter size by the number of service units per meter yields the total service units for that meter size. Summing all meter sizes yields the total number of water service units connected to the City's water system as shown in **Table 2.3**. The current population in the water service area is divided by the total number of service units yielding a Persons per Service Unit number.

Table 2.3 Persons per Water Service Unit

Meter Size	Existing Connections[1]	Service Units/ Meter	Service Units
5/8"	40,662	1	40,662
1"	1,761	2.5	4,403
1-1/2"	922	5	4,610
2"	1,532	8	12,256
3"	99	22.5	2,228
4"	26	50	1,300
6"	11	100	1,100
8"	32	200	6,400
10"	2	325	650
Total Existing Connections:	45,047	Total Service Units:	73,609
		Total Served Population:	152,350
		Persons per Service Unit:	**2.07**

(1) Data Sources: City of Denton

In accordance with Chapter 395 of the Texas Local Government Code, the City of Denton defines a service unit based on historical and projected water demands. The service unit is the development type that predominately uses a 5/8-inch x 3/4-inch meter. The measure of consumption per service unit is based on a 5/8-inch meter x 3/4-inch meter and the data shown in **Table 2.4**.

Table 2.4 Water Service Unit Consumption Calculation

Year	Population	Service Units (2.07 person/unit)	Water Average Day Demand (MGD)[1]	Demand per Service Unit (GPD)
2014	123,200	59,517	17.28	290
2015	125,980	60,860	18.47	303
2016	128,160	61,913	17.50	283
2017	130,990	63,280	18.24	288
2018	134,460	64,957	19.63	302
2019	139,869	67,570	19.52	289
2020	141,882	68,542	20.40	298
2021	146,751	70,894	19.48	275
2022	149,509	72,227	23.20	321
2023	152,350	73,599	24.70	336
2024	164,737	79,583	24.88	313
2025	178,132	86,054	26.79	311
2026	192,615	93,051	28.70	308
2027	208,276	100,617	30.61	304
2028	225,210	108,797	32.52	299
2029	232,756	112,442	34.43	306
2030	240,554	116,210	35.72	307
2031	248,614	120,104	37.00	308
2032	256,944	124,128	38.29	308
2033	265,554	128,287	39.58	309
2034	270,865	130,852	40.87	312
			Average Flow per Service Unit	**303**

(1) Data Source: City of Denton

Based on the City's 10-year growth projections and the resulting water demand projections, water service will be required for an additional **52,774** Service Units by the year 2034 as shown in **Table 2.5**. The calculation is as follows:

- A service unit, which is a unit of development that consumes approximately **303** gallons per day (GPD), is a typical residential connection that uses a 5/8-inch x 3/4-inch meter.

Table 2.5 10-year Additional Service Unit Calculation

Year	Average Day Demand (MGD)	Service Unit Demand (GPD)	Projected Service Units
2024	24.875	303	82,096
2034	40.8657	303	134,870
10-year Additional Service Units			**52,774**

The City's existing water system is divided into three service areas (Service Area 1A, 1B and 2 as indicated in the Land Use Assumptions chapter). The calculated 10-year additional services units has been distributed across the three services areas based on projected growth and its associated water demand projections as shown in **Table 2.6**.

Table 2.6 10-year Additional Service Units by Service Area

Year		Service Area 1A	Service Area 1B	Service Area 2	Total
2024	Service Units	32,060	48,694	1,342	82,096
2034	Service Units	33,676	78,121	23,073	134,870
10-Year Service Units		**1,616**	**29,427**	**21,731**	**52,774**

2.5 PLAN FOR AWARDING IMPACT FEE CREDIT

Impact fee law allows for a credit calculation to credit back the utility revenues or ad valorem taxes that are allocated for paying a portion of future capital improvements. The intent of this credit is to prevent the City from double charging development for future capital improvements via Impact Fees and utility rates. If the City chooses not to do a financial analysis to determine the credit value, they are required by law to reduce the recoverable cost by fifty (50) percent. The City chose to perform a financial analysis.

MAXIMUM ASSESSABLE IMPACT FEE DETERMINATION

The impact fee determination method employed by NewGen Strategies and Solutions, LLC is developed through a financial based model that recognizes the requirements of Chapter 395, including the recognition of cash and/or debt financing, interest earnings, fund balances, and applicable credits associated with the use of utility revenues. In developing the components of the financial model, assumptions must be made that include the following:

- Financing
    - Method of financing (i.e. cash or debt financing)
    - The level of financing (e.g. 100% debt)
    - Cost of financing
    - Debt repayment structure
- Timing and Level of Expenditures and Revenues
- Interest Earnings
- Annual Service Unit Growth
- Portion of Utility Revenue Used to Fund Impact Fee Water Improvements

While the assumptions employed in determining the maximum assessable impact fee are a reasonable basis for forecasting, these assumptions may not reflect actual future conditions. To address this, Chapter 395 requires the monitoring of Impact Fees through the Capital Improvement Advisory Committee (CIAC) who can then update or revise Impact Fees to reflect the actual implementation of the impact fee program.

FINANCING

Once the cost of capacity added that is attributable to growth is determined, a City must decide how the cost will be financed: cash and/or debt. Actual costs of capital for any previously funded projects, whether partially or fully funded, are also included.

Based on discussions with City staff, it is assumed that the City will debt finance the future project costs. For debt financing, the cost of financing is based on the City's Financial Advisor's estimates of future debt costs for bonds issued with 30-year terms as shown in the Water Financial Analysis Appendix of this report. Debt service payments for each future debt issue are assumed to remain constant over the issue's term.

TIMING AND LEVEL OF EXPENDITURES AND REVENUES

The exact timing and annual level of cash capital expenditures over the forecast period is currently indeterminate, therefore it is assumed that capital expenditures will occur in amounts over the 10-year program period. It is also assumed that the City will expand debt proceeds over a 2-year timeframe for debt-financed capital projects. For the calculation of the maximum assessable impact fee, debt is assumed to be issued in equal amounts for each year. In order to recognize the full amount of debt to be issued for the cost of capacity added that is attributable to growth during the 10-year period, a portion of years eight, nine, and ten are assumed to be spend in the final three years.

INTEREST EARNINGS

While debt is issued over 30-year terms and Impact Fees developed are to be charged over a 10-year period, a sufficient fund balance must be generated to meet the future debt service obligations. Fund balances were identified for each service area as a potential source for the current Impact Fee CIP.

Because of the generation of the fund balance, excess monies will be available for interest earnings.

Chapter 395 states that interest earnings are funds of the impact fee account and are to be held to the same restrictions as impact fee revenues. In order to recognize that interest earnings are used to fund only impact fee eligible improvements, interest earnings are credited against the costs recoverable through Impact Fees. Chapter 395 does not require the upfront recognition of interest earnings in the impact fee determination. To acknowledge the time value of the impact fee payer's monies, interest earnings have been credited. For this analysis, interest is assumed to be earned at an annual rate of 1.89% per 10-year historical average.

Annual Service Unit Growth

The timing and annual level of service unit growth over the 10-year program period is currently indeterminate, therefore it is assumed that service unit growth will be consistent over the 10-year forecast.

Portion of Utility Revenue Used to Fund Impact Fee Water Improvements

Credit for the portion of ad valorem tax and/or utility service revenues generated by new service units during the program period are used for payment of the improvements included in the Water Impact Fee CIP. The credit is not a determination to recognize the total utility revenue generated by new service units, but is a credit for the portion of utility revenue that is used for payment of the improvements included in the Water Impact Fee CIP. Theoretically, the credit determination could be zero ($0) if the City does not utilize any of the new service unit utility revenue to fund improvements that are included in the Water Impact Fee CIP.

To be conservative and recognize potential cash flow issues that can occur with the funding of major capital improvement projects, it is assumed that the debt-funded projects (100% of the improvement costs included in the Water Impact Fee CIP but not otherwise funded) could potentially be funded by utility revenue.

When an impact fee program is in place, payments made through utility revenue will consist of revenue generated by new service units in the defined service area and existing service units throughout the City; therefore, the portion attributable to the new service units in the defined service area must be isolated. The credit calculation illustrating how the credit is isolated is shown in the Water Financial Analysis Appendix of this report.

2.6 MAXIMUM ASSESSABLE IMPACT FEE

A breakdown of the 10-year recoverable costs and the associated impact fee per service unit by service area is as follows:

Table 2.7 Service Area 1A - 10-Year Recoverable Cost Breakdown

Recoverable Impact Fee CIP Costs	$2,454,148
Financing Costs	$1,106,314
Interest Earnings	($604,035)
Pre Credit Recoverable Cost for Impact Fee	$2,956,427
Credit for Utility Revenues	($15,105)
Maximum Recoverable Cost for Impact Fee	**$2,941,322**

(1) Per NewGen Strategies and Solutions, LLC financial analysis, See Appendix A.

$$\text{Impact fee per service units} = \frac{\text{10-year recoverable costs}}{\text{10-year additional service units}}$$

$$\text{Impact fee per service units} = \frac{\$2,941,322}{1,616}$$

$$\text{Impact fee per service units} = \$1,820$$

Therefore, the maximum assessable water impact fee for Service Area 1A is **$1,820.**

Table 2.8 Service Area 1B - 10-Year Recoverable Cost Breakdown

Recoverable Impact Fee CIP Costs	$292,309,445
Financing Costs	$129,102,582
Interest Earnings	($81,750,244)
Pre Credit Recoverable Cost for Impact Fee	$339,661,783
Credit for Utility Revenues	($23,479,052)
Maximum Recoverable Cost for Impact Fee	**$316,182,731**

(1) Per NewGen Strategies and Solutions, LLC financial analysis, See Appendix A.

$$\text{Impact fee per service units} = \frac{\text{10-year recoverable costs}}{\text{10-year additional service units}}$$

$$\text{Impact fee per service units} = \frac{\$316,182,731}{29,427}$$

$$\text{Impact fee per service units} = \$10,745$$

Therefore, the maximum assessable water impact fee for Service Area 1B is **$10,745.**

Table 2.9 Service Area 2 - 10-Year Recoverable Cost Breakdown

Recoverable Impact Fee CIP Costs	$240,510,198
Financing Costs	$106,564,481
Interest Earnings	($68,197,039)
Pre Credit Recoverable Cost for Impact Fee	$278,877,640
Credit for Utility Revenues	($15,078,415)
Maximum Recoverable Cost for Impact Fee	**$263,799,224**

(1) Per Newgen Strategies and Solutions, LLC financial analysis, See Appendix A.

$$\text{Impact fee per service units} = \frac{\text{10-year recoverable costs}}{\text{10-year additional service units}}$$

$$\text{Impact fee per service units} = \frac{\$263,799,224}{21,731}$$

$$\text{Impact fee per service units} = \$12,139$$

Therefore, the maximum assessable water impact fee for Service Area 2 is **$12,139.**

For a development that requires a different size meter, a service unit equivalent is established at a multiplier based on its capacity with respect to the 5/8-inch x 3/4-inch meter. The maximum impact fee that could be assessed for other meter sizes is based on the Equivalency Table (**Table 2.10**).

Table 2.10 Maximum Assessable Water Impact Fee by Service Area and Meter Size

Meter Size	Service Unit Equivalent	Service Area 1A Maximum Assessable Water Impact Fee	Service Area 1B Maximum Assessable Water Impact Fee	Service Area 2 Maximum Assessable Water Impact Fee
5/8"x3/4”	1	$1,820	$10,745	$12,139
1"	2.5	$4,550	$26,863	$30,348
1-1/2"	5	$9,100	$53,725	$60,695
2"	8	$14,560	$85,960	$97,112
3"	22.5	$40,950	$241,763	$273,128
4"	50	$91,000	$537,250	$606,950
6"	100	$182,000	$1,074,500	$1,213,900
8”	200	$364,000	$2,149,000	$2,427,800
10”	325	$591,500	$3,492,125	$3,945,175

CHAPTER 3

WASTEWATER IMPACT FEE STUDY

3.1 INTRODUCTION

The City of Denton retained the services of Kimley-Horn and Associates, Inc., for the purpose of updating the Impact Fees for wastewater system improvements required to serve new development.

The purpose of this report is to satisfy the requirements of the law and provide the City with an impact fee capital improvements plan and associated Impact Fees.

For convenience and reference, the following is excerpted from Chapter 395 of the code:

(b) The political subdivision shall use qualified professionals to prepare the capital improvements plan and to calculate the impact fee. The capital improvements plan must contain specific enumeration of the following items:

(1) a description of the existing capital improvements within the service area and the costs to upgrade, update, improve, expand, or replace the improvements to meet existing needs and usage and stricter safety, efficiency, environmental, or regulatory standards, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;

(2) an analysis of the total capacity, the level of current usage, and commitments for usage of capacity of the existing capital improvements, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;

(3) a description of all or the parts of the capital improvements or facility expansions and their costs necessitated by and attributable to new development in the service area based on the approved land use assumptions, which shall be prepared by a qualified professional engineer licensed to perform such professional engineering services in this state;

(4) a definitive table establishing the specific level or quantity of use, consumption, generation, or discharge of a service unit for each category of capital improvements or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including but not limited to residential, commercial, and industrial;

(5) the total number of projected service units necessitated by and attributable to new development within the service area based on the approved land use assumptions and calculated in accordance with generally accepted engineering or planning criteria;

(6) the projected demand for capital improvements or facility expansions required by new service units projected over a reasonable period of time, not to exceed 10 years; and

(7) plan for awarding:

(A) a credit for the portion of ad valorem tax and utility service revenues generated by new service units during the program period that is used for the payment of improvements, including the payment of debt, that are included in the capital improvements plan; or

(B) in the alternative, a credit equal to 50 percent of the total project cost of implementing the capital improvements plan.

The impact fee study includes information from the 2023 Wastewater System Master Plan being completed at this time. The Impact Fees are based on recommended capital improvements outlined in the Wastewater Master Plan, input from City Staff, and the growth projections shown in the Land Use Assumptions Chapter of this report.

The study process was comprised of four tasks:

Land Use Assumptions

The land use assumptions used for this report were created by Kimley-Horn with input provided by the City of Denton and the Denton 2040 Comprehensive Plan. The development of land use assumptions included the following:

- Establishing impact fee service areas.
- Collection/determination of service units service area; and
- Projection of the ten-year service units by service area.

A detailed discussion is outlined in the Land Use Assumptions Chapter of this report.

Evaluation of Wastewater System Master Plan

This task involved reviewing the 2023 Wastewater Master Plan and its growth projection compatibility with the Land Use Assumptions. The wastewater flow projections were then used to determine the additional service units.

Impact Fee Capital Improvements Plan

This task involved reviewing the impact fee wastewater capital improvements plan outlined in 2019 Impact Fee Study and the 2023 Wastewater Master Plan. Discussions were also held with City Utility staff to identify projects that will be constructed in the 10-year planning window and meet the design criteria.

Impact Fee Analysis and Report

This task included calculating the additional service units, and credit reduction. These values were then used to determine the impact fee per service unit and the maximum assessable wastewater impact fee by meter size.

3.2 DESIGN CRITERIA

In accordance with the Chapter 217 of the Texas Administrative Code (Design Criteria for Domestic Wastewater Systems) and the design criteria in the *2023 Wastewater Master Plan* the following design criteria is followed when planning for future wastewater infrastructure.

COLLECTION LINES (INTERCEPTORS)

The design criteria for collection lines or interceptors is based on the TCEQ requirements that meet peak wet weather design flows and not exceed 80% of the pipe capacity.

LIFT STATIONS PUMPING CAPACITY

The design criteria for lift station pumping shall be to provide firm pumping capacity to meet the peak wet weather design flows. The firm pumping capacity is defined as the available total pumping capacity with the largest pump out of service.

LIFT STATION WET WELL CAPACITY

The design criteria for lift station wet wells are to provide adequate volumes to limit pump cycling to once every 10 minutes. Based on this criterion, the required operating volume for each pump can be calculated as

$V = tQ/4$ where,
t = Maximum pump cycling time = 10 minutes
Q = Lead pump discharge rate in gallons per minute (gpm)
V = Required wet well volume between pump start and stop elevation

FORCE MAINS

The design criteria recommended for force mains is to meet the required pumping capacity of the lift station at a velocity less than 7 feet per second and a maximum discharge pressure of 100 psi and to allow a minimum of 3 feet per second scouring velocity during a single pump operation.

3.3 IMPACT FEE CAPITAL IMPROVEMENTS PLAN

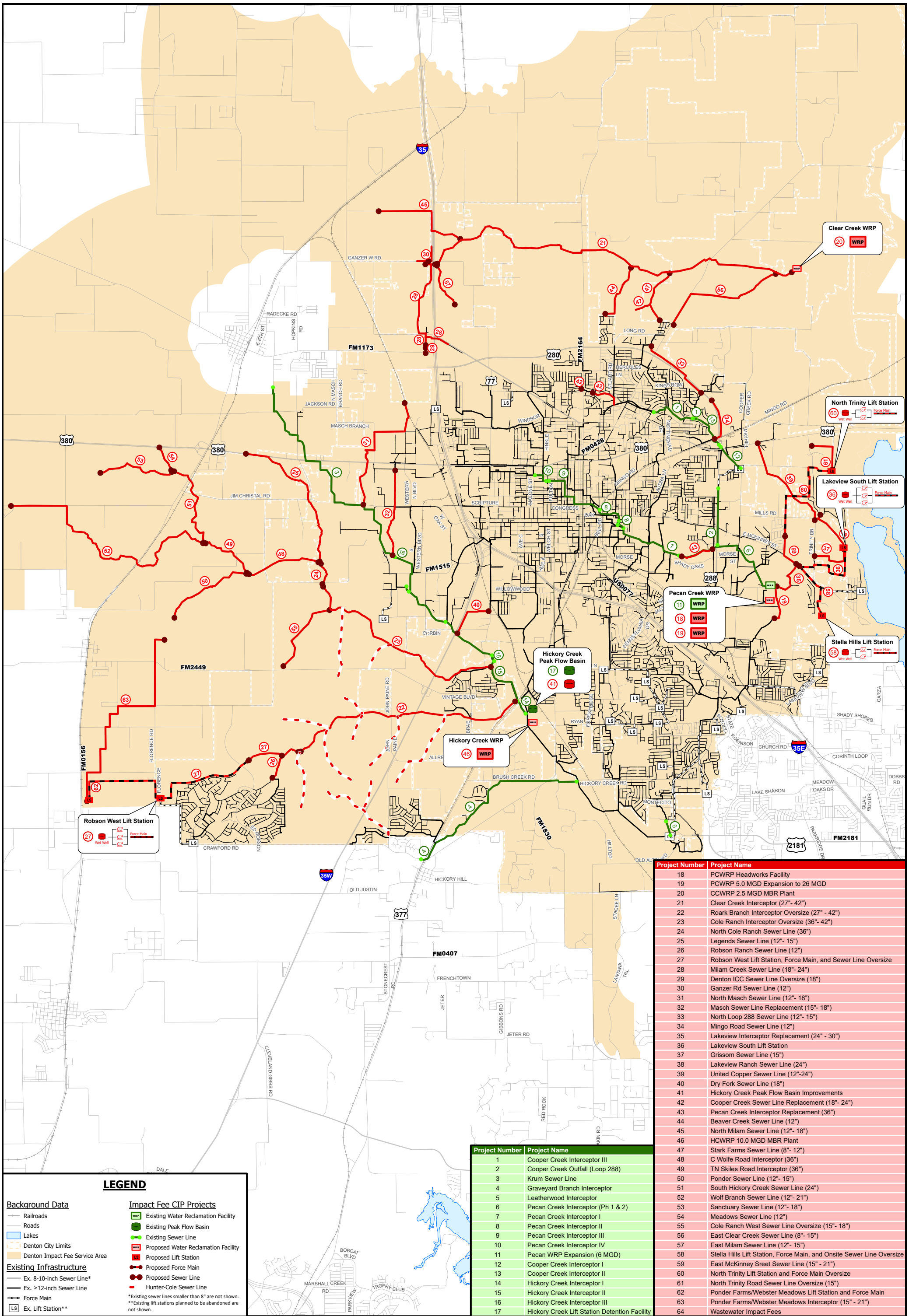
The purpose of the wastewater master plan is to provide the City with a logical strategy for upgrading and expanding its wastewater collection system to accommodate future growth and for addressing existing system deficiencies. The Wastewater Master Plan and the recommended system improvements are developed to accommodate growth through the 25-year planning period. The impact fee capital improvements plan is developed using projects identified during the master planning process and through discussions with utility staff. State law only allows cost recovery associated with eligible projects in a ten (10) year planning window from the time of the impact fee study. The following details the projects and the eligible recoverable cost.

Seventeen (17) existing projects, forty-seven (47) proposed projects, and the Wastewater Impact Fee Study are determined eligible for recoverable cost through Impact Fees over the next 10 years. The total cost of these projects is **$1,222,435,449**. The projected total recoverable through Impact Fees is **$636,342,861**. After debt service costs are added and the credit reduction calculation is complete, **$707,097,573** is recoverable through Impact Fees serving the 10-year system needs. These impact fee capital improvements are shown in **Table 3.1** and illustrated in **Exhibit 3.1**.

Table 3.1 Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

Project #	Description	2023 Required Capacity *(Percent Utilization)*	2033 Required Capacity *(Percent Utilization)*	2023-2033 Required Capacity *(Percent Utilization)*	2033 Projected Recoverable Cost	Total Project Cost
EXISTING						
1	Cooper Creek Interceptor III	52%	54%	2%	$26,887	$1,277,970
2	Cooper Creek Outfall (Loop 288)	52%	62%	11%	$411,553	$3,898,807
3	Krum Sewer Line	20%	42%	22%	$87,775	$398,450
4	Graveyard Branch Interceptor	8%	18%	10%	$484,130	$5,004,952
5	Leatherwood Interceptor	22%	25%	3%	$4,616	$156,592
6	Pecan Creek Interceptor (Ph 1 & 2)	57%	65%	8%	$257,047	$3,363,189
7	Pecan Creek Interceptor I	78%	84%	6%	$123,815	$1,975,672
8	Pecan Creek Interceptor II	37%	43%	6%	$103,913	$1,862,175
9	Pecan Creek Interceptor III	32%	37%	6%	$172,497	$3,079,149
10	Pecan Creek Interceptor IV	23%	31%	8%	$77,121	$978,285
11	Pecan WRP Expansion (6 MGD)	17%	100%	83%	$25,004,271	$30,005,125
12	Cooper Creek Interceptor I	48%	60%	12%	$309,649	$2,632,000
13	Cooper Creek Interceptor II	44%	54%	10%	$113,537	$1,128,000
14	Hickory Creek Interceptor I	27%	100%	73%	$1,058,753	$1,447,500
15	Hickory Creek Interceptor II	52%	90%	39%	$3,120,135	$8,102,500
16	Hickory Creek Interceptor III	24%	49%	25%	$721,323	$2,875,433
17	Hickory Creek Lift Station Detention Facility	35%	100%	65%	$6,435,000	$9,900,000
				Existing Subtotal	**$38,512,020**	**$78,085,799**
PROPOSED						
18	PCWRP Headworks Facility	62%	83%	22%	$12,333,923	$56,260,000
19	PCWRP 5.0 MGD Expansion to 26 MGD	0%	14%	14%	$16,800,000	$120,000,000
20	CCWRP 2.5 MGD MBR Plant	4%	73%	69%	$82,034,726	$118,800,000
21	Clear Creek Interceptor (27"- 42")	0%	49%	49%	$44,055,019	$89,440,000
22	Roark Branch Interceptor Oversize (27" - 42")	5%	35%	30%	$829,989	$2,810,200
23	Cole Ranch Interceptor Oversize (36"- 42")	0%	100%	100%	$4,809,000	$4,809,000
24	North Cole Ranch Sewer Line (36")	0%	60%	60%	$4,377,794	$7,310,000
25	Legends Sewer Line (12"- 15")	0%	100%	100%	$32,080,000	$32,080,000
26	Robson Ranch Sewer Line (12")	27%	30%	4%	$112,722	$3,086,000
27	Robson West Lift Station, Force Main, and Sewer Line Oversize	15%	26%	11%	$1,438,690	$13,079,000
28	Milam Creek Sewer Line (18"- 24")	19%	46%	26%	$3,630,769	$13,750,000
29	Denton ICC Sewer Line Oversize (18")	0%	10%	10%	$33,899	$324,720
30	Ganzer Rd Sewer Line (12")	49%	95%	46%	$1,167,692	$2,530,000
31	North Masch Sewer Line (12"- 18")	11%	45%	34%	$2,965,667	$8,680,000
32	Masch Sewer Line Replacement (15"- 18")	32%	86%	54%	$3,003,678	$5,560,000
33	North Loop 288 Sewer Line (12"- 15")	0%	22%	22%	$1,750,452	$7,980,000
34	Mingo Road Sewer Line (12")	0%	59%	59%	$2,580,649	$4,380,000
35	Lakeview Interceptor Replacement (24" - 30")	7%	24%	17%	$399,875	$2,367,000
36	Lakeview South Lift Station	0%	26%	26%	$2,191,051	$8,300,000

Project #	Description	2023 Required Capacity *(Percent Utilization)*	2033 Required Capacity *(Percent Utilization)*	2023-2033 Required Capacity *(Percent Utilization)*	2033 Projected Recoverable Cost	Total Project Cost
37	Grissom Sewer Line (15")	5%	36%	31%	$927,382	$2,960,000
38	Lakeview Ranch Sewer Line (24")	6%	23%	17%	$1,009,502	$5,820,000
39	United Copper Sewer Line (12"-24")	6%	18%	13%	$1,193,632	$9,500,000
40	Dry Fork Sewer Line (18")	73%	90%	17%	$627,467	$3,620,000
41	Hickory Creek Peak Flow Basin Improvements	0%	100%	100%	$23,400,000	$23,400,000
42	Cooper Creek Sewer Line Replacement (18"- 24")	60%	64%	4%	$147,710	$3,590,000
43	Pecan Creek Interceptor Replacement (36")	42%	77%	35%	$1,349,783	$3,890,000
44	Beaver Creek Sewer Line (12")	49%	95%	46%	$1,343,077	$2,910,000
45	North Milam Sewer Line (12"- 18")	0%	53%	53%	$3,667,912	$6,890,000
46	HCWRP 10.0 MGD MBR Plant	15%	73%	58%	$260,188,000	$448,600,000
47	Stark Farms Sewer Line (8"- 12")	7%	80%	73%	$978,783	$1,340,000
48	C Wolfe Road Interceptor (36")	0%	57%	57%	$10,282,047	$18,120,000
49	TN Skiles Road Interceptor (36")	0%	61%	61%	$8,855,122	$14,420,000
50	Ponder Sewer Line (12"- 15")	0%	45%	45%	$2,331,446	$5,230,000
51	South Hickory Creek Sewer Line (24")	0%	86%	86%	$19,345,135	$22,580,000
52	Wolf Branch Sewer Line (12"- 21")	0%	52%	52%	$9,466,267	$18,040,000
53	Sanctuary Sewer Line (12"- 18")	0%	99%	99%	$4,217,059	$4,280,000
54	Meadows Sewer Line (12")	0%	100%	100%	$2,130,000	$2,130,000
55	Cole Ranch West Sewer Line Oversize (15"- 18")	0%	40%	40%	$116,714	$294,000
56	East Clear Creek Sewer Line (8"- 15")	0%	52%	52%	$1,633,769	$3,170,000
57	East Milam Sewer Line (12"- 15")	0%	47%	47%	$1,358,994	$2,920,000
58	Stella Hills Lift Station, Force Main, and Onsite Sewer Line Oversize	11%	24%	13%	$639,957	$4,934,730
59	East McKinney Street Sewer Line (15" - 21")	0%	15%	15%	$473,921	$3,180,000
60	North Trinity Lift Station and Force Main Oversize	0%	15%	15%	$873,029	$5,858,000
61	North Trinity Road Sewer Line Oversize (15")	0%	15%	15%	$78,540	$527,000
62	Ponder Farms/Webster Meadows Lift Station and Force Main	0%	100%	100%	$11,500,000	$11,500,000
63	Ponder-Farms/Webster-Meadows Interceptor (15"-21")	0%	100%	100%	$13,000,000	$13,000,000
63	Wastewater Impact Fees	0%	100%	100%	$100,000	$100,000
				Proposed Subtotal	**$597,830,840**	**$1,144,349,650**
				Total	**$636,342,861**	**$1,222,435,449**



Project Number	Project Name
18	PCWRP Headworks Facility
19	PCWRP 5.0 MGD Expansion to 26 MGD
20	CCWRP 2.5 MGD MBR Plant
21	Clear Creek Interceptor (27"- 42")
22	Roark Branch Interceptor Oversize (27" - 42")
23	Cole Ranch Interceptor Oversize (36"- 42")
24	North Cole Ranch Sewer Line (36")
25	Legends Sewer Line (12"- 15")
26	Robson Ranch Sewer Line (12")
27	Robson West Lift Station, Force Main, and Sewer Line Oversize
28	Milam Creek Sewer Line (18"- 24")
29	Denton ICC Sewer Line Oversize (18")
30	Ganzer Rd Sewer Line (12")
31	North Masch Sewer Line (12"- 18")
32	Masch Sewer Line Replacement (15"- 18")
33	North Loop 288 Sewer Line (12"- 15")
34	Mingo Road Sewer Line (12")
35	Lakeview Interceptor Replacement (24" - 30")
36	Lakeview South Lift Station
37	Grissom Sewer Line (15")
38	Lakeview Ranch Sewer Line (24")
39	United Copper Sewer Line (12"-24")
40	Dry Fork Sewer Line (18")
41	Hickory Creek Peak Flow Basin Improvements
42	Cooper Creek Sewer Line Replacement (18"- 24")
43	Pecan Creek Interceptor Replacement (36")
44	Beaver Creek Sewer Line (12")
45	North Milam Sewer Line (12"- 18")
46	HCWRP 10.0 MGD MBR Plant
47	Stark Farms Sewer Line (8"- 12")
48	C Wolfe Road Interceptor (36")
49	TN Skiles Road Interceptor (36")
50	Ponder Sewer Line (12"- 15")
51	South Hickory Creek Sewer Line (24")
52	Wolf Branch Sewer Line (12"- 21")
53	Sanctuary Sewer Line (12"- 18")
54	Meadows Sewer Line (12")
55	Cole Ranch West Sewer Line Oversize (15"- 18")
56	East Clear Creek Sewer Line (8"- 15")
57	East Milam Sewer Line (12"- 15")
58	Stella Hills Lift Station, Force Main, and Onsite Sewer Line Oversize
59	East McKinney Sreet Sewer Line (15" - 21")
60	North Trinity Lift Station and Force Main Oversize
61	North Trinity Road Sewer Line Oversize (15")
62	Ponder Farms/Webster Meadows Lift Station and Force Main
63	Ponder Farms/Webster Meadows Interceptor (15" - 21")
64	Wastewater Impact Fees

Project Number	Project Name
1	Cooper Creek Interceptor III
2	Cooper Creek Outfall (Loop 288)
3	Krum Sewer Line
4	Graveyard Branch Interceptor
5	Leatherwood Interceptor
6	Pecan Creek Interceptor (Ph 1 & 2)
7	Pecan Creek Interceptor I
8	Pecan Creek Interceptor II
9	Pecan Creek Interceptor III
10	Pecan Creek Interceptor IV
11	Pecan WRP Expansion (6 MGD)
12	Cooper Creek Interceptor I
13	Cooper Creek Interceptor II
14	Hickory Creek Interceptor I
15	Hickory Creek Interceptor II
16	Hickory Creek Interceptor III
17	Hickory Creek Lift Station Detention Facility

LEGEND

Background Data
- Railroads
- Roads
- Lakes
- Denton City Limits
- Denton Impact Fee Service Area

Existing Infrastructure
- Ex. 8-10-inch Sewer Line*
- Ex. ≥12-inch Sewer Line
- Force Main
- LS Ex. Lift Station**

Impact Fee CIP Projects
- WRP Existing Water Reclamation Facility
- Existing Peak Flow Basin
- Existing Sewer Line
- WRP Proposed Water Reclamation Facility
- LS Proposed Lift Station
- Proposed Force Main
- Proposed Sewer Line
- Hunter-Cole Sewer Line

*Existing sewer lines smaller than 8" are not shown.
**Existing lift stations planned to be abandoned are not shown.

CITY OF DENTON

CITY OF DENTON
WASTEWATER IMPACT FEE
CAPITAL IMPROVEMENTS PLAN

1 IN = 4,000 FT
January 2025

Kimley»Horn

This map product is for information purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

EXHIBIT 3.1

3.4 WASTEWATER IMPACT FEE CALCULATION

SERVICE UNITS

Chapter 395 of the Local Government Code defines a service unit as follows, "Service Unit means a standardized measure of consumption attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards and based on historical data and trends applicable to the political subdivision in which the individual unit of development is located during the previous 10 years."

SERVICE UNIT CALCULATION

A single service unit for Denton's water Impact Fees is the 5/8-inch x 3/4-inch meter. A service unit is the wastewater flow associated with water demand of accommodated by a 5/8-inch x 3/4-inch meter, which is typically used by a single-family residence. All meters greater than 5/8-inch x 3/4-inch have a service unit multiplier determined by the ratio of each larger meter's capacity to the capacity of the 5/8-inch x 3/4-inch meter. The current service unit multipliers (service units/meter) are shown in **Table 3.2**.

Table 3.2 Meter Capacity Ratios

Meter Size	Service Units/ Meter[1]
5/8"x3/4"	1
1"	2.5
1-1/2"	5
2"	8
3"	22.5
4"	50
6"	100
8"	200
10"	325

Based on the City's 10-year growth projections and the resulting wastewater flow in relation to water demand projections, wastewater service will be required for an additional **52,276** Service Units by the year 2034 as shown in **Table 3.3**.

The City's existing wastewater system is a single service area because it treats wastewater at a single treatment facility. Over the next 10-years the City will construct two additional treatment facilities to accommodate growth and will therefore divide into three service areas (Pecan Creek, Hickory Creek, Clear Creek as indicated in the Land Use Assumptions chapter). The calculated 10-year additional services units has been distributed across the three services areas based on projected growth and its associated wastewater flow projections as shown in **Table 3.3**.

Table 3.3 10-year Additional Service Units by Service Area

Year		Pecan Creek	Hickory Creek	Clear Creek	Total
2024	Service Units	59,597	21,283	1,216	82,096
2034	Service Units	67,213	56,695	10,464	134,372
10-Year Service Units		**7,616**	**35,412**	**9,248**	**52,276**

3.5 PLAN FOR AWARDING IMPACT FEE CREDIT

Impact fee law allows for a credit calculation to credit back the utility revenues or ad valorem taxes that are allocated for paying a portion of future capital improvements. The intent of this credit is to prevent the City from double charging development for future capital improvements via Impact Fees and utility rates. If the City chooses not to do a financial analysis to determine the credit value, they are required by law to reduce the recoverable cost by 50 percent. The City chose to perform a financial analysis.

MAXIMUM ASSESSABLE IMPACT FEE DETERMINATION

The impact fee determination method employed by NewGen Strategies and Solutions, LLC is developed through a financial based model that recognizes the requirements of Chapter 395, including the recognition of cash and/or debt financing, interest earnings, fund balances, and applicable credits associated with the use of utility revenues. In developing the components of the financial model, assumptions must be made that include the following:

- Financing
    - Method of financing (i.e. cash or debt financing)
    - The level of financing (e.g. 100% debt)
    - Cost of financing
    - Debt repayment structure

- Timing and Level of Expenditures and Revenues
- Interest Earnings
- Annual Service Unit Growth
- Portion of Utility Revenue Used to Fund Impact Fee Wastewater Improvements

While the assumptions employed in determining the maximum assessable impact fee are a reasonable basis for forecasting, these assumptions may not reflect actual future conditions. To address this, Chapter 395 requires the monitoring of Impact Fees through the Capital Improvement Advisory Committee (CIAC) who can then update or revise Impact Fees to reflect the actual implementation of the impact fee program.

FINANCING

Once the cost of capacity added that is attributable to growth is determined, a City must decide how the cost will be financed: cash and/or debt. Actual costs of capital for any previously funded projects, whether partially or fully funded, are also included.

Based on discussions with City staff, it is assumed that the City will debt finance the future project costs. For debt financing, the cost of financing is based on the City's Financial Advisor's estimates of future debt costs for bonds issued with 30-year terms as shown in the Wastewater Financial Analysis Appendix of this report. Debt service payments for each future debt issue are assumed to remain constant over the issue's term.

TIMING AND LEVEL OF EXPENDITURES AND REVENUES

The exact timing and annual level of cash capital expenditures over the forecast period is currently indeterminate, therefore it is assumed that capital expenditures will occur in amounts over the 10-year program period. It is also assumed that the City will expand debt proceeds over a 2-year timeframe for debt-financed capital projects. For the calculation of the maximum assessable impact fee, debt is assumed to be issued in equal amounts for each year. In order to recognize the full amount of debt to be issued for the cost of capacity added that is attributable to growth during the 10-year period, a portion of years eight, nine, and ten are assumed to be spend in the final three years.

INTEREST EARNINGS

While debt is issued over 30-year terms and Impact Fees developed are to be charged over a 10-year period, a sufficient fund balance must be generated to meet the future debt service obligations. Fund balances were identified for each service area as a potential source for the current Impact Fee CIP. Because of the generation of the fund balance, excess monies will be available for interest earnings.

Chapter 395 states that interest earnings are funds of the impact fee account and are to be held to the same restrictions as impact fee revenues. In order to recognize that interest earnings are used to fund only impact fee eligible improvements, interest earnings are credited against the costs recoverable through

Impact Fees. Chapter 395 does not require the upfront recognition of interest earnings in the impact fee determination. To acknowledge the time value of the impact fee payer's monies, interest earnings have been credited. For this analysis, interest is assumed to be earned at an annual rate of 1.89% per 10-year historical average.

Annual Service Unit Growth

The timing and annual level of service unit growth over the 10-year program period is currently indeterminate, therefore it is assumed that service unit growth will be consistent over the 10-year forecast.

Portion of Utility Revenue Used to Fund Impact Fee Wastewater Improvements

Credit for the portion of ad valorem tax and/or utility service revenues generated by new service units during the program period are used for payment of the improvements included in the Wastewater Impact Fee CIP. The credit is not a determination to recognize the total utility revenue generated by new service units but is a credit for the portion of utility revenue that is used for payment of the improvements included in the Wastewater Impact Fee CIP. Theoretically, the credit determination could be zero ($0) if the City does not utilize any of the new service unit utility revenue to fund improvements that are included in the Wastewater Impact Fee CIP.

To be conservative and recognize potential cash flow issues that can occur with the funding of major capital improvement projects, it is assumed that the debt-funded projects (100% of the improvement costs included in the Wastewater Impact Fee CIP but not otherwise funded) could potentially be funded by utility revenue.

When an impact fee program is in place, payments made through utility revenue will consist of revenue generated by new service units in the defined service area and existing service units throughout the City; therefore, the portion attributable to the new service units in the defined service area must be isolated. The credit calculation illustrating how the credit is isolated is shown in the Wastewater Financial Analysis Appendix of this report.

3.6 MAXIMUM ASSESSABLE IMPACT FEE

A breakdown of the 10-year recoverable costs and the associated impact fee per service unit by service area is as follows:

Table 3.4 Pecan Creek Service - 10-Year Recoverable Cost Breakdown

Recoverable Impact Fee CIP Costs	$69,883,844
Financing Costs	$34,160,000
Interest Earnings	($13,234,573)
Pre Credit Recoverable Cost for Impact Fee	$90,809,271
Credit for Utility Revenues	($2,347,057)
Maximum Recoverable Cost for Impact Fee	**$88,462,214**

(1) Per NewGen Strategies and Solutions, LLC financial analysis, See Appendix A.

$$\text{Impact fee per service units} = \frac{\text{10-year recoverable costs}}{\text{10-year additional service units}}$$

$$\text{Impact fee per service units} = \frac{\$88,462,214}{7,616}$$

$$\text{Impact fee per service units} = \$11,615$$

Therefore, the maximum assessable wastewater impact fee for Pecan Creek Service Area is **$11,615.**

Table 3.5 Hickory Creek Service Area - 10-Year Recoverable Cost Breakdown

Recoverable Impact Fee CIP Costs	$426,546,589
Financing Costs	$190,088,853
Interest Earnings	($124,870,363)
Pre Credit Recoverable Cost for Impact Fee	$491,765,079
Credit for Utility Revenues	($38,817,845)
Maximum Recoverable Cost for Impact Fee	**$452,947,234**

(1) Per NewGen Strategies and Solutions, LLC financial analysis, See Appendix A.

$$\text{Impact fee per service units} = \frac{\text{10-year recoverable costs}}{\text{10-year additional service units}}$$

$$\text{Impact fee per service units} = \frac{\$452,947,234}{35,412}$$

$$\text{Impact fee per service units} = \$12,791$$

Therefore, the maximum assessable wastewater impact fee for Hickory Creek Service Area is **$12,791.**

Table 3.6 Clear Creek Service Area - 10-Year Recoverable Cost Breakdown

Recoverable Impact Fee CIP Costs	$139,912,428
Financing Costs	$47,194,860
Interest Earnings	($17,484,683)
Pre Credit Recoverable Cost for Impact Fee	$169,622,605
Credit for Utility Revenues	($3,934,480)
Maximum Recoverable Cost for Impact Fee	**$165,688,125**

(1) Per NewGen Strategies and Solutions, LLC financial analysis, See Appendix A.

$$\text{Impact fee per service units} = \frac{\text{10-year recoverable costs}}{\text{10-year additional service units}}$$

$$\text{Impact fee per service units} = \frac{\$165,688,125}{9,248}$$

$$\text{Impact fee per service units} = \$17,916$$

Therefore, the maximum assessable wastewater impact fee for Clear Creek is **$17,916**.

For a development that requires a different size meter, a service unit equivalent is established at a multiplier based on its capacity with respect to the 5/8-inch x 3/4-inch meter. The maximum impact fee that could be assessed for other meter sizes is based on the Equivalency Table (**Table 2.10**).

Table 3.7 Maximum Assessable Wastewater Impact Fee by Service Area and Meter Size

Meter Size	Service Unit Equivalent	Pecan Creek Maximum Assessable Water Impact Fee	Hickory Creek Maximum Assessable Water Impact Fee	Clear Creek Maximum Assessable Water Impact Fee
5/8"x3/4"	1	$11,615	$12,791	$17,916
1"	2.5	$29,038	$31,977	$44,790
1-1/2"	5	$58,075	$63,954	$89,581
2"	8	$92,920	$102,326	$143,329
3"	22.5	$261,338	$287,793	$403,112
4"	50	$580,750	$639,539	$895,805
6"	100	$1,161,500	$1,279,078	$1,791,610
8"	200	$2,323,000	$2,558,157	$3,583,221
10"	325	$3,774,875	$4,157,005	$5,822,734

APPENDIX

WATER FINANCIAL ANALYSIS

City of Denton - 2024 Water Impact Fee Update
Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Water Service Area Zone 1A

0	Existing Fund Balance	$ -
1	Existing Number of Service Units Over Entire City	82,096
2	Additional Service Units Added During Planning Period In the Service Area	1,616
3	Total Cost of the Water Impact Fee CIP	$ 10,654,473
4	Recoverable Cost for Impact Fee Planning Period	$ 2,454,148
5	Percent Recoverable for Water Impact Fee Planning Period (Line 4 / Line 3)	23.03%
6	Financing Costs (From Financial Analysis)	$ 1,106,314
7	Interest Earnings (From Financial Analysis)	$ (604,035)
8	Recoverable Cost of Water Impact Fee and Financing Costs Less Balance (Line 5 + Line 7 + Line 8 - Line 0)	$ 2,956,427
9	Pre-Credit Maximum Fee (Line 8 / Line 2)	$ 1,830
10	Credit for Utility Revenues (From Financial Analysis)	$ (15,105)
11	Recoverable Cost of Water Impact Fee and Financing (Line 8 + Line 10)	$ 2,941,322
12	Maximum Assessable Fee (Line 11 / Line 2)	$ 1,820

SUMMARY OF WATER IMPACT FEE DETERMINATION

Water Service Area Zone 1A

Recoverable Impact Fee CIP Costs	$	2,454,148	Table 2.1
Financing Cost		1,106,314	See Detail Below
Existing Fund Balance		-	Water Appendices - page 1
Interest Earnings		(604,035)	Water Appendices - page 3
Pre Credit Recoverable Cost for Impact Fee	$	2,956,427	Sum of Above
Credit for Utility Revenues		(15,105)	Water Appendices - page 6
Maximum Recoverable Cost for Impact Fee	**$**	**2,941,322**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees.
Reference is Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

Financing Costs:

Represents the interest costs associated with debt financing the new impact fee project costs. Interest costs are derived from existing debt issues and forecasted debt issues.

New Annual Debt Service	$	2,231,971	Water Appendices - page 2
Existing Annual Debt Service		1,269,285	Water Appendices - page 2
Principal Component (New and Existing Debt)		(2,394,943)	Water Appendices - page 1
Financing Costs	$	1,106,314	

Existing Fund Balance:

Represents impact fee revenue collected but not yet expended. Some projects that are included in the 2018 Impact Fee Update were also included in prior Impact Fee Updates.
To avoid charging twice for the same project, the impact fee revenues collected but yet to be expended (i.e. fund balance) are credited against the recoverable costs. Reference is page 1 of Water Appendices.

Interest Earnings

Represents the interest earned on cash flows and assumes a 1.89% annual interest rate.
The Impact Fee Statute states that interest earnings are funds of the impact fee account and are held to the same restrictions as impact fee revenues. Therefore in order to recognize that interest earnings are used to fund capital improvements, interest earnings are credited against the recoverable costs.
Reference is the sum of Accumulated Interest on page 3 of Water Appendices.

Pre Credit Recoverable Cost for Impact Fee

Represents Recoverable Impact Fee CIP Costs plus Financing Costs less Existing Fund Balance and Interest Earnings.

Credit for Utility Revenues

In 2001, the Impact Fee Statute was amended to include a credit for ad valorem and utility revenues generated by new service units during the ten-year timeframe that are used to fund impact fee eligible projects for which the new service units were charged an impact fee. The intent of this amendment is to avoid double-charging the new service units for impact fee capital improvements. The credit recognizes utility revenues used to fund the debt service of debt financed impact fee eligible projects. Reference is page 6 of Water Appendices.

Maximum Recoverable Cost for Impact Fee:

Represents Pre Credit Recoverable Cost for Impact Fee less Credit for Utility Revenues.
This is the maximum cost that can be recovered through impact fees.

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Water Service Area Zone 1A

I. General Assumptions

Annual Interest Rate on Deposits[1]	2.50%
Annual Service Unit Growth[2]	162
Existing Fund Balance[3]	$ -

Portion of Projects Funded by Existing Debt[4]	$ 850,650
Non-debt Funded Project Cost[5]	59,206
New Project Cost Funded Through New Debt[6]	1,544,292
Total Recoverable Project Cost[7]	$ 2,454,148

II. New Debt Issues Assumptions

Year	Principal[8]	Interest[9]	Term
1	$ 154,429	3.80%	20
2	154,429	3.80%	20
3	154,429	3.80%	20
4	154,429	3.80%	20
5	154,429	3.80%	20
6	154,429	3.80%	20
7	154,429	3.80%	20
8	154,429	3.80%	20
9	154,429	3.80%	20
10	154,429	3.80%	20
Total	$ 1,544,292		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[10]
1	$ 83,135
2	160,350
3	160,350
4	160,350
5	160,350
6	160,350
7	160,350
8	160,350
9	160,350
10	237,564
Total	$ 1,603,498

(1) Per discussions with City Staff
(2) Derived from Table 2.6 10-year Additional SFE Water Zone Distribution
(3) Balance from 03/30/2024 provided by City Staff
(4) Per discussions with City Staff and City files
(5) From allocation per City Staff; assumes 0% of new project costs funded through sources other than debt
(6) This assumes 100% of new project costs funded through new debt issues
(7) Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost
(8) Assumes new debt issued in equal annual amounts
(9) Estimated interest on future debt per discussions with City Staff
(10) Assumes new debt proceeds expended over a 2-year timeframe.
Non-debt funded capital expenditures allocated in equal annual amounts

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees
Debt Service and Expense Summary
Water Service Area Zone 1A

I. New Debt Service Detail

Year	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7	Series 8	Series 9	Series 10	Total Annual New Debt Service
1	$ 11,160	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 11,160
2	11,160	11,160	-	-	-	-	-	-	-	-	22,320
3	11,160	11,160	11,160	-	-	-	-	-	-	-	33,480
4	11,160	11,160	11,160	11,160	-	-	-	-	-	-	44,639
5	11,160	11,160	11,160	11,160	11,160	-	-	-	-	-	55,799
6	11,160	11,160	11,160	11,160	11,160	11,160	-	-	-	-	66,959
7	11,160	11,160	11,160	11,160	11,160	11,160	11,160	-	-	-	78,119
8	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	-	-	89,279
9	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	-	100,439
10	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	111,599
11	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	111,599
12	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	111,599
13	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	111,599
14	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	111,599
15	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	111,599
16	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	111,599
17	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	111,599
18	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	111,599
19	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	111,599
20	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	111,599
21	-	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	100,439
22	-	-	11,160	11,160	11,160	11,160	11,160	11,160	11,160	11,160	89,279
23	-	-	-	11,160	11,160	11,160	11,160	11,160	11,160	11,160	78,119
24	-	-	-	-	11,160	11,160	11,160	11,160	11,160	11,160	66,959
25	-	-	-	-	-	11,160	11,160	11,160	11,160	11,160	55,799
26	-	-	-	-	-	-	11,160	11,160	11,160	11,160	44,639
27	-	-	-	-	-	-	-	11,160	11,160	11,160	33,480
28	-	-	-	-	-	-	-	-	11,160	11,160	22,320
29	-	-	-	-	-	-	-	-	-	11,160	11,160
	$ 223,197	$ 223,197	$ 223,197	$ 223,197	$ 223,197	$ 223,197	$ 223,197	$ 223,197	$ 223,197	$ 223,197	$ 2,231,971

II. Summary of Annual Expenses

Year	New Annual Debt Service[1]	Annual Capital Expenditures[2]	Annual Bond Proceeds[2]	Existing Annual Debt Service[3]	Annual Credit[4]	Total Expense
1	$ 11,160	$ 83,135	$ (154,429)	$ 63,464	$ (147)	$ 3,183
2	22,320	160,350	(154,429)	63,464	(336)	91,368
3	33,480	160,350	(154,429)	63,464	(569)	102,295
4	44,639	160,350	(154,429)	63,464	(844)	113,180
5	55,799	160,350	(154,429)	63,464	(1,162)	124,022
6	66,959	160,350	(154,429)	63,464	(1,522)	134,822
7	78,119	160,350	(154,429)	63,464	(1,924)	145,580
8	89,279	160,350	(154,429)	63,464	(2,368)	156,296
9	100,439	160,350	(154,429)	63,464	(2,853)	166,971
10	111,599	237,564	(154,429)	63,464	(3,379)	254,819
11	111,599	-	-	63,464	-	175,063
12	111,599	-	-	63,464	-	175,063
13	111,599	-	-	63,464	-	175,063
14	111,599	-	-	63,464	-	175,063
15	111,599	-	-	63,464	-	175,063
16	111,599	-	-	63,464	-	175,063
17	111,599	-	-	63,464	-	175,063
18	111,599	-	-	63,464	-	175,063
19	111,599	-	-	63,464	-	175,063
20	111,599	-	-	63,464	-	175,063
21	100,439	-	-	-	-	100,439
22	89,279	-	-	-	-	89,279
23	78,119	-	-	-	-	78,119
24	66,959	-	-	-	-	66,959
25	55,799	-	-	-	-	55,799
26	44,639	-	-	-	-	44,639
27	33,480	-	-	-	-	33,480
28	22,320	-	-	-	-	22,320
29	11,160	-	-	-	-	11,160
	$ 2,231,971	$ 1,603,498	$ (1,544,292)	$ 1,269,285	$ (15,105)	$ 3,545,357

(1) Water Appendices - page 2 Section I
(2) Water Appendices - page 1
(3) Actual timing of payment varies. Calculated P&I above assumes City's estimated average cost of outstanding system debt and constant annual debt service payments.
(4) Water Appendices - page 6

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees

Revenue Test

Water Service Area Zone 1A

Year	Impact Fee	Service Units	Impact Fee Revenue	Annual Expenses	Sub-Total	Accumulated Interest	Estimated Fund Balance
Initial							$ -
1	$ 1,820	162	$ 294,132	$ 3,183	$ 290,949	$ 3,637	294,586
2	1,820	162	294,132	91,368	202,764	9,899	507,249
3	1,820	162	294,132	102,295	191,837	15,079	714,165
4	1,820	162	294,132	113,180	180,952	20,116	915,234
5	1,820	162	294,132	124,022	170,110	25,007	1,110,351
6	1,820	162	294,132	134,822	159,311	29,750	1,299,412
7	1,820	162	294,132	145,580	148,553	34,342	1,482,307
8	1,820	162	294,132	156,296	137,836	38,781	1,658,924
9	1,820	162	294,132	166,971	127,162	43,063	1,829,148
10	1,820	162	294,132	254,819	39,313	46,220	1,914,681
11	-	-	-	175,063	(175,063)	45,679	1,785,297
12	-	-	-	175,063	(175,063)	42,444	1,652,679
13	-	-	-	175,063	(175,063)	39,129	1,516,744
14	-	-	-	175,063	(175,063)	35,730	1,377,412
15	-	-	-	175,063	(175,063)	32,247	1,234,596
16	-	-	-	175,063	(175,063)	28,677	1,088,210
17	-	-	-	175,063	(175,063)	25,017	938,164
18	-	-	-	175,063	(175,063)	21,266	784,367
19	-	-	-	175,063	(175,063)	17,421	626,725
20	-	-	-	175,063	(175,063)	13,480	465,142
21	-	-	-	100,439	(100,439)	10,373	375,077
22	-	-	-	89,279	(89,279)	8,261	294,059
23	-	-	-	78,119	(78,119)	6,375	222,315
24	-	-	-	66,959	(66,959)	4,721	160,076
25	-	-	-	55,799	(55,799)	3,304	107,582
26	-	-	-	44,639	(44,639)	2,132	65,074
27	-	-	-	33,480	(33,480)	1,208	32,802
28	-	-	-	22,320	(22,320)	541	11,024
29	-	-	-	11,160	(11,160)	136	-
			2,941,322	3,545,357		604,035	

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Calculation

Water Service Area Zone 1A

Year	Number of Years to End of Period	Future Value Escalation: Interest Rate Factor	Future Value Escalation: Recovery Fee Factor	Annual Service Units: Actual	Annual Service Units: Escalated	Annual Expense: Actual	Annual Expense: Escalated
1	29	2.0215	1.0000	162	327	$ 3,183	$ 6,435
2	28	1.9721	1.0000	162	319	91,368	180,192
3	27	1.9240	1.0000	162	311	102,295	196,821
4	26	1.8771	1.0000	162	303	113,180	212,452
5	25	1.8313	1.0000	162	296	124,022	227,126
6	24	1.7867	1.0000	162	289	134,822	240,882
7	23	1.7431	1.0000	162	282	145,580	253,759
8	22	1.7006	1.0000	162	275	156,296	265,793
9	21	1.6591	1.0000	162	268	166,971	277,021
10	20	1.6186	1.0000	162	262	254,819	412,458
11	19	1.5792	1.0000	-	-	175,063	276,451
12	18	1.5406	1.0000	-	-	175,063	269,709
13	17	1.5031	1.0000	-	-	175,063	263,130
14	16	1.4664	1.0000	-	-	175,063	256,712
15	15	1.4306	1.0000	-	-	175,063	250,451
16	14	1.3957	1.0000	-	-	175,063	244,343
17	13	1.3617	1.0000	-	-	175,063	238,383
18	12	1.3285	1.0000	-	-	175,063	232,569
19	11	1.2961	1.0000	-	-	175,063	226,896
20	10	1.2645	1.0000	-	-	175,063	221,362
21	9	1.2336	1.0000	-	-	100,439	123,904
22	8	1.2035	1.0000	-	-	89,279	107,451
23	7	1.1742	1.0000	-	-	78,119	91,727
24	6	1.1456	1.0000	-	-	66,959	76,705
25	5	1.1176	1.0000	-	-	55,799	62,362
26	4	1.0904	1.0000	-	-	44,639	48,673
27	3	1.0638	1.0000	-	-	33,480	35,614
28	2	1.0378	1.0000	-	-	22,320	23,164
29	1	1.0125	1.0000	-	-	11,160	11,299
					2,930		$ 5,333,843

Annual Interest Rate:		2.50%
Present Value of Initial Impact Fee Fund Balance	$	-
Total Escalated Expense for Entire Period	$	5,333,843
Less Future Value of Initial Impact Fee Fund Balance		-
Sub-Total	$	5,333,843
Total Escalated Service Units		2,930
Impact Fee for Water Service Area	**$**	**1,820**

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Project Funding

Water Service Area Zone 1A

Impact Fee Project Name[1]	Cost In Service Area [1]	Percent in Demand	Impact Fee Recoverable Cost[1]	Debt Funded[2] Existing	Debt Funded[2] Proposed	Non-Debt Funded[2]	Impact Fee Recoverable Cost
Lake Ray Roberts	$ 4,693,949	10%	$ 469,395	$ 469,395	$ -	$ -	$ 469,395
54" Finished Water Transmission Line	293,637	57%	167,401	140,694	-	26,706	167,401
Loop 288 Water Main - Sherman to UNT	133,552	65%	86,809	86,809	-	-	86,809
Loop 288 Water Main - Sherman to Hwy 380	183,135	0%	-	-	-	-	-
North-South Water Line Phase I	314,318	10%	31,432	31,432	-	-	31,432
Roselawn Elevated Storage Tank	192,877	27%	51,434	51,434	-	-	51,434
North-South Water Line	565,815	10%	56,581	37,230	-	19,352	56,581
Locust Water Line Upsize	1,281,776	3%	36,622	31,251	-	5,371	36,622
Hickory Water Line Upsize	498,444	1%	7,121	2,406	-	4,714	7,121
42" Jim Christal EST Transmission Main	377,981	81%	307,109	-	307,109	-	307,109
24/48" Loop 288 Transmission Main	2,115,928	58%	1,237,183	-	1,237,183	-	1,237,183
Water Impact Fee Report Preparation	3,062	100%	3,062	-	-	3,062	3,062
Total	$ 10,654,473		$ 2,454,148	$ 850,650	$ 1,544,292	$ 59,206	$ 2,454,148

(1) Derived from Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost for Zone 1A

(2) Per discussions with City staff and City files

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees
Credit Determination
Water Service Area Zone 1A

2024 Service Units[1]	82,096	
Ten Year Growth in Service Units[2]	1,616	
	10	years
Annual Growth in Service Units	162	

	1	2	3	4	5	6	7	8	9	10	Total
Debt Service for Debt Funded Projects Eligible for Impact Fees[3]	$ 74,624	$ 85,784	$ 96,944	$ 108,104	$ 119,264	$ 130,423	$ 141,583	$ 152,743	$ 163,903	$ 175,063	$ 1,248,435
Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 74,624	$ 85,784	$ 96,944	$ 108,104	$ 119,264	$ 130,423	$ 141,583	$ 152,743	$ 163,903	$ 175,063	$ 1,248,435
Current Service Units	82,258	82,419	82,581	82,742	82,904	83,066	83,227	83,389	83,550	83,712	
Total Net Impact Fee Eligible Debt Service Funded by Other Sources per Service Unit	$ 0.91	$ 1.04	$ 1.17	$ 1.31	$ 1.44	$ 1.57	$ 1.70	$ 1.83	$ 1.96	$ 2.09	
Annual Growth in Service Units (Cumulative)	162	323	485	646	808	970	1,131	1,293	1,454	1,616	
Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 147	$ 336	$ 569	$ 844	$ 1,162	$ 1,522	$ 1,924	$ 2,368	$ 2,853	$ 3,379	$ 15,105

Credit Amount **$ 15,105**

(1) Derived from Table 2.5 10-year Additional Single-Family Equivalent Calculation
(2) Derived from Table 2.6 10-year Additional SFE Water Zone Distribution
(3) Water Appendices - page 2 Section II

City of Denton - 2024 Water Impact Fee Update
Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Water Service Area Zone 1B

0	Existing Fund Balance	$ -
1	Existing Number of Service Units Over Entire City	82,096
2	Additional Service Units Added During Planning Period In the Service Area	29,427
3	Total Cost of the Water Impact Fee CIP	$ 573,022,860
4	Recoverable Cost for Impact Fee Planning Period	$ 292,309,445
5	Percent Recoverable for Water Impact Fee Planning Period (Line 4 / Line 3)	51.01%
6	Financing Costs (From Financial Analysis)	$ 129,102,582
7	Interest Earnings (From Financial Analysis)	$ (81,750,244)
8	Recoverable Cost of Water Impact Fee and Financing Costs Less Balance (Line 5 + Line 7 + Line 8 - Line 0)	$ 339,661,784
9	Pre-Credit Maximum Fee (Line 8 / Line 2)	$ 11,542
10	Credit for Utility Revenues (From Financial Analysis)	$ (23,479,052)
11	Recoverable Cost of Water Impact Fee and Financing (Line 8 + Line 10)	$ 316,182,731
12	Maximum Assessable Fee (Line 11 / Line 2)	$ 10,745

SUMMARY OF WATER IMPACT FEE DETERMINATION

Water Service Area Zone 1B

Recoverable Impact Fee CIP Costs	$	292,309,445	Table 2.1
Financing Cost		129,102,582	See Detail Below
Existing Fund Balance		-	Water Appendices - page 1
Interest Earnings		(81,750,244)	Water Appendices - page 3
Pre Credit Recoverable Cost for Impact Fee	$	339,661,784	Sum of Above
Credit for Utility Revenues		(23,479,052)	Water Appendices - page 6
Maximum Recoverable Cost for Impact Fee	**$**	**316,182,731**	Total Cost of the Water Impact Fee CIP

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees.
Reference is Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

Financing Costs:

Represents the interest costs associated with debt financing the new impact fee project costs. Interest costs are derived
one-half of the new impact fee project costs will be funded through new debt issues (Page 7 of
Appendix E -). Interest costs are derived from forecasted debt issues.
from existing debt issues and forecasted debt issues.

New Annual Debt Service	$	376,804,966	Water Appendices - page 2
Existing Annual Debt Service		39,438,370	Water Appendices - page 2
Principal Component (New and Existing Debt)		(287,140,753)	Water Appendices - page 1
Financing Costs	$	129,102,582	

Existing Fund Balance:

Represents impact fee revenue collected but not yet expended. Some projects that are included in the 2018
Impact Fee Update were also included in prior Impact Fee Updates.
To avoid charging twice for the same project, the impact fee revenues collected but yet to be expended
(i.e. fund balance) are credited against the recoverable costs. Reference is page 1 of Water Appendices.

Interest Earnings

Represents the interest earned on cash flows and assumes a 1.89% annual interest rate.
The Impact Fee Statute states that interest earnings are funds of the impact fee account and are held
to the same restrictions as impact fee revenues. Therefore in order to recognize that interest earnings
are used to fund capital improvements, interest earnings are credited against the recoverable costs.
Reference is the sum of Accumulated Interest on page 3 of Water Appendices.

Pre Credit Recoverable Cost for Impact Fee

Represents Recoverable Impact Fee CIP Costs plus Financing Costs less Existing Fund Balance and Interest Earnings.

Credit for Utility Revenues

In 2001, the Impact Fee Statute was amended to include a credit for ad valorem and utility revenues generated
by new service units during the ten-year timeframe that are used to fund impact fee eligible projects
for which the new service units were charged an impact fee. The intent of this amendment is to avoid
double-charging the new service units for impact fee capital improvements. The credit recognizes utility
revenues used to fund the debt service of debt financed impact fee eligible projects. Reference is page 6 of
Water Appendices.

Maximum Recoverable Cost for Impact Fee:

Represents Pre Credit Recoverable Cost for Impact Fee less Credit for Utility Revenues.
This is the maximum cost that can be recovered through impact fees.

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Water Service Area Zone 1B

I. General Assumptions

Annual Interest Rate on Deposits[1]	2.50%
Annual Service Unit Growth[2]	2,943
Existing Fund Balance[3]	$ -
Total Cost of the Water Impact Fee CIP	
Portion of Projects Funded by Existing Debt[4]	$ 26,430,833
Recoverable	5,168,692
New Project Cost Funded Through New Debt[6]	260,709,921
Total Recoverable Project Cost[7]	$ 292,309,445

II. New Debt Issues Assumptions

	Principal[8]	Interest[9]	Term
1	$ 26,070,992	3.80%	20
2	26,070,992	3.80%	20
3	26,070,992	3.80%	20
4	26,070,992	3.80%	20
5	26,070,992	3.80%	20
6	26,070,992	3.80%	20
7	26,070,992	3.80%	20
8	26,070,992	3.80%	20
9	26,070,992	3.80%	20
10	26,070,992	3.80%	20
Total	$ 260,709,921		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[10]
1	$ 13,552,365
2	26,587,861
3	26,587,861
4	26,587,861
5	26,587,861
6	26,587,861
7	26,587,861
8	26,587,861
9	26,587,861
10	39,623,357
Total	$ 265,878,613

(1) Per discussions with City Staff
(2) Derived from Table 2.6 10-year Additional SFE Water Zone Distribution
(3) Balance from 03/30/2024 provided by City Staff
(4) Per discussions with City Staff and City files
(5) From allocation per City Staff; assumes 0% of new project costs funded through sources other than debt
(6) This assumes 100% of new project costs funded through new debt issues
(7) Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost
(8) Assumes new debt issued in equal annual amounts
(9) Estimated interest on future debt per discussions with City Staff
(10) Assumes new debt proceeds expended over a 2-year timeframe.
Non-debt funded capital expenditures allocated in equal annual amounts

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees
Debt Service and Expense Summary
Water Service Area Zone 1B

I. New Debt Service Detail

Year	Series of the Water Imp	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7	Series 8	Series 9	Series 10	Total Annual New Debt Service
1		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,884,025
2	1,884,025	1,884,025	-	-	-	-	-	-	-	-	3,768,050
3	1,884,025	1,884,025	1,884,025	-	-	-	-	-	-	-	5,652,074
4	1,884,025	1,884,025	1,884,025	1,884,025	-	-	-	-	-	-	7,536,099
5	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	-	-	-	-	-	9,420,124
6	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	-	-	-	-	11,304,149
7	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	-	-	-	13,188,174
8	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	-	-	15,072,199
9	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	-	16,956,223
10	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	18,840,248
11	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	18,840,248
12	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	18,840,248
13	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	18,840,248
14	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	18,840,248
15	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	18,840,248
16	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	18,840,248
17	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	18,840,248
18	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	18,840,248
19	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	18,840,248
20	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	18,840,248
21	-	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	16,956,223
22	-	-	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	15,072,199
23	-	-	-	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	13,188,174
24	-	-	-	-	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	11,304,149
25	-	-	-	-	-	1,884,025	1,884,025	1,884,025	1,884,025	1,884,025	9,420,124
26	-	-	-	-	-	-	1,884,025	1,884,025	1,884,025	1,884,025	7,536,099
27	-	-	-	-	-	-	-	1,884,025	1,884,025	1,884,025	5,652,074
28	-	-	-	-	-	-	-	-	1,884,025	1,884,025	3,768,050
29	-	-	-	-	-	-	-	-	-	1,884,025	1,884,025
	$ 37,680,497	$ 37,680,497	$ 37,680,497	$ 37,680,497	$ 37,680,497	$ 37,680,497	$ 37,680,497	$ 37,680,497	$ 37,680,497	$ 37,680,497	$ 376,804,966

II. Summary of Annual Expenses

Year	New Annual Debt Service[1]	Annual Capital Expenditures[2]	Annual Bond Proceeds[2]	Existing Annual Debt Service[3]	Annual Credit[4]	Total Expense
1	$ 1,884,025	$ 13,552,365	$ (26,070,992)	$ 1,971,918	$ (133,433)	$ (8,796,117)
2	3,768,050	26,587,861	(26,070,992)	1,971,918	(383,972)	5,872,866
3	5,652,074	26,587,861	(26,070,992)	1,971,918	(740,244)	7,400,618
4	7,536,099	26,587,861	(26,070,992)	1,971,918	(1,192,307)	8,832,580
5	9,420,124	26,587,861	(26,070,992)	1,971,918	(1,731,425)	10,177,487
6	11,304,149	26,587,861	(26,070,992)	1,971,918	(2,349,893)	11,443,043
7	13,188,174	26,587,861	(26,070,992)	1,971,918	(3,040,891)	12,636,071
8	15,072,199	26,587,861	(26,070,992)	1,971,918	(3,798,356)	13,762,630
9	16,956,223	26,587,861	(26,070,992)	1,971,918	(4,616,885)	14,828,126
10	18,840,248	39,623,357	(26,070,992)	1,971,918	(5,491,644)	28,872,888
11	18,840,248	-	-	1,971,918	-	20,812,167
12	18,840,248	-	-	1,971,918	-	20,812,167
13	18,840,248	-	-	1,971,918	-	20,812,167
14	18,840,248	-	-	1,971,918	-	20,812,167
15	18,840,248	-	-	1,971,918	-	20,812,167
16	18,840,248	-	-	1,971,918	-	20,812,167
17	18,840,248	-	-	1,971,918	-	20,812,167
18	18,840,248	-	-	1,971,918	-	20,812,167
19	18,840,248	-	-	1,971,918	-	20,812,167
20	18,840,248	-	-	1,971,918	-	20,812,167
21	16,956,223	-	-	-	-	16,956,223
22	15,072,199	-	-	-	-	15,072,199
23	13,188,174	-	-	-	-	13,188,174
24	11,304,149	-	-	-	-	11,304,149
25	9,420,124	-	-	-	-	9,420,124
26	7,536,099	-	-	-	-	7,536,099
27	5,652,074	-	-	-	-	5,652,074
28	3,768,050	-	-	-	-	3,768,050
29	1,884,025	-	-	-	-	1,884,025
	$376,804,966	$265,878,613	$ (260,709,921)	$ 39,438,370	$ (23,479,052)	$397,932,976

(1) Water Appendices - page 2 Section I
(2) Water Appendices - page 1
(3) Actual timing of payment varies. Calculated P&I above assumes City's estimated average cost of outstanding system debt and constant annual debt service payments.
(4) Water Appendices - page 6

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees

Revenue Test

Water Service Area Zone 1B

Year	Impact Fee	Service Units	Impact Fee Revenue	Annual Expenses	Sub-Total	Accumulated Interest	Estimated Fund Balance
Initial	Total Cost of the Water Impact Fee CIP						$ -
1	$ 10,745	2,943	$ 31,618,273	$ (8,796,117)	$ 40,414,390	$ 505,180	40,919,570
2	10,745	2,943	31,618,273	5,872,866	25,745,407	1,344,807	68,009,784
3	10,745	2,943	31,618,273	7,400,618	24,217,655	2,002,965	94,230,405
4	10,745	2,943	31,618,273	8,832,580	22,785,693	2,640,581	119,656,679
5	10,745	2,943	31,618,273	10,177,487	21,440,786	3,259,427	144,356,893
6	10,745	2,943	31,618,273	11,443,043	20,175,230	3,861,113	168,393,235
7	10,745	2,943	31,618,273	12,636,071	18,982,203	4,447,108	191,822,546
8	10,745	2,943	31,618,273	13,762,630	17,855,643	5,018,759	214,696,949
9	10,745	2,943	31,618,273	14,828,126	16,790,147	5,577,301	237,064,397
10	10,745	2,943	31,618,273	28,872,888	2,745,385	5,960,927	245,770,709
11	-	-	-	20,812,167	(20,812,167)	5,884,116	230,842,658
12	-	-	-	20,812,167	(20,812,167)	5,510,914	215,541,406
13	-	-	-	20,812,167	(20,812,167)	5,128,383	199,857,622
14	-	-	-	20,812,167	(20,812,167)	4,736,288	183,781,744
15	-	-	-	20,812,167	(20,812,167)	4,334,392	167,303,968
16	-	-	-	20,812,167	(20,812,167)	3,922,447	150,414,249
17	-	-	-	20,812,167	(20,812,167)	3,500,204	133,102,286
18	-	-	-	20,812,167	(20,812,167)	3,067,405	115,357,524
19	-	-	-	20,812,167	(20,812,167)	2,623,786	97,169,144
20	-	-	-	20,812,167	(20,812,167)	2,169,077	78,526,053
21	-	-	-	16,956,223	(16,956,223)	1,751,199	63,321,028
22	-	-	-	15,072,199	(15,072,199)	1,394,623	49,643,453
23	-	-	-	13,188,174	(13,188,174)	1,076,234	37,531,513
24	-	-	-	11,304,149	(11,304,149)	796,986	27,024,350
25	-	-	-	9,420,124	(9,420,124)	557,857	18,162,083
26	-	-	-	7,536,099	(7,536,099)	359,851	10,985,835
27	-	-	-	5,652,074	(5,652,074)	203,995	5,537,755
28	-	-	-	3,768,050	(3,768,050)	91,343	1,861,049
29	-	-	-	1,884,025	(1,884,025)	22,976	-
			316,182,731	397,932,976		81,750,244	

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Calculation

Water Service Area Zone 1B

Year	Number of Years to of the Water Impact	Future Value Escalation: Interest Rate Factor	Future Value Escalation: Recovery Fee Factor	Annual Service Units: Actual	Annual Service Units: Escalated	Annual Expense: Actual	Annual Expense: Escalated
1	29	2.0215	1.0000	2,943	5,949	$ (8,796,117)	$ (17,780,921)
2	28	1.9721	1.0000	2,943	5,804	5,872,866	11,582,158
3	27	1.9240	1.0000	2,943	5,662	7,400,618	14,239,132
4	26	1.8771	1.0000	2,943	5,524	8,832,580	16,579,798
5	25	1.8313	1.0000	2,943	5,389	10,177,487	18,638,388
6	24	1.7867	1.0000	2,943	5,258	11,443,043	20,444,923
7	23	1.7431	1.0000	2,943	5,129	12,636,071	22,025,821
8	22	1.7006	1.0000	2,943	5,004	13,762,630	23,404,407
9	21	1.6591	1.0000	2,943	4,882	14,828,126	24,601,331
10	20	1.6186	1.0000	2,943	4,763	28,872,888	46,734,618
11	19	1.5792	1.0000	-	-	20,812,167	32,865,626
12	18	1.5406	1.0000	-	-	20,812,167	32,064,025
13	17	1.5031	1.0000	-	-	20,812,167	31,281,976
14	16	1.4664	1.0000	-	-	20,812,167	30,519,001
15	15	1.4306	1.0000	-	-	20,812,167	29,774,635
16	14	1.3957	1.0000	-	-	20,812,167	29,048,424
17	13	1.3617	1.0000	-	-	20,812,167	28,339,926
18	12	1.3285	1.0000	-	-	20,812,167	27,648,708
19	11	1.2961	1.0000	-	-	20,812,167	26,974,350
20	10	1.2645	1.0000	-	-	20,812,167	26,316,439
21	9	1.2336	1.0000	-	-	16,956,223	20,917,756
22	8	1.2035	1.0000	-	-	15,072,199	18,140,059
23	7	1.1742	1.0000	-	-	13,188,174	15,485,416
24	6	1.1456	1.0000	-	-	11,304,149	12,949,477
25	5	1.1176	1.0000	-	-	9,420,124	10,528,030
26	4	1.0904	1.0000	-	-	7,536,099	8,216,999
27	3	1.0638	1.0000	-	-	5,652,074	6,012,438
28	2	1.0378	1.0000	-	-	3,768,050	3,910,529
29	1	1.0125	1.0000	-	-	1,884,025	1,907,575
					53,364		$ 573,371,044

Annual Interest Rate:		2.50%
Present Value of Initial Impact Fee Fund Balance	$	-
Total Escalated Expense for Entire Period	$	573,371,044
Less Future Value of Initial Impact Fee Fund Balance		-
Sub-Total	$	573,371,044
Total Escalated Service Units		53,364
Impact Fee for Water Service Area	**$**	**10,745**

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Project Funding

Water Service Area Zone 1B

Impact Fee Project Name[1]	Cost In Service Area [1]	Impact Fee Recoverable Cost[1]	Debt Funded[2] Existing	Debt Funded[2] Proposed	Non-Debt Funded[2]	Impact Fee Recoverable Cost
Lake Ray Roberts	$ 85,485,098	$ 8,548,510	$ 8,548,510	$ -	$ -	$ 8,548,510
54" Finished Water Transmission Line	5,347,650	3,048,662	2,562,290	-	486,372	3,048,662
Loop 288 Water Main - Sherman to UNT	2,432,212	1,580,938	1,580,938	-	-	1,580,938
Loop 288 Water Main - Sherman to Hwy 380	3,335,217	-	-	-	-	-
Northwest Elevated Storage Tank	2,339,988	58,500	58,500	-	-	58,500
Southwest Pump Station	3,400,717	1,700,358	1,700,358	-	-	1,700,358
Southwest PS Oversize Discharge Line (30" to 36")	163,638	66,971	66,971	-	-	66,971
North-South Water Line Phase I	5,724,283	572,429	572,429	-	-	572,429
Roselawn Elevated Storage Tank	3,512,633	936,702	936,702	-	-	936,702
Roselawn Water Line	1,033,884	103,388	103,388	-	-	103,388
Southwest Elevated Storage Tank	3,112,115	77,803	77,803	-	-	77,803
North-South Water Line	10,304,485	1,030,449	678,022	-	352,426	1,030,449
Allred Road / John Paine Road Water Lines	3,411,070	1,169,510	301,745	-	867,765	1,169,510
McKinney Water Line	1,200,600	85,758	63,329	-	22,429	85,758
I-35E Frontage Water Line	1,020,510	72,894	72,894	-	-	72,894
Northwest Booster Pump Station	8,383,268	7,093,535	4,417,073	-	2,676,462	7,093,535
36" Northwest Water Line	8,504,928	5,397,358	4,689,881	-	707,477	5,397,358
Lake Ray Roberts WTP Rerate to 30 MGD	23,008,902	23,008,902	-	23,008,902	-	23,008,902
Lake Ray Roberts WTP 20 MGD Expansion to 50 MGD	112,654,462	112,654,462	-	112,654,462	-	112,654,462
16" Northwest I-35 Frontage Rd Water Line	4,524,000	2,442,960	-	2,442,960	-	2,442,960
16" I-35W/Corbin Water Line	2,722,100	598,862	-	598,862	-	598,862
42" Jim Christal EST Transmission Main	6,883,699	5,593,006	-	5,593,006	-	5,593,006
24/30" West Allred Rd Transmission Main Oversize	426,815	426,815	-	426,815	-	426,815
24" Rosebrook Transmission Main	5,424,349	3,254,609	-	3,254,609	-	3,254,609
24" North/South Transmission Main	13,467,686	11,671,994	-	11,671,994	-	11,671,994
12" Cooper Creek Rd Water Line	14,883,000	4,464,900	-	4,464,900	-	4,464,900
12" N Mayhill Rd Water Line	4,363,000	959,860	-	959,860	-	959,860
12" Duchess Dr Water Line	2,185,000	655,500	-	655,500	-	655,500
12" Shady Oaks Dr Water Line	3,048,000	1,097,280	-	1,097,280	-	1,097,280
12" Stuart Ridge Water Line	4,826,000	2,219,960	-	2,219,960	-	2,219,960
Lake Ray Roberts HSPS Improvements Phase 1	3,180,981	3,180,981	-	3,180,981	-	3,180,981
Lake Ray Roberts WTP 54/60" Transmission Main	67,855,554	39,675,142	-	39,675,142	-	39,675,142
Lake Ray Roberts WTP 10 MGD Expansion to 60 MGD	56,327,231	5,632,723	-	5,632,723	-	5,632,723
24/48" Loop 288 Transmission Main	38,534,776	22,531,284	-	22,531,284	-	22,531,284
Lake Ray Roberts HSPS Improvements Phase 2	3,180,981	1,097,964	-	1,097,964	-	1,097,964
Southwest PS Improvements	5,802,270	1,441,337	-	1,441,337	-	1,441,337
12" Northwest Water Line	13,235,000	3,970,500	-	3,970,500	-	3,970,500
16" Milam Rd Water Line	9,947,000	5,769,260	-	5,769,260	-	5,769,260
16" North Central Water Line	12,188,000	3,656,400	-	3,656,400	-	3,656,400
12" N Locust Rd to E Sherman Dr Water Line	3,959,000	1,187,700	-	1,187,700	-	1,187,700
12" North Cooper Creek Rd Water Line	8,286,000	2,982,960	-	2,982,960	-	2,982,960
12" Swisher Rd Water Line	3,341,000	534,560	-	534,560	-	534,560
Water Impact Fee Report Preparation	55,761	55,761	-	-	55,761	55,761
Total	$ 573,022,860	$ 292,309,445	$ 26,430,833	$ 260,709,921	$ 5,168,692	$ 292,309,445

(1) Derived from Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost for Zone 1B

(2) Per discussions with City staff and City files

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees
Credit Determination
Water Service Area Zone 1B

2024 Service Units[1]	82,096	
Ten Year Growth in Ser	Total Cost of the Water Impact Fee CIP	29,427
	10	years
Annual Growth in Service Units		2,943

	1	2	3	4	5	6	7	8	9	10	Total
Debt Service for Debt Funded Projects Eligible for Impact Fees[3]	$ 3,855,943	$ 5,739,968	$ 7,623,993	$ 9,508,018	$11,392,043	$13,276,067	$15,160,092	$17,044,117	$18,928,142	$20,812,167	$ 123,340,551
Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 3,855,943	$ 5,739,968	$ 7,623,993	$ 9,508,018	$11,392,043	$13,276,067	$15,160,092	$17,044,117	$18,928,142	$20,812,167	$ 123,340,551
Current Service Units	85,039	87,981	90,924	93,867	96,810	99,752	102,695	105,638	108,581	111,523	
Total Net Impact Fee Eligible Debt Service Funded by Other Sources per Service Unit	$ 45.34	$ 65.24	$ 83.85	$ 101.29	$ 117.67	$ 133.09	$ 147.62	$ 161.34	$ 174.32	$ 186.62	
Annual Growth in Service Units (Cumulative)	2,943	5,885	8,828	11,771	14,714	17,656	20,599	23,542	26,485	29,427	
Annual Water Rate Revenue Generated by Service Unit for Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 133,433	$ 383,972	$ 740,244	$ 1,192,307	$ 1,731,425	$ 2,349,893	$ 3,040,891	$ 3,798,356	$ 4,616,885	$ 5,491,644	$ 23,479,052

Credit Amount	**$**	**23,479,052**

(1) Derived from Table 2.5 10-year Additional Single-Family Equivalent Calculation
(2) Derived from Table 2.6 10-year Additional SFE Water Zone Distribution
(3) Water Appendices - page 2 Section II

City of Denton - 2024 Water Impact Fee Update
Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Water Service Area Zone 2

0	Existing Fund Balance	$ -
1	Existing Number of Service Units Over Entire City	82,096
2	Additional Service Units Added During Planning Period In the Service Area	21,731
3	Total Cost of the Water Impact Fee CIP	$ 419,386,122
4	Recoverable Cost for Impact Fee Planning Period	$ 240,510,198
5	Percent Recoverable for Water Impact Fee Planning Period (Line 4 / Line 3)	57.35%
6	Financing Costs (From Financial Analysis)	$ 106,564,481
7	Interest Earnings (From Financial Analysis)	$ (68,197,039)
8	Recoverable Cost of Water Impact Fee and Financing Costs Less Balance (Line 5 + Line 7 + Line 8 - Line 0)	$ 278,877,639
9	Pre-Credit Maximum Fee (Line 8 / Line 2)	$ 12,833
10	Credit for Utility Revenues (From Financial Analysis)	$ (15,078,415)
11	Recoverable Cost of Water Impact Fee and Financing (Line 8 + Line 10)	$ 263,799,224
12	Maximum Assessable Fee (Line 11 / Line 2)	$ 12,139

SUMMARY OF WATER IMPACT FEE DETERMINATION

Water Service Area Zone 2

Recoverable Impact Fee CIP Costs	$	240,510,198	Table 2.1
Financing Cost		106,564,481	See Detail Below
Existing Fund Balance		-	Water Appendices - page 1
Interest Earnings		(68,197,039)	Water Appendices - page 3
Pre Credit Recoverable Cost for Impact Fee	$	278,877,639	Sum of Above
Credit for Utility Revenues		(15,078,415)	Water Appendices - page 6
Maximum Recoverable Cost for Impact Fee	**$**	**263,799,224**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees.
Reference is Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

Financing Costs:

Represents the interest costs associated with debt financing the new impact fee project costs. Interest costs are derived from existing debt issues and forecasted debt issues.

New Annual Debt Service	$	315,826,720	Water Appendices - page 2
Existing Annual Debt Service		28,067,078	Water Appendices - page 2
Principal Component (New and Existing Debt)		(237,329,318)	Water Appendices - page 1
Financing Costs	$	106,564,481	

Existing Fund Balance:

Represents impact fee revenue collected but not yet expended. Some projects that are included in the 2018 Impact Fee Update were also included in prior Impact Fee Updates.
To avoid charging twice for the same project, the impact fee revenues collected but yet to be expended (i.e. fund balance) are credited against the recoverable costs. Reference is page 1 of Water Appendices.

Interest Earnings

Represents the interest earned on cash flows and assumes a 1.89% annual interest rate.
The Impact Fee Statute states that interest earnings are funds of the impact fee account and are held to the same restrictions as impact fee revenues. Therefore in order to recognize that interest earnings are used to fund capital improvements, interest earnings are credited against the recoverable costs.
Reference is the sum of Accumulated Interest on page 3 of Water Appendices.

Pre Credit Recoverable Cost for Impact Fee

Represents Recoverable Impact Fee CIP Costs plus Financing Costs less Existing Fund Balance and Interest Earnings.

Credit for Utility Revenues

In 2001, the Impact Fee Statute was amended to include a credit for ad valorem and utility revenues generated by new service units during the ten-year timeframe that are used to fund impact fee eligible projects for which the new service units were charged an impact fee. The intent of this amendment is to avoid double-charging the new service units for impact fee capital improvements. The credit recognizes utility revenues used to fund the debt service of debt financed impact fee eligible projects. Reference is page 6 of Water Appendices.

Maximum Recoverable Cost for Impact Fee:

Represents Pre Credit Recoverable Cost for Impact Fee less Credit for Utility Revenues.
This is the maximum cost that can be recovered through impact fees.

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Water Service Area Zone 2

I. General Assumptions

Annual Interest Rate on Deposits[1]	2.50%
Annual Service Unit Growth[2]	2,173
Existing Fund Balance[3]	$ -

Portion of Projects Funded by Existing Debt[4]	$ 18,810,013
Non-debt Funded Project Cost[5]	3,180,880
New Project Cost Funded Through New Debt[6]	218,519,305
Total Recoverable Project Cost[7]	$ 240,510,198

II. New Debt Issues Assumptions

Year	Principal[8]	Interest[9]	Term
1	$ 21,851,930	3.80%	20
2	21,851,930	3.80%	20
3	21,851,930	3.80%	20
4	21,851,930	3.80%	20
5	21,851,930	3.80%	20
6	21,851,930	3.80%	20
7	21,851,930	3.80%	20
8	21,851,930	3.80%	20
9	21,851,930	3.80%	20
10	21,851,930	3.80%	20
Total	$ 218,519,305		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[10]
1	$ 11,244,053
2	22,170,018
3	22,170,018
4	22,170,018
5	22,170,018
6	22,170,018
7	22,170,018
8	22,170,018
9	22,170,018
10	33,095,984
Total	$ 221,700,185

(1) Per discussions with City Staff
(2) Derived from Table 2.6 10-year Additional SFE Water Zone Distribution
(3) Balance from 03/30/2024 provided by City Staff
(4) Per discussions with City Staff and City files
(5) From allocation per City Staff; assumes 0% of new project costs funded through sources other than debt
(6) This assumes 100% of new project costs funded through new debt issues
(7) Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost
(8) Assumes new debt issued in equal annual amounts
(9) Estimated interest on future debt per discussions with City Staff
(10) Assumes new debt proceeds expended over a 2-year timeframe.
Non-debt funded capital expenditures allocated in equal annual amounts

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees
Debt Service and Expense Summary
Water Service Area Zone 2

I. New Debt Service Detail

Year	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7	Series 8	Series 9	Series 10	Total Annual New Debt Service
1	$ 1,579,134	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,579,134
2	1,579,134	1,579,134	-	-	-	-	-	-	-	-	3,158,267
3	1,579,134	1,579,134	1,579,134	-	-	-	-	-	-	-	4,737,401
4	1,579,134	1,579,134	1,579,134	1,579,134	-	-	-	-	-	-	6,316,534
5	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	-	-	-	-	-	7,895,668
6	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	-	-	-	-	9,474,802
7	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	-	-	-	11,053,935
8	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	-	-	12,633,069
9	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	-	14,212,202
10	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	15,791,336
11	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	15,791,336
12	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	15,791,336
13	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	15,791,336
14	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	15,791,336
15	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	15,791,336
16	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	15,791,336
17	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	15,791,336
18	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	15,791,336
19	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	15,791,336
20	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	15,791,336
21	-	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	14,212,202
22	-	-	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	12,633,069
23	-	-	-	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	11,053,935
24	-	-	-	-	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	9,474,802
25	-	-	-	-	-	1,579,134	1,579,134	1,579,134	1,579,134	1,579,134	7,895,668
26	-	-	-	-	-	-	1,579,134	1,579,134	1,579,134	1,579,134	6,316,534
27	-	-	-	-	-	-	-	1,579,134	1,579,134	1,579,134	4,737,401
28	-	-	-	-	-	-	-	-	1,579,134	1,579,134	3,158,267
29	-	-	-	-	-	-	-	-	-	1,579,134	1,579,134
	$ 31,582,672	$ 31,582,672	$ 31,582,672	$ 31,582,672	$ 31,582,672	$ 31,582,672	$ 31,582,672	$ 31,582,672	$ 31,582,672	$ 31,582,672	$ 315,826,720

II. Summary of Annual Expenses

Year	New Annual Debt Service[1]	Annual Capital Expenditures[2]	Annual Bond Proceeds[2]	Existing Annual Debt Service[3]	Annual Credit[4]	Total Expense
1	$ 1,579,134	$ 11,244,053	$ (21,851,930)	$ 1,403,354	$ (76,911)	$ (7,702,300)
2	3,158,267	22,170,018	(21,851,930)	1,403,354	(229,351)	4,650,358
3	4,737,401	22,170,018	(21,851,930)	1,403,354	(451,763)	6,007,079
4	6,316,534	22,170,018	(21,851,930)	1,403,354	(739,124)	7,298,852
5	7,895,668	22,170,018	(21,851,930)	1,403,354	(1,086,878)	8,530,232
6	9,474,802	22,170,018	(21,851,930)	1,403,354	(1,490,887)	9,705,356
7	11,053,935	22,170,018	(21,851,930)	1,403,354	(1,947,382)	10,827,995
8	12,633,069	22,170,018	(21,851,930)	1,403,354	(2,452,924)	11,901,587
9	14,212,202	22,170,018	(21,851,930)	1,403,354	(3,004,367)	12,929,278
10	15,791,336	33,095,984	(21,851,930)	1,403,354	(3,598,828)	24,839,915
11	15,791,336	-	-	1,403,354	-	17,194,690
12	15,791,336	-	-	1,403,354	-	17,194,690
13	15,791,336	-	-	1,403,354	-	17,194,690
14	15,791,336	-	-	1,403,354	-	17,194,690
15	15,791,336	-	-	1,403,354	-	17,194,690
16	15,791,336	-	-	1,403,354	-	17,194,690
17	15,791,336	-	-	1,403,354	-	17,194,690
18	15,791,336	-	-	1,403,354	-	17,194,690
19	15,791,336	-	-	1,403,354	-	17,194,690
20	15,791,336	-	-	1,403,354	-	17,194,690
21	14,212,202	-	-	-	-	14,212,202
22	12,633,069	-	-	-	-	12,633,069
23	11,053,935	-	-	-	-	11,053,935
24	9,474,802	-	-	-	-	9,474,802
25	7,895,668	-	-	-	-	7,895,668
26	6,316,534	-	-	-	-	6,316,534
27	4,737,401	-	-	-	-	4,737,401
28	3,158,267	-	-	-	-	3,158,267
29	1,579,134	-	-	-	-	1,579,134
	$315,826,720	$ 221,700,185	$ (218,519,305)	$ 28,067,078	$ (15,078,415)	$331,996,263

(1) Water Appendices - page 2 Section I
(2) Water Appendices - page 1
(3) Actual timing of payment varies. Calculated P&I above assumes City's estimated average cost of outstanding system debt and constant annual debt service payments.
(4) Water Appendices - page 6

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees

Revenue Test

Water Service Area Zone 2

Year	Impact Fee	Service Units	Impact Fee Revenue	Annual Expenses	Sub-Total	Accumulated Interest	Estimated Fund Balance
Initial							$ -
1	$ 12,139	2,173	$ 26,379,922	$ (7,702,300)	$ 34,082,223	$ 426,028	34,508,251
2	12,139	2,173	26,379,922	4,650,358	21,729,564	1,134,326	57,372,140
3	12,139	2,173	26,379,922	6,007,079	20,372,843	1,688,964	79,433,947
4	12,139	2,173	26,379,922	7,298,852	19,081,070	2,224,362	100,739,380
5	12,139	2,173	26,379,922	8,530,232	17,849,691	2,741,606	121,330,676
6	12,139	2,173	26,379,922	9,705,356	16,674,566	3,241,699	141,246,941
7	12,139	2,173	26,379,922	10,827,995	15,551,928	3,725,573	160,524,441
8	12,139	2,173	26,379,922	11,901,587	14,478,336	4,194,090	179,196,867
9	12,139	2,173	26,379,922	12,929,278	13,450,645	4,648,055	197,295,567
10	12,139	2,173	26,379,922	24,839,915	1,540,007	4,951,639	203,787,213
11	-	-	-	17,194,690	(17,194,690)	4,879,747	191,472,270
12	-	-	-	17,194,690	(17,194,690)	4,571,873	178,849,453
13	-	-	-	17,194,690	(17,194,690)	4,256,303	165,911,066
14	-	-	-	17,194,690	(17,194,690)	3,932,843	152,649,219
15	-	-	-	17,194,690	(17,194,690)	3,601,297	139,055,826
16	-	-	-	17,194,690	(17,194,690)	3,261,462	125,122,598
17	-	-	-	17,194,690	(17,194,690)	2,913,131	110,841,040
18	-	-	-	17,194,690	(17,194,690)	2,556,092	96,202,442
19	-	-	-	17,194,690	(17,194,690)	2,190,127	81,197,880
20	-	-	-	17,194,690	(17,194,690)	1,815,013	65,818,203
21	-	-	-	14,212,202	(14,212,202)	1,467,803	53,073,803
22	-	-	-	12,633,069	(12,633,069)	1,168,932	41,609,666
23	-	-	-	11,053,935	(11,053,935)	902,067	31,457,799
24	-	-	-	9,474,802	(9,474,802)	668,010	22,651,007
25	-	-	-	7,895,668	(7,895,668)	467,579	15,222,918
26	-	-	-	6,316,534	(6,316,534)	301,616	9,208,000
27	-	-	-	4,737,401	(4,737,401)	170,982	4,641,582
28	-	-	-	3,158,267	(3,158,267)	76,561	1,559,876
29	-	-	-	1,579,134	(1,579,134)	19,258	-
			263,799,224	331,996,263		68,197,039	

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Calculation

Water Service Area Zone 2

Year	Number of Years to End of Period	Future Value Escalation: Interest Rate Factor	Future Value Escalation: Recovery Fee Factor	Annual Service Units: Actual	Annual Service Units: Escalated	Annual Expense: Actual	Annual Expense: Escalated
1	29	2.0215	1.0000	2,173	4,393	$ (7,702,300)	$ (15,569,824)
2	28	1.9721	1.0000	2,173	4,286	4,650,358	9,171,193
3	27	1.9240	1.0000	2,173	4,181	6,007,079	11,557,899
4	26	1.8771	1.0000	2,173	4,079	7,298,852	13,700,810
5	25	1.8313	1.0000	2,173	3,980	8,530,232	15,621,712
6	24	1.7867	1.0000	2,173	3,883	9,705,356	17,340,252
7	23	1.7431	1.0000	2,173	3,788	10,827,995	18,874,180
8	22	1.7006	1.0000	2,173	3,695	11,901,587	20,239,560
9	21	1.6591	1.0000	2,173	3,605	12,929,278	21,450,954
10	20	1.6186	1.0000	2,173	3,517	24,839,915	40,206,714
11	19	1.5792	1.0000	-	-	17,194,690	27,153,071
12	18	1.5406	1.0000	-	-	17,194,690	26,490,801
13	17	1.5031	1.0000	-	-	17,194,690	25,844,684
14	16	1.4664	1.0000	-	-	17,194,690	25,214,326
15	15	1.4306	1.0000	-	-	17,194,690	24,599,342
16	14	1.3957	1.0000	-	-	17,194,690	23,999,358
17	13	1.3617	1.0000	-	-	17,194,690	23,414,008
18	12	1.3285	1.0000	-	-	17,194,690	22,842,935
19	11	1.2961	1.0000	-	-	17,194,690	22,285,790
20	10	1.2645	1.0000	-	-	17,194,690	21,742,234
21	9	1.2336	1.0000	-	-	14,212,202	17,532,641
22	8	1.2035	1.0000	-	-	12,633,069	15,204,458
23	7	1.1742	1.0000	-	-	11,053,935	12,979,416
24	6	1.1456	1.0000	-	-	9,474,802	10,853,867
25	5	1.1176	1.0000	-	-	7,895,668	8,824,282
26	4	1.0904	1.0000	-	-	6,316,534	6,887,244
27	3	1.0638	1.0000	-	-	4,737,401	5,039,447
28	2	1.0378	1.0000	-	-	3,158,267	3,277,689
29	1	1.0125	1.0000	-	-	1,579,134	1,598,873
					39,407		$ 478,377,917

Annual Interest Rate:		2.50%
Present Value of Initial Impact Fee Fund Balance	$	-
Total Escalated Expense for Entire Period	$	478,377,917
Less Future Value of Initial Impact Fee Fund Balance		-
Sub-Total	$	478,377,917
Total Escalated Service Units		39,407
Impact Fee for Water Service Area	**$**	**12,139**

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Project Funding

Water Service Area Zone 2

Impact Fee Project Name[1]	Cost In Service Area [1]	Impact Fee Recoverable Cost[1]	Debt Funded[2] Existing	Debt Funded[2] Proposed	Non-Debt Funded[2]	Impact Fee Recoverable Cost
Lake Ray Roberts	$ 63,127,116	$ 6,312,712	$ 6,312,712	$ -	$ -	$ 6,312,712
54" Finished Water Transmission Line	3,949,012	2,251,307	2,251,307	-	-	2,251,307
Loop 288 Water Main - Sherman to UNT	1,796,085	1,167,455	1,167,455	-	-	1,167,455
Southwest Pump Station	2,511,285	1,255,643	1,255,643	-	-	1,255,643
Southwest PS Oversize Discharge Line (30" to 36")	120,839	49,455	49,455	-	-	49,455
Roselawn Elevated Storage Tank	2,593,930	691,715	691,715	-	-	691,715
Roselawn Water Line	763,479	76,348	76,348	-	-	76,348
Southwest Elevated Storage Tank	2,298,165	57,454	57,454	-	-	57,454
Allred Road / John Paine Road Water Lines	2,518,930	863,633	222,826	-	640,807	863,633
Northwest Booster Pump Station	6,190,688	5,238,274	3,261,821	-	1,976,453	5,238,274
36" Northwest Water Line	6,280,528	3,985,720	3,463,278	-	522,442	3,985,720
Lake Ray Roberts WTP Rerate to 30 MGD	16,991,098	16,991,098	-	16,991,098	-	16,991,098
Lake Ray Roberts WTP 20 MGD Expansion to 50 MGD	83,190,538	83,190,538	-	83,190,538	-	83,190,538
42" Jim Christal EST Transmission Main	5,083,320	4,130,197	-	4,130,197	-	4,130,197
24/30" West Allred Rd Transmission Main Oversize	315,185	315,185	-	315,185	-	315,185
16" Ponder Water Line	4,326,000	2,249,520	-	2,249,520	-	2,249,520
24/30" Rosebrook/Sanctuary Transmission Main	59,702,000	37,811,267	-	37,811,267	-	37,811,267
24" Rosebrook Transmission Main	4,005,651	2,403,391	-	2,403,391	-	2,403,391
24" North/South Transmission Main	9,945,314	8,619,272	-	8,619,272	-	8,619,272
12" Old Stoney Rd Water Line	3,824,000	994,240	-	994,240	-	994,240
12" Rosebrook Water Line	4,669,000	1,494,080	-	1,494,080	-	1,494,080
Lake Ray Roberts HSPS Improvements Phase 1	2,349,019	2,349,019	-	2,349,019	-	2,349,019
Lake Ray Roberts WTP 54/60" Transmission Main	50,108,446	29,298,408	-	29,298,408	-	29,298,408
Lake Ray Roberts WTP 10 MGD Expansion to 60 MGD	41,595,269	4,159,527	-	4,159,527	-	4,159,527
24/48" Loop 288 Transmission Main	28,456,296	16,638,396	-	16,638,396	-	16,638,396
Lake Ray Roberts HSPS Improvements Phase 2	2,349,019	810,800	-	810,800	-	810,800
Southwest PS Improvements	4,284,730	1,064,366	-	1,064,366	-	1,064,366
20" Ponder Farms Transmission Main	4,500,000	4,500,000	-	4,500,000	-	4,500,000
12" Webster Meadows Transmission Main	1,500,000	1,500,000	-	1,500,000	-	1,500,000
Water Impact Fee Report Preparation	41,177	41,177	-	-	41,177	41,177
Total	$ 419,386,122	$ 240,510,198	$ 18,810,013	$ 218,519,305	$ 3,180,880	$ 240,510,198

(1) Derived from Table 2.1 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost for Zone 2

(2) Per discussions with City staff and City files

City of Denton - 2024 Water Impact Fee Update

Capital Improvement Plan for Impact Fees
Credit Determination
Water Service Area Zone 2

2024 Service Units[1]	82,096
Ten Year Growth in Service Units[2]	21,731
	10 years
Annual Growth in Service Units	2,173

	1	2	3	4	5	6	7	8	9	10	Total
Debt Service for Debt Funded Projects Eligible for Impact Fees[3]	$2,982,488	$4,561,621	$6,140,755	$ 7,719,888	$ 9,299,022	$ 10,878,156	$ 12,457,289	$ 14,036,423	$ 15,615,556	$ 17,194,690	$ 100,885,887
Net Impact Fee Eligible Debt Service Funded by Other Sources	$2,982,488	$4,561,621	$6,140,755	$ 7,719,888	$ 9,299,022	$ 10,878,156	$ 12,457,289	$ 14,036,423	$ 15,615,556	$ 17,194,690	$ 100,885,887
Current Service Units	84,269	86,442	88,615	90,788	92,961	95,134	97,308	99,481	101,654	103,827	
Total Net Impact Fee Eligible Debt Service Funded by Other Sources per Service Unit	$ 35.39	$ 52.77	$ 69.30	$ 85.03	$ 100.03	$ 114.35	$ 128.02	$ 141.10	$ 153.62	$ 165.61	
Annual Growth in Service Units (Cumulative)	2,173	4,346	6,519	8,692	10,865	13,038	15,212	17,385	19,558	21,731	
Annual Water Rate Revenue Generated by Service Unit for Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 76,911	$ 229,351	$ 451,763	$ 739,124	$ 1,086,878	$ 1,490,887	$ 1,947,382	$ 2,452,924	$ 3,004,367	$ 3,598,828	$ 15,078,415

Credit Amount **$ 15,078,415**

(1) Derived from Table 2.5 10-year Additional Single-Family Equivalent Calculation
(2) Derived from Table 2.6 10-year Additional SFE Water Zone Distribution
(3) Water Appendices - page 2 Section II

APPENDIX

WASTEWATER FINANCIAL ANALYSIS

City of Denton - 2024 Wastewater Impact Fee Update
Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Wastewater Service Area Pecan Creek

0	Existing Fund Balance	$ -
1	Existing Number of Service Units Over Entire City	82,096
2	Additional Service Units Added During Planning Period In the Service Area	7,616
3	Total Cost of the Wastewater Impact Fee CIP	$ 294,802,074
4	Recoverable Cost for Impact Fee Planning Period	$ 69,883,844
5	Percent Recoverable for Wastewater Impact Fee Planning Period (Line 4 / Line 3)	23.71%
6	Financing Costs (From Financial Analysis)	$ 34,160,000
7	Interest Earnings (From Financial Analysis)	$ (13,234,573)
8	Recoverable Cost of Wastewater Impact Fee and Financing Costs Less Balance (Line 5 + Line 7 + Line 8 - Line 0)	$ 90,809,272
9	Pre-Credit Maximum Fee (Line 8 / Line 2)	$ 11,923
10	Credit for Utility Revenues (From Financial Analysis)	$ (2,347,057)
11	Recoverable Cost of Wastewater Impact Fee and Financing (Line 8 + Line 10)	$ 88,462,214
12	Maximum Assessable Fee (Line 11 / Line 2)	$ 11,615

SUMMARY OF WASTEWATER IMPACT FEE DETERMINATION

Wastewater Service Area: Pecan Creek

Recoverable Impact Fee CIP Costs	$	69,883,844	Table 3.1
Financing Cost		34,160,000	See Detail Below
Existing Fund Balance		-	Wastewater Appendices - page 1
Interest Earnings		(13,234,573)	Wastewater Appendices - page 3
Pre Credit Recoverable Cost for Impact Fee	$	90,809,271	Sum of Above
Credit for Utility Revenues		(2,347,057)	Wastewater Appendices - page 6
Maximum Recoverable Cost for Impact Fee	**$**	**88,462,214**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees.
Reference is Table 3.1 Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

Financing Costs:

Represents the interest costs associated with debt financing the new impact fee project costs. Interest costs are derived from existing debt issues and forecasted debt issues.

New Annual Debt Service	$	19,678,504	Wastewater Appendices - page 2
Existing Annual Debt Service		84,255,782	Wastewater Appendices - page 2
Principal Component (New and Existing Debt)		(69,774,285)	Wastewater Appendices - page 1
Financing Costs	$	34,160,000	

Existing Fund Balance:

Represents impact fee revenue collected but not yet expended. Some projects that are included in the 2018 Impact Fee Update were also included in prior Impact Fee Updates.
To avoid charging twice for the same project, the impact fee revenues collected but yet to be expended (i.e. fund balance) are credited against the recoverable costs. Reference is page 1 of Wastewater Appendices.

Interest Earnings

Represents the interest earned on cash flows and assumes a 1.89% annual interest rate.
The Impact Fee Statute states that interest earnings are funds of the impact fee account and are held to the same restrictions as impact fee revenues. Therefore in order to recognize that interest earnings are used to fund capital improvements, interest earnings are credited against the recoverable costs.
Reference is the sum of Accumulated Interest on page 3 of Wastewater Appendices.

Pre Credit Recoverable Cost for Impact Fee

Represents Recoverable Impact Fee CIP Costs plus Financing Costs less Existing Fund Balance and Interest Earnings.

Credit for Utility Revenues

In 2001, the Impact Fee Statute was amended to include a credit for ad valorem and utility revenues generated by new service units during the ten-year timeframe that are used to fund impact fee eligible projects for which the new service units were charged an impact fee. The intent of this amendment is to avoid double-charging the new service units for impact fee capital improvements. The credit recognizes utility revenues used to fund the debt service of debt financed impact fee eligible projects. Reference is page 6 of Wastewater Appendices.

Maximum Recoverable Cost for Impact Fee:

Represents Pre Credit Recoverable Cost for Impact Fee less Credit for Utility Revenues.
This is the maximum cost that can be recovered through impact fees.

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Wastewater Service Area: Pecan Creek

I. General Assumptions

Annual Interest Rate on Deposits[1]	2.50%
Annual Service Unit Growth[2]	762
Existing Fund Balance[3]	$ -

Portion of Projects Funded by Existing Debt[4]	$ 56,158,803
Non-debt Funded Project Cost[5]	109,559
New Project Cost Funded Through New Debt[6]	13,615,482
Total Recoverable Project Cost[7]	$ 69,883,844

II. New Debt Issues Assumptions

Year	Principal[8]	Interest[9]	Term
1	$ 1,361,548	3.80%	20
2	1,361,548	3.80%	20
3	1,361,548	3.80%	20
4	1,361,548	3.80%	20
5	1,361,548	3.80%	20
6	1,361,548	3.80%	20
7	1,361,548	3.80%	20
8	1,361,548	3.80%	20
9	1,361,548	3.80%	20
10	1,361,548	3.80%	20
Total	$ 13,615,482		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[10]
1	$ 691,730
2	1,372,504
3	1,372,504
4	1,372,504
5	1,372,504
6	1,372,504
7	1,372,504
8	1,372,504
9	1,372,504
10	2,053,278
Total	$ 13,725,041

(1) Per discussions with City Staff
(2) Derived from Table 3.3 10-year Additional Single-Family Equivalent Calculation
(3) Balance from 03/30/2024 provided by City Staff
(4) Per discussions with City Staff and City files
(5) From allocation per City Staff; assumes 0% of new project costs funded through sources other than debt
(6) This assumes 100% of new project costs funded through new debt issues
(7) Table 3.1 Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost
(8) Assumes new debt issued in equal annual amounts
(9) Estimated interest on future debt per discussions with City Staff
(10) Assumes new debt proceeds expended over a 2-year timeframe.
Non-debt funded capital expenditures allocated in equal annual amounts

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees
Debt Service and Expense Summary
Wastewater Service Area: Pecan Creek

I. New Debt Service Detail

Year	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7	Series 8	Series 9	Series 10	Total Annual New Debt Service
1	$ 98,393	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 98,393
2	98,393	98,393	-	-	-	-	-	-	-	-	196,785
3	98,393	98,393	98,393	-	-	-	-	-	-	-	295,178
4	98,393	98,393	98,393	98,393	-	-	-	-	-	-	393,570
5	98,393	98,393	98,393	98,393	98,393	-	-	-	-	-	491,963
6	98,393	98,393	98,393	98,393	98,393	98,393	-	-	-	-	590,355
7	98,393	98,393	98,393	98,393	98,393	98,393	98,393	-	-	-	688,748
8	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	-	-	787,140
9	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	-	885,533
10	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	983,925
11	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	983,925
12	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	983,925
13	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	983,925
14	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	983,925
15	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	983,925
16	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	983,925
17	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	983,925
18	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	983,925
19	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	983,925
20	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	983,925
21	-	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	885,533
22	-	-	98,393	98,393	98,393	98,393	98,393	98,393	98,393	98,393	787,140
23	-	-	-	98,393	98,393	98,393	98,393	98,393	98,393	98,393	688,748
24	-	-	-	-	98,393	98,393	98,393	98,393	98,393	98,393	590,355
25	-	-	-	-	-	98,393	98,393	98,393	98,393	98,393	491,963
26	-	-	-	-	-	-	98,393	98,393	98,393	98,393	393,570
27	-	-	-	-	-	-	-	98,393	98,393	98,393	295,178
28	-	-	-	-	-	-	-	-	98,393	98,393	196,785
29	-	-	-	-	-	-	-	-	-	98,393	98,393
	$ 1,967,850	$ 1,967,850	$ 1,967,850	$ 1,967,850	$ 1,967,850	$ 1,967,850	$ 1,967,850	$ 1,967,850	$ 1,967,850	$ 1,967,850	$ 19,678,504

II. Summary of Annual Expenses

Year	New Annual Debt Service[1]	Annual Capital Expenditures[2]	Annual Bond Proceeds[2]	Existing Annual Debt Service[3]	Annual Credit[4]	Total Expense
1	$ 98,393	$ 691,730	$ (1,361,548)	$ 4,212,789	$ (39,628)	$ 3,601,735
2	196,785	1,372,504	(1,361,548)	4,212,789	(80,326)	4,340,204
3	295,178	1,372,504	(1,361,548)	4,212,789	(122,066)	4,396,856
4	393,570	1,372,504	(1,361,548)	4,212,789	(164,820)	4,452,495
5	491,963	1,372,504	(1,361,548)	4,212,789	(208,560)	4,507,148
6	590,355	1,372,504	(1,361,548)	4,212,789	(253,260)	4,560,840
7	688,748	1,372,504	(1,361,548)	4,212,789	(298,896)	4,613,596
8	787,140	1,372,504	(1,361,548)	4,212,789	(345,444)	4,665,442
9	885,533	1,372,504	(1,361,548)	4,212,789	(392,879)	4,716,399
10	983,925	2,053,278	(1,361,548)	4,212,789	(441,179)	5,447,265
11	983,925	-	-	4,212,789	-	5,196,714
12	983,925	-	-	4,212,789	-	5,196,714
13	983,925	-	-	4,212,789	-	5,196,714
14	983,925	-	-	4,212,789	-	5,196,714
15	983,925	-	-	4,212,789	-	5,196,714
16	983,925	-	-	4,212,789	-	5,196,714
17	983,925	-	-	4,212,789	-	5,196,714
18	983,925	-	-	4,212,789	-	5,196,714
19	983,925	-	-	4,212,789	-	5,196,714
20	983,925	-	-	4,212,789	-	5,196,714
21	885,533	-	-	-	-	885,533
22	787,140	-	-	-	-	787,140
23	688,748	-	-	-	-	688,748
24	590,355	-	-	-	-	590,355
25	491,963	-	-	-	-	491,963
26	393,570	-	-	-	-	393,570
27	295,178	-	-	-	-	295,178
28	196,785	-	-	-	-	196,785
29	98,393	-	-	-	-	98,393
	$ 19,678,504	$ 13,725,041	$ (13,615,482)	$ 84,255,782	$ (2,347,057)	$ 101,696,787

(1) Wastewater Appendices - page 2 Section I
(2) Wastewater Appendices - page 1
(3) Actual timing of payment varies. Calculated P&I above assumes City's estimated average cost of outstanding system debt and constant annual debt service payments.
(4) Wastewater Appendices - page 6

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Revenue Test

Wastewater Service Area: Pecan Creek

Year	Impact Fee	Service Units	Impact Fee Revenue	Annual Expenses	Sub-Total	Accumulated Interest	Estimated Fund Balance
Initial							$ -
1	$ 11,615	762	$ 8,846,221	$ 3,601,735	$ 5,244,486	$ 65,556	5,310,042
2	11,615	762	8,846,221	4,340,204	4,506,018	189,076	10,005,136
3	11,615	762	8,846,221	4,396,856	4,449,365	305,745	14,760,247
4	11,615	762	8,846,221	4,452,495	4,393,726	423,928	19,577,900
5	11,615	762	8,846,221	4,507,148	4,339,074	543,686	24,460,660
6	11,615	762	8,846,221	4,560,840	4,285,382	665,084	29,411,125
7	11,615	762	8,846,221	4,613,596	4,232,625	788,186	34,431,936
8	11,615	762	8,846,221	4,665,442	4,180,780	913,058	39,525,774
9	11,615	762	8,846,221	4,716,399	4,129,822	1,039,767	44,695,364
10	11,615	762	8,846,221	5,447,265	3,398,956	1,159,871	49,254,191
11	-	-	-	5,196,714	(5,196,714)	1,166,396	45,223,873
12	-	-	-	5,196,714	(5,196,714)	1,065,638	41,092,796
13	-	-	-	5,196,714	(5,196,714)	962,361	36,858,443
14	-	-	-	5,196,714	(5,196,714)	856,502	32,518,231
15	-	-	-	5,196,714	(5,196,714)	747,997	28,069,513
16	-	-	-	5,196,714	(5,196,714)	636,779	23,509,578
17	-	-	-	5,196,714	(5,196,714)	522,781	18,835,644
18	-	-	-	5,196,714	(5,196,714)	405,932	14,044,862
19	-	-	-	5,196,714	(5,196,714)	286,163	9,134,310
20	-	-	-	5,196,714	(5,196,714)	163,399	4,100,995
21	-	-	-	885,533	(885,533)	91,456	3,306,918
22	-	-	-	787,140	(787,140)	72,834	2,592,612
23	-	-	-	688,748	(688,748)	56,206	1,960,070
24	-	-	-	590,355	(590,355)	41,622	1,411,337
25	-	-	-	491,963	(491,963)	29,134	948,508
26	-	-	-	393,570	(393,570)	18,793	573,731
27	-	-	-	295,178	(295,178)	10,654	289,207
28	-	-	-	196,785	(196,785)	4,770	97,193
29	-	-	-	98,393	(98,393)	1,200	-
			88,462,214	101,696,787		13,234,573	

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Calculation

Wastewater Service Area: Pecan Creek

Year	Number of Years to End of Period	Future Value Escalation: Interest Rate Factor	Future Value Escalation: Recovery Fee Factor	Annual Service Units: Actual	Annual Service Units: Escalated	Annual Expense: Actual	Annual Expense: Escalated
1	29	2.0215	1.0000	762	1,540	$ 3,601,735	$ 7,280,733
2	28	1.9721	1.0000	762	1,502	4,340,204	8,559,522
3	27	1.9240	1.0000	762	1,465	4,396,856	8,459,755
4	26	1.8771	1.0000	762	1,430	4,452,495	8,357,861
5	25	1.8313	1.0000	762	1,395	4,507,148	8,254,098
6	24	1.7867	1.0000	762	1,361	4,560,840	8,148,708
7	23	1.7431	1.0000	762	1,328	4,613,596	8,041,918
8	22	1.7006	1.0000	762	1,295	4,665,442	7,933,941
9	21	1.6591	1.0000	762	1,264	4,716,399	7,824,974
10	20	1.6186	1.0000	762	1,233	5,447,265	8,817,125
11	19	1.5792	1.0000	-	-	5,196,714	8,206,415
12	18	1.5406	1.0000	-	-	5,196,714	8,006,258
13	17	1.5031	1.0000	-	-	5,196,714	7,810,983
14	16	1.4664	1.0000	-	-	5,196,714	7,620,472
15	15	1.4306	1.0000	-	-	5,196,714	7,434,607
16	14	1.3957	1.0000	-	-	5,196,714	7,253,275
17	13	1.3617	1.0000	-	-	5,196,714	7,076,366
18	12	1.3285	1.0000	-	-	5,196,714	6,903,771
19	11	1.2961	1.0000	-	-	5,196,714	6,735,387
20	10	1.2645	1.0000	-	-	5,196,714	6,571,109
21	9	1.2336	1.0000	-	-	885,533	1,092,422
22	8	1.2035	1.0000	-	-	787,140	947,358
23	7	1.1742	1.0000	-	-	688,748	808,720
24	6	1.1456	1.0000	-	-	590,355	676,282
25	5	1.1176	1.0000	-	-	491,963	549,823
26	4	1.0904	1.0000	-	-	393,570	429,130
27	3	1.0638	1.0000	-	-	295,178	313,997
28	2	1.0378	1.0000	-	-	196,785	204,226
29	1	1.0125	1.0000	-	-	98,393	99,622
					13,811		$ 160,418,856

Annual Interest Rate:		2.50%
Present Value of Initial Impact Fee Fund Balance	$	-
Total Escalated Expense for Entire Period	$	160,418,856
Less Future Value of Initial Impact Fee Fund Balance		-
Sub-Total	$	160,418,856
Total Escalated Service Units		13,811
Impact Fee for Wastewater Service Area	**$**	**11,615**

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Project Funding

Wastewater Service Area: Pecan Creek

Impact Fee Project Name[1]	Cost In Service Area [1]	Impact Fee Recoverable Cost[1]	Debt Funded[2] Existing	Debt Funded[2] Proposed	Non-Debt Funded[2]	Impact Fee Recoverable Cost
Cooper Creek Interceptor III	$ 1,277,970	$ 26,887	$ 26,887	$ -	$ -	$ 26,887
Cooper Creek Outfall (Loop 288)	3,898,807	411,553	411,553	-	-	411,553
Graveyard Branch Interceptor	5,004,952	484,130	484,130	-	-	484,130
Pecan Creek Interceptor (Ph 1 & 2)	3,363,189	257,047	257,047	-	-	257,047
Pecan Creek Interceptor I	1,975,672	123,815	123,815	-	-	123,815
Pecan Creek Interceptor II	1,862,175	103,913	103,913	-	-	103,913
Pecan Creek Interceptor III	3,079,149	172,497	172,497	-	-	172,497
Pecan Creek Interceptor IV	978,285	77,121	77,121	-	-	77,121
Pecan WRP Expansion (6 MGD)	30,005,125	25,004,271	25,004,271	-	-	25,004,271
Cooper Creek Interceptor I	2,632,000	309,649	266,084	-	43,565	309,649
Cooper Creek Interceptor II	1,128,000	113,537	97,563	-	15,974	113,537
PCWRP Headworks Facility	56,260,000	12,333,923	12,333,923	-	-	12,333,923
PCWRP 5.0 MGD Expansion to 26 MGD	120,000,000	16,800,000	16,800,000	-	-	16,800,000
North Loop 288 Sewer Line (12"- 15")	7,980,000	1,750,452	-	1,750,452	-	1,750,452
Mingo Road Sewer Line (12")	4,380,000	2,580,649	-	2,580,649	-	2,580,649
Lakeview Interceptor Replacement (24" - 30")	2,367,000	399,875	-	399,875	-	399,875
Lakeview South Lift Station	8,300,000	2,191,051	-	2,191,051	-	2,191,051
Grissom Sewer Line (15")	2,960,000	927,382	-	927,382	-	927,382
Lakeview Ranch Sewer Line (24")	5,820,000	1,009,502	-	1,009,502	-	1,009,502
United Copper Sewer Line (12"-24")	9,500,000	1,193,632	-	1,193,632	-	1,193,632
Cooper Creek Sewer Line Replacement (18"- 24")	3,590,000	147,710	-	147,710	-	147,710
Pecan Creek Interceptor Replacement (36")	3,890,000	1,349,783	-	1,349,783	-	1,349,783
Stella Hills Lift Station, Force Main, and Onsite Sewer Line Oversize	4,934,730	639,957	-	639,957	-	639,957
East McKinney Sreet Sewer Line (15" - 21")	3,180,000	473,921	-	473,921	-	473,921
North Trinity Lift Station and Force Main Oversize	5,858,000	873,029	-	873,029	-	873,029
North Trinity Road Sewer Line Oversize (15")	527,000	78,540	-	78,540	-	78,540
Wastewater Impact Fee Report Preparation	50,020	50,020	-	-	50,020	50,020
Total	$ 294,802,074	$ 69,883,844	$ 56,158,803	$ 13,615,482	$ 109,559	$ 69,883,844

(1) Table 3.1 Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

(2) Per discussions with City staff and City files

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees
Credit Determination
Wastewater Service Area: Pecan Creek

2024 Service Units[1]	82,096	
Ten Year Growth in Service Units[1]	7,616	
	10	years
Annual Growth in Service Units	762	

	1	2	3	4	5	6	7	8	9	10	Total
Debt Service for Debt Funded Projects Eligible for Impact Fees[2]	$ 4,311,182	$ 4,409,574	$ 4,507,967	$ 4,606,359	$ 4,704,752	$ 4,803,144	$ 4,901,537	$ 4,999,929	$ 5,098,322	$ 5,196,714	$ 47,539,479
Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 4,311,182	$ 4,409,574	$ 4,507,967	$ 4,606,359	$ 4,704,752	$ 4,803,144	$ 4,901,537	$ 4,999,929	$ 5,098,322	$ 5,196,714	$ 47,539,479
Current Service Units	82,858	83,619	84,381	85,142	85,904	86,666	87,427	88,189	88,951	89,712	
Total Net Impact Fee Eligible Debt Service Funded by Other Sources per Service Unit	$ 52.03	$ 52.73	$ 53.42	$ 54.10	$ 54.77	$ 55.42	$ 56.06	$ 56.70	$ 57.32	$ 57.93	
Annual Growth in Service Units (Cumulative)	762	1,523	2,285	3,046	3,808	4,570	5,331	6,093	6,855	7,616	
Service Unit for Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 39,628	$ 80,326	$ 122,066	$ 164,820	$ 208,560	$ 253,260	$ 298,896	$ 345,444	$ 392,879	$ 441,179	$ 2,347,057

Credit Amount **$ 2,347,057**

(1) Derived from Table 3.3 10-year Additional Single-Family Equivalent Calculation
(2) Wastewater Appendices - page 2 Section II

City of Denton - 2024 Wastewater Impact Fee Update
Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Wastewater Service Area

0	Existing Fund Balance	$ -
1	Existing Number of Service Units Over Entire City	82,096
2	Additional Service Units Added During Planning Period In the Service Area	35,412
3	Total Cost of the Wastewater Impact Fee CIP	$ 685,550,867
4	Recoverable Cost for Impact Fee Planning Period	$ 426,546,589
5	Percent Recoverable for Wastewater Impact Fee Planning Period (Line 4 / Line 3)	62.22%
6	Financing Costs (From Financial Analysis)	$ 190,088,853
7	Interest Earnings (From Financial Analysis)	$ (124,870,363)
8	Recoverable Cost of Wastewater Impact Fee and Financing Costs Less Balance (Line 5 + Line 7 + Line 8 - Line 0)	$ 491,765,079
9	Pre-Credit Maximum Fee (Line 8 / Line 2)	$ 13,887
10	Credit for Utility Revenues (From Financial Analysis)	$ (38,817,845)
11	Recoverable Cost of Wastewater Impact Fee and Financing (Line 8 + Line 10)	$ 452,947,234
12	Maximum Assessable Fee (Line 11 / Line 2)	$ 12,791

SUMMARY OF WASTEWATER IMPACT FEE DETERMINATION

Wastewater Service Area: Hickory Creek

Recoverable Impact Fee CIP Costs	$	426,546,589	Table 3.1
Financing Cost		190,088,853	See Detail Below
Existing Fund Balance		-	Wastewater Appendices - page 1
Interest Earnings		(124,870,363)	Wastewater Appendices - page 3
Pre Credit Recoverable Cost for Impact Fee	$	491,765,079	Sum of Above
Credit for Utility Revenues		(38,817,845)	Wastewater Appendices - page 6
Maximum Recoverable Cost for Impact Fee	**$**	**452,947,234**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees.
Reference is Table 3.1 Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

Financing Costs:

Represents the interest costs associated with debt financing the new impact fee project costs. Interest costs are derived from existing debt issues and forecasted debt issues.

New Annual Debt Service	$	599,911,952	Wastewater Appendices - page 2
Existing Annual Debt Service		15,754,514	Wastewater Appendices - page 2
Principal Component (New and Existing Debt)		(425,577,613)	Wastewater Appendices - page 1
Financing Costs	$	190,088,853	

Existing Fund Balance:

Represents impact fee revenue collected but not yet expended. Some projects that are included in the 2018 Impact Fee Update were also included in prior Impact Fee Updates.
To avoid charging twice for the same project, the impact fee revenues collected but yet to be expended (i.e. fund balance) are credited against the recoverable costs. Reference is page 1 of Wastewater Appendices.

Interest Earnings

Represents the interest earned on cash flows and assumes a 1.89% annual interest rate.
The Impact Fee Statute states that interest earnings are funds of the impact fee account and are held to the same restrictions as impact fee revenues. Therefore in order to recognize that interest earnings are used to fund capital improvements, interest earnings are credited against the recoverable costs.
Reference is the sum of Accumulated Interest on page 3 of Wastewater Appendices.

Pre Credit Recoverable Cost for Impact Fee

Represents Recoverable Impact Fee CIP Costs plus Financing Costs less Existing Fund Balance and Interest Earnings.

Credit for Utility Revenues

In 2001, the Impact Fee Statute was amended to include a credit for ad valorem and utility revenues generated by new service units during the ten-year timeframe that are used to fund impact fee eligible projects for which the new service units were charged an impact fee. The intent of this amendment is to avoid double-charging the new service units for impact fee capital improvements. The credit recognizes utility revenues used to fund the debt service of debt financed impact fee eligible projects. Reference is page 6 of Wastewater Appendices.

Maximum Recoverable Cost for Impact Fee:

Represents Pre Credit Recoverable Cost for Impact Fee less Credit for Utility Revenues.
This is the maximum cost that can be recovered through impact fees.

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Wastewater Service Area: Hickory Creek

I. General Assumptions

Annual Interest Rate on Deposits[1]	2.50%
Annual Service Unit Growth[2]	3,541
Existing Fund Balance[3]	$ -

Portion of Projects Funded by Existing Debt[4]	$ 10,500,818
Non-debt Funded Project Cost[5]	968,975
New Project Cost Funded Through New Debt[6]	415,076,795
Total Recoverable Project Cost[7]	$ 426,546,589

II. New Debt Issues Assumptions

Year	Principal[8]	Interest[9]	Term
1	$ 41,507,680	3.80%	20
2	41,507,680	3.80%	20
3	41,507,680	3.80%	20
4	41,507,680	3.80%	20
5	41,507,680	3.80%	20
6	41,507,680	3.80%	20
7	41,507,680	3.80%	20
8	41,507,680	3.80%	20
9	41,507,680	3.80%	20
10	41,507,680	3.80%	20
Total	$ 415,076,795		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[10]
1	$ 20,850,737
2	41,604,577
3	41,604,577
4	41,604,577
5	41,604,577
6	41,604,577
7	41,604,577
8	41,604,577
9	41,604,577
10	62,358,417
Total	$ 416,045,771

(1) Per discussions with City Staff
(2) Derived from Table 3.3 10-year Additional Service Units by Service Area
(3) Balance from 03/30/2024 provided by City Staff
(4) Per discussions with City Staff and City files
(5) From allocation per City Staff; assumes 0% of new project costs funded through sources other than debt
(6) This assumes 100% of new project costs funded through new debt issues
(7) Table 3.1 Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost
(8) Assumes new debt issued in equal annual amounts
(9) Estimated interest on future debt per discussions with City Staff
(10) Assumes new debt proceeds expended over a 2-year timeframe.
Non-debt funded capital expenditures allocated in equal annual amounts

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees
Debt Service and Expense Summary
Wastewater Service Area: Hickory Creek

I. New Debt Service Detail

Year	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7	Series 8	Series 9	Series 10	Total Annual New Debt Service
1	$ 2,999,560	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,999,560
2	2,999,560	2,999,560	-	-	-	-	-	-	-	-	5,999,120
3	2,999,560	2,999,560	2,999,560	-	-	-	-	-	-	-	8,998,679
4	2,999,560	2,999,560	2,999,560	2,999,560	-	-	-	-	-	-	11,998,239
5	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	-	-	-	-	-	14,997,799
6	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	-	-	-	-	17,997,359
7	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	-	-	-	20,996,918
8	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	-	-	23,996,478
9	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	-	26,996,038
10	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	29,995,598
11	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	29,995,598
12	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	29,995,598
13	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	29,995,598
14	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	29,995,598
15	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	29,995,598
16	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	29,995,598
17	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	29,995,598
18	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	29,995,598
19	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	29,995,598
20	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	29,995,598
21	-	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	26,996,038
22	-	-	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	23,996,478
23	-	-	-	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	20,996,918
24	-	-	-	-	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	17,997,359
25	-	-	-	-	-	2,999,560	2,999,560	2,999,560	2,999,560	2,999,560	14,997,799
26	-	-	-	-	-	-	2,999,560	2,999,560	2,999,560	2,999,560	11,998,239
27	-	-	-	-	-	-	-	2,999,560	2,999,560	2,999,560	8,998,679
28	-	-	-	-	-	-	-	-	2,999,560	2,999,560	5,999,120
29	-	-	-	-	-	-	-	-	-	2,999,560	2,999,560
	$ 59,991,195	$ 59,991,195	$ 59,991,195	$ 59,991,195	$ 59,991,195	$ 59,991,195	$ 59,991,195	$ 59,991,195	$ 59,991,195	$ 59,991,195	$ 599,911,952

II. Summary of Annual Expenses

Year	New Annual Debt Service[1]	Annual Capital Expenditures[2]	Annual Bond Proceeds[2]	Existing Annual Debt Service[3]	Annual Credit[4]	Total Expense
1	$ 2,999,560	$ 20,850,737	$ (41,507,680)	$ 787,726	$ (156,607)	$ (17,026,264)
2	5,999,120	41,604,577	(41,507,680)	787,726	(538,993)	6,344,749
3	8,998,679	41,604,577	(41,507,680)	787,726	(1,121,291)	8,762,012
4	11,998,239	41,604,577	(41,507,680)	787,726	(1,881,437)	11,001,426
5	14,997,799	41,604,577	(41,507,680)	787,726	(2,800,500)	13,081,922
6	17,997,359	41,604,577	(41,507,680)	787,726	(3,862,143)	15,019,838
7	20,996,918	41,604,577	(41,507,680)	787,726	(5,052,196)	16,829,345
8	23,996,478	41,604,577	(41,507,680)	787,726	(6,358,305)	18,522,796
9	26,996,038	41,604,577	(41,507,680)	787,726	(7,769,652)	20,111,009
10	29,995,598	62,358,417	(41,507,680)	787,726	(9,276,721)	42,357,339
11	29,995,598	-	-	787,726	-	30,783,323
12	29,995,598	-	-	787,726	-	30,783,323
13	29,995,598	-	-	787,726	-	30,783,323
14	29,995,598	-	-	787,726	-	30,783,323
15	29,995,598	-	-	787,726	-	30,783,323
16	29,995,598	-	-	787,726	-	30,783,323
17	29,995,598	-	-	787,726	-	30,783,323
18	29,995,598	-	-	787,726	-	30,783,323
19	29,995,598	-	-	787,726	-	30,783,323
20	29,995,598	-	-	787,726	-	30,783,323
21	26,996,038	-	-	-	-	26,996,038
22	23,996,478	-	-	-	-	23,996,478
23	20,996,918	-	-	-	-	20,996,918
24	17,997,359	-	-	-	-	17,997,359
25	14,997,799	-	-	-	-	14,997,799
26	11,998,239	-	-	-	-	11,998,239
27	8,998,679	-	-	-	-	8,998,679
28	5,999,120	-	-	-	-	5,999,120
29	2,999,560	-	-	-	-	2,999,560
	$ 599,911,952	$ 416,045,771	$ (415,076,795)	$ 15,754,514	$ (38,817,845)	$ 577,817,596

(1) Wastewater Appendices - page 2 Section I
(2) Wastewater Appendices - page 1
(3) Actual timing of payment varies. Calculated P&I above assumes City's estimated average cost of outstanding system debt and constant annual debt service payments.
(4) Wastewater Appendices - page 6

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Revenue Test

Wastewater Service Area: Hickory Creek

Year	Impact Fee	Service Units	Impact Fee Revenue	Annual Expenses	Sub-Total	Accumulated Interest	Estimated Fund Balance
Initial							$ -
1	$ 12,791	3,541	$ 45,294,723	$ (17,026,264)	$ 62,320,987	$ 779,012	63,099,999
2	12,791	3,541	45,294,723	6,344,749	38,949,974	2,064,375	104,114,348
3	12,791	3,541	45,294,723	8,762,012	36,532,712	3,059,518	143,706,577
4	12,791	3,541	45,294,723	11,001,426	34,293,298	4,021,331	182,021,205
5	12,791	3,541	45,294,723	13,081,922	32,212,801	4,953,190	219,187,196
6	12,791	3,541	45,294,723	15,019,838	30,274,885	5,858,116	255,320,197
7	12,791	3,541	45,294,723	16,829,345	28,465,378	6,738,822	290,524,397
8	12,791	3,541	45,294,723	18,522,796	26,771,927	7,597,759	324,894,084
9	12,791	3,541	45,294,723	20,111,009	25,183,714	8,437,149	358,514,946
10	12,791	3,541	45,294,723	42,357,339	2,937,384	8,999,591	370,451,921
11	-	-	-	30,783,323	(30,783,323)	8,876,506	348,545,104
12	-	-	-	30,783,323	(30,783,323)	8,328,836	326,090,617
13	-	-	-	30,783,323	(30,783,323)	7,767,474	303,074,768
14	-	-	-	30,783,323	(30,783,323)	7,192,078	279,483,522
15	-	-	-	30,783,323	(30,783,323)	6,602,297	255,302,495
16	-	-	-	30,783,323	(30,783,323)	5,997,771	230,516,943
17	-	-	-	30,783,323	(30,783,323)	5,378,132	205,111,752
18	-	-	-	30,783,323	(30,783,323)	4,743,002	179,071,430
19	-	-	-	30,783,323	(30,783,323)	4,091,994	152,380,101
20	-	-	-	30,783,323	(30,783,323)	3,424,711	125,021,489
21	-	-	-	26,996,038	(26,996,038)	2,788,087	100,813,538
22	-	-	-	23,996,478	(23,996,478)	2,220,382	79,037,442
23	-	-	-	20,996,918	(20,996,918)	1,713,475	59,753,999
24	-	-	-	17,997,359	(17,997,359)	1,268,883	43,025,523
25	-	-	-	14,997,799	(14,997,799)	888,166	28,915,890
26	-	-	-	11,998,239	(11,998,239)	572,919	17,490,570
27	-	-	-	8,998,679	(8,998,679)	324,781	8,816,671
28	-	-	-	5,999,120	(5,999,120)	145,428	2,962,980
29	-	-	-	2,999,560	(2,999,560)	36,580	-
			452,947,233	577,817,596		124,870,363	

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Calculation

Wastewater Service Area: Hickory Creek

Year	Number of Years to End of Period	Future Value Escalation: Interest Rate Factor	Future Value Escalation: Recovery Fee Factor	Annual Service Units: Actual	Annual Service Units: Escalated	Annual Expense: Actual	Annual Expense: Escalated
1	29	2.0215	1.0000	3,541	7,158	$ (17,026,264)	$ (34,417,761)
2	28	1.9721	1.0000	3,541	6,984	6,344,749	12,512,782
3	27	1.9240	1.0000	3,541	6,813	8,762,012	16,858,517
4	26	1.8771	1.0000	3,541	6,647	11,001,426	20,650,979
5	25	1.8313	1.0000	3,541	6,485	13,081,922	23,957,383
6	24	1.7867	1.0000	3,541	6,327	15,019,838	26,835,470
7	23	1.7431	1.0000	3,541	6,173	16,829,345	29,335,081
8	22	1.7006	1.0000	3,541	6,022	18,522,796	31,499,434
9	21	1.6591	1.0000	3,541	5,875	20,111,009	33,366,159
10	20	1.6186	1.0000	3,541	5,732	42,357,339	68,561,000
11	19	1.5792	1.0000	-	-	30,783,323	48,611,622
12	18	1.5406	1.0000	-	-	30,783,323	47,425,973
13	17	1.5031	1.0000	-	-	30,783,323	46,269,242
14	16	1.4664	1.0000	-	-	30,783,323	45,140,724
15	15	1.4306	1.0000	-	-	30,783,323	44,039,730
16	14	1.3957	1.0000	-	-	30,783,323	42,965,591
17	13	1.3617	1.0000	-	-	30,783,323	41,917,649
18	12	1.3285	1.0000	-	-	30,783,323	40,895,268
19	11	1.2961	1.0000	-	-	30,783,323	39,897,822
20	10	1.2645	1.0000	-	-	30,783,323	38,924,704
21	9	1.2336	1.0000	-	-	26,996,038	33,303,201
22	8	1.2035	1.0000	-	-	23,996,478	28,880,825
23	7	1.1742	1.0000	-	-	20,996,918	24,654,363
24	6	1.1456	1.0000	-	-	17,997,359	20,616,889
25	5	1.1176	1.0000	-	-	14,997,799	16,761,698
26	4	1.0904	1.0000	-	-	11,998,239	13,082,301
27	3	1.0638	1.0000	-	-	8,998,679	9,572,415
28	2	1.0378	1.0000	-	-	5,999,120	6,225,961
29	1	1.0125	1.0000	-	-	2,999,560	3,037,054
					64,216		$ 821,382,075

Annual Interest Rate:		2.50%
Present Value of Initial Impact Fee Fund Balance	$	-
Total Escalated Expense for Entire Period	$	821,382,075
Less Future Value of Initial Impact Fee Fund Balance		-
Sub-Total	$	821,382,075
Total Escalated Service Units		64,216
Impact Fee for Wastewater Service Area	**$**	**12,791**

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Project Funding

Wastewater Service Area: Hickory Creek

Impact Fee Project Name[1]	Cost In Service Area [1]	Impact Fee Recoverable Cost[1]	Debt Funded[2] Existing	Debt Funded[2] Proposed	Non-Debt Funded[2]	Impact Fee Recoverable Cost
Krum Sewer Line	$ 398,450	$ 87,775	$ 87,775	$ -	$ -	$ 87,775
Leatherwood Interceptor	156,592	4,616	4,616	-	-	4,616
Hickory Creek Interceptor I	1,447,500	1,058,753	1,052,544	-	6,208	1,058,753
Hickory Creek Interceptor II	8,102,500	3,120,135	3,101,839	-	18,296	3,120,135
Hickory Creek Interceptor III	2,875,433	721,323	566,544	-	154,779	721,323
Hickory Creek Lift Station Detention Facility	9,900,000	6,435,000	5,687,500	-	747,500	6,435,000
Roark Branch Interceptor Oversize (27" - 42")	2,810,200	829,989	-	829,989	-	829,989
Cole Ranch Interceptor Oversize (36"- 42")	4,809,000	4,809,000	-	4,809,000	-	4,809,000
North Cole Ranch Sewer Line (36")	7,310,000	4,377,794	-	4,377,794	-	4,377,794
Legends Sewer Line (12"- 15")	32,080,000	32,080,000	-	32,080,000	-	32,080,000
Robson Ranch Sewer Line (12")	3,086,000	112,722	-	112,722	-	112,722
Robson West Lift Station, Force Main, and Sewer Line Oversize	13,079,000	1,438,690	-	1,438,690	-	1,438,690
North Masch Sewer Line (12"- 18")	8,680,000	2,965,667	-	2,965,667	-	2,965,667
Masch Sewer Line Replacement (15"- 18")	5,560,000	3,003,678	-	3,003,678	-	3,003,678
Dry Fork Sewer Line (18")	3,620,000	627,467	-	627,467	-	627,467
Hickory Creek Peak Flow Basin Improvements	23,400,000	23,400,000	-	23,400,000	-	23,400,000
HCWRP 10.0 MGD MBR Plant	448,600,000	260,188,000	-	260,188,000	-	260,188,000
C Wolfe Road Interceptor (36")	18,120,000	10,282,047	-	10,282,047	-	10,282,047
TN Skiles Road Interceptor (36")	14,420,000	8,855,122	-	8,855,122	-	8,855,122
Ponder Sewer Line (12"- 15")	5,230,000	2,331,446	-	2,331,446	-	2,331,446
South Hickory Creek Sewer Line (24")	22,580,000	19,345,135	-	19,345,135	-	19,345,135
Wolf Branch Sewer Line (12"- 21")	18,040,000	9,466,267	-	9,466,267	-	9,466,267
Sanctuary Sewer Line (12"- 18")	4,280,000	4,217,059	-	4,217,059	-	4,217,059
Meadows Sewer Line (12")	2,130,000	2,130,000	-	2,130,000	-	2,130,000
Cole Ranch West Sewer Line Oversize (15"- 18")	294,000	116,714	-	116,714	-	116,714
Ponder Farms/Webster Meadows Lift Station and Force Main	11,500,000	11,500,000	-	11,500,000	-	11,500,000
Ponder Farms/Webster Meadows Interceptor (15"-21")	13,000,000	13,000,000	-	13,000,000	-	13,000,000
Wastewater Impact Fee Report Preparation	42,192	42,192	-	-	42,192	42,192
Total	$ 685,550,867	$ 426,546,589	$ 10,500,818	$ 415,076,795	$ 968,975	$ 426,546,589

(1) Table 3.1 Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

(2) Per discussions with City staff and City files

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees
Credit Determination
Wastewater Service Area: Hickory Creek

2024 Service Units[1]	82,096	
Ten Year Growth in Service Units[1]	35,412	
	10	years
Annual Growth in Service Units	3,541	

	1	2	3	4	5	6	7	8	9	10	Total
Debt Service for Debt Funded Projects Eligible for Impact Fees[2]	$3,787,285	$6,786,845	$9,786,405	$ 12,785,965	$ 15,785,524	$ 18,785,084	$ 21,784,644	$ 24,784,204	$ 27,783,764	$ 30,783,323	$ 172,853,044
Net Impact Fee Eligible Debt Service Funded by Other Sources	$3,787,285	$6,786,845	$9,786,405	$ 12,785,965	$ 15,785,524	$ 18,785,084	$ 21,784,644	$ 24,784,204	$ 27,783,764	$ 30,783,323	$ 172,853,044
Current Service Units	85,637	89,178	92,719	96,261	99,802	103,343	106,884	110,425	113,966	117,508	
Total Net Impact Fee Eligible Debt Service Funded by Other Sources per Service Unit	$ 44.22	$ 76.10	$ 105.55	$ 132.83	$ 158.17	$ 181.77	$ 203.82	$ 224.44	$ 243.79	$ 261.97	
Annual Growth in Service Units (Cumulative)	3,541	7,082	10,623	14,165	17,706	21,247	24,788	28,329	31,870	35,412	
Annual Wastewater Rate Revenue Generated by Service Unit for Net Impact Fee Eligible Debt	$ 156,607	$ 538,993	$1,121,291	$ 1,881,437	$ 2,800,500	$ 3,862,143	$ 5,052,196	$ 6,358,305	$ 7,769,652	$ 9,276,721	$ 38,817,845

Credit Amount **$ 38,817,845**

(1) Derived from Table 3.3 10-year Additional Service Units by Service Area
(2) Wastewater Appendices - page 2 Section II

City of Denton - 2024 Wastewater Impact Fee Update
Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Wastewater Service Area

0	Existing Fund Balance	$ -
1	Existing Number of Service Units Over Entire City	82,096
2	Additional Service Units Added During Planning Period In the Service Area	9,248
3	Total Cost of the Wastewater Impact Fee CIP	$ 242,082,508
4	Recoverable Cost for Impact Fee Planning Period	$ 139,912,428
5	Percent Recoverable for Wastewater Impact Fee Planning Period (Line 4 / Line 3)	57.80%
6	Financing Costs (From Financial Analysis)	$ 47,194,860
7	Interest Earnings (From Financial Analysis)	$ (17,484,683)
8	Recoverable Cost of Wastewater Impact Fee and Financing Costs Less Balance (Line 5 + Line 7 + Line 8 - Line 0)	$ 169,622,605
9	Pre-Credit Maximum Fee (Line 8 / Line 2)	$ 18,341
10	Credit for Utility Revenues (From Financial Analysis)	$ (3,934,480)
11	Recoverable Cost of Wastewater Impact Fee and Financing (Line 8 + Line 10)	$ 165,688,125
12	Maximum Assessable Fee (Line 11 / Line 2)	$ 17,916

SUMMARY OF WASTEWATER IMPACT FEE DETERMINATION

Wastewater Service Area: Pecan Creek

Recoverable Impact Fee CIP Costs	$	139,912,428	Table 3.3
Financing Cost		47,194,860	See Detail Below
Existing Fund Balance		-	Wastewater Appendices - page 1
Interest Earnings		(17,484,683)	Wastewater Appendices - page 3
Pre Credit Recoverable Cost for Impact Fee	$	169,622,605	Sum of Above
Credit for Utility Revenues		(3,934,480)	Wastewater Appendices - page 6
Maximum Recoverable Cost for Impact Fee	**$**	**165,688,125**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees.
Reference is Table 3.1 Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

Financing Costs:

Represents the interest costs associated with debt financing the new impact fee project costs. Interest costs are derived from existing debt issues and forecasted debt issues.

New Annual Debt Service	$	19,966,716	Wastewater Appendices - page 2
Existing Annual Debt Service		123,077,765	Wastewater Appendices - page 2
Principal Component (New and Existing Debt)		(95,849,621)	Wastewater Appendices - page 1
Financing Costs	$	47,194,860	

Existing Fund Balance:

Represents impact fee revenue collected but not yet expended. Some projects that are included in the 2018 Impact Fee Update were also included in prior Impact Fee Updates.
To avoid charging twice for the same project, the impact fee revenues collected but yet to be expended (i.e. fund balance) are credited against the recoverable costs. Reference is page 1 of Wastewater Appendices.

Interest Earnings

Represents the interest earned on cash flows and assumes a 1.89% annual interest rate.
The Impact Fee Statute states that interest earnings are funds of the impact fee account and are held to the same restrictions as impact fee revenues. Therefore in order to recognize that interest earnings are used to fund capital improvements, interest earnings are credited against the recoverable costs.
Reference is the sum of Accumulated Interest on page 3 of Wastewater Appendices.

Pre Credit Recoverable Cost for Impact Fee

Represents Recoverable Impact Fee CIP Costs plus Financing Costs less Existing Fund Balance and Interest Earnings.

Credit for Utility Revenues

In 2001, the Impact Fee Statute was amended to include a credit for ad valorem and utility revenues generated by new service units during the ten-year timeframe that are used to fund impact fee eligible projects for which the new service units were charged an impact fee. The intent of this amendment is to avoid double-charging the new service units for impact fee capital improvements. The credit recognizes utility revenues used to fund the debt service of debt financed impact fee eligible projects. Reference is page 6 of Wastewater Appendices.

Maximum Recoverable Cost for Impact Fee:

Represents Pre Credit Recoverable Cost for Impact Fee less Credit for Utility Revenues.
This is the maximum cost that can be recovered through impact fees.

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Wastewater Service Area: Pecan Creek

I. General Assumptions

Annual Interest Rate on Deposits[1]	2.50%
Annual Service Unit Growth[2]	925
Existing Fund Balance[3]	$ -

Portion of Projects Funded by Existing Debt[4]	$ 82,034,726
Non-debt Funded Project Cost[5]	44,062,806
New Project Cost Funded Through New Debt[6]	13,814,895
Total Recoverable Project Cost[7]	$ 139,912,428

II. New Debt Issues Assumptions

Year	Principal[8]	Interest[9]	Term
1	$ 1,381,489	3.80%	20
2	1,381,489	3.80%	20
3	1,381,489	3.80%	20
4	1,381,489	3.80%	20
5	1,381,489	3.80%	20
6	1,381,489	3.80%	20
7	1,381,489	3.80%	20
8	1,381,489	3.80%	20
9	1,381,489	3.80%	20
10	1,381,489	3.80%	20
Total	$ 13,814,895		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[10]
1	$ 5,097,025
2	5,787,770
3	5,787,770
4	5,787,770
5	5,787,770
6	5,787,770
7	5,787,770
8	5,787,770
9	5,787,770
10	6,478,515
Total	$ 57,877,701

(1) Per discussions with City Staff
(2) Derived from Table 3.3 10-year Additional Service Units by Service Area
(3) Balance from 03/30/2024 provided by City Staff
(4) Per discussions with City Staff and City files
(5) From allocation per City Staff; assumes 0% of new project costs funded through sources other than debt
(6) This assumes 100% of new project costs funded through new debt issues
(7) Table 3.1 Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost
(8) Assumes new debt issued in equal annual amounts
(9) Estimated interest on future debt per discussions with City Staff
(10) Assumes new debt proceeds expended over a 2-year timeframe.
Non-debt funded capital expenditures allocated in equal annual amounts

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees
Debt Service and Expense Summary
Wastewater Service Area: Pecan Creek

I. New Debt Service Detail

Year	Series 1	Series 2	Series 3	Series 4	Series 5	Series 6	Series 7	Series 8	Series 9	Series 10	Total Annual New Debt Service
1	$ 99,834	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 99,834
2	99,834	99,834	-	-	-	-	-	-	-	-	199,667
3	99,834	99,834	99,834	-	-	-	-	-	-	-	299,501
4	99,834	99,834	99,834	99,834	-	-	-	-	-	-	399,334
5	99,834	99,834	99,834	99,834	99,834	-	-	-	-	-	499,168
6	99,834	99,834	99,834	99,834	99,834	99,834	-	-	-	-	599,001
7	99,834	99,834	99,834	99,834	99,834	99,834	99,834	-	-	-	698,835
8	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	-	-	798,669
9	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	-	898,502
10	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	998,336
11	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	998,336
12	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	998,336
13	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	998,336
14	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	998,336
15	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	998,336
16	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	998,336
17	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	998,336
18	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	998,336
19	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	998,336
20	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	998,336
21	-	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	898,502
22	-	-	99,834	99,834	99,834	99,834	99,834	99,834	99,834	99,834	798,669
23	-	-	-	99,834	99,834	99,834	99,834	99,834	99,834	99,834	698,835
24	-	-	-	-	99,834	99,834	99,834	99,834	99,834	99,834	599,001
25	-	-	-	-	-	99,834	99,834	99,834	99,834	99,834	499,168
26	-	-	-	-	-	-	99,834	99,834	99,834	99,834	399,334
27	-	-	-	-	-	-	-	99,834	99,834	99,834	299,501
28	-	-	-	-	-	-	-	-	99,834	99,834	199,667
29	-	-	-	-	-	-	-	-	-	99,834	99,834
	$ 1,996,672	$ 1,996,672	$ 1,996,672	$ 1,996,672	$ 1,996,672	$ 1,996,672	$ 1,996,672	$ 1,996,672	$ 1,996,672	$ 1,996,672	$ 19,966,716

II. Summary of Annual Expenses

Year	New Annual Debt Service[1]	Annual Capital Expenditures[2]	Annual Bond Proceeds[2]	Existing Annual Debt Service[3]	Annual Credit[4]	Total Expense
1	$ 99,834	$ 5,097,025	$ (1,381,489)	$ 6,153,888	$ (69,665)	$ 9,899,593
2	199,667	5,787,770	(1,381,489)	6,153,888	(139,994)	10,619,842
3	299,501	5,787,770	(1,381,489)	6,153,888	(210,967)	10,648,703
4	399,334	5,787,770	(1,381,489)	6,153,888	(282,561)	10,676,942
5	499,168	5,787,770	(1,381,489)	6,153,888	(354,758)	10,704,579
6	599,001	5,787,770	(1,381,489)	6,153,888	(427,538)	10,731,632
7	698,835	5,787,770	(1,381,489)	6,153,888	(500,884)	10,758,120
8	798,669	5,787,770	(1,381,489)	6,153,888	(574,776)	10,784,061
9	898,502	5,787,770	(1,381,489)	6,153,888	(649,199)	10,809,472
10	998,336	6,478,515	(1,381,489)	6,153,888	(724,137)	11,525,112
11	998,336	-	-	6,153,888	-	7,152,224
12	998,336	-	-	6,153,888	-	7,152,224
13	998,336	-	-	6,153,888	-	7,152,224
14	998,336	-	-	6,153,888	-	7,152,224
15	998,336	-	-	6,153,888	-	7,152,224
16	998,336	-	-	6,153,888	-	7,152,224
17	998,336	-	-	6,153,888	-	7,152,224
18	998,336	-	-	6,153,888	-	7,152,224
19	998,336	-	-	6,153,888	-	7,152,224
20	998,336	-	-	6,153,888	-	7,152,224
21	898,502	-	-	-	-	898,502
22	798,669	-	-	-	-	798,669
23	698,835	-	-	-	-	698,835
24	599,001	-	-	-	-	599,001
25	499,168	-	-	-	-	499,168
26	399,334	-	-	-	-	399,334
27	299,501	-	-	-	-	299,501
28	199,667	-	-	-	-	199,667
29	99,834	-	-	-	-	99,834
	$ 19,966,716	$ 57,877,701	$ (13,814,895)	$ 123,077,765	$ (3,934,480)	$ 183,172,808

(1) Wastewater Appendices - page 2 Section I
(2) Wastewater Appendices - page 1
(3) Actual timing of payment varies. Calculated P&I above assumes City's estimated average cost of outstanding system debt and constant annual debt service payments.
(4) Wastewater Appendices - page 6

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Revenue Test

Wastewater Service Area: Pecan Creek

Year	Impact Fee	Service Units	Impact Fee Revenue	Annual Expenses	Sub-Total	Accumulated Interest	Estimated Fund Balance
Initial							$ -
1	$ 17,916	925	$ 16,568,812	$ 9,899,593	$ 6,669,219	$ 83,365	6,752,585
2	17,916	925	16,568,812	10,619,842	5,948,971	243,177	12,944,732
3	17,916	925	16,568,812	10,648,703	5,920,109	397,620	19,262,461
4	17,916	925	16,568,812	10,676,942	5,891,870	555,210	25,709,541
5	17,916	925	16,568,812	10,704,579	5,864,234	716,041	32,289,817
6	17,916	925	16,568,812	10,731,632	5,837,180	880,210	39,007,207
7	17,916	925	16,568,812	10,758,120	5,810,692	1,047,814	45,865,713
8	17,916	925	16,568,812	10,784,061	5,784,751	1,218,952	52,869,417
9	17,916	925	16,568,812	10,809,472	5,759,341	1,393,727	60,022,485
10	17,916	925	16,568,812	11,525,112	5,043,700	1,563,608	66,629,793
11	-	-	-	7,152,224	(7,152,224)	1,576,342	61,053,911
12	-	-	-	7,152,224	(7,152,224)	1,436,945	55,338,632
13	-	-	-	7,152,224	(7,152,224)	1,294,063	49,480,471
14	-	-	-	7,152,224	(7,152,224)	1,147,609	43,475,856
15	-	-	-	7,152,224	(7,152,224)	997,494	37,321,126
16	-	-	-	7,152,224	(7,152,224)	843,625	31,012,527
17	-	-	-	7,152,224	(7,152,224)	685,910	24,546,213
18	-	-	-	7,152,224	(7,152,224)	524,253	17,918,242
19	-	-	-	7,152,224	(7,152,224)	358,553	11,124,571
20	-	-	-	7,152,224	(7,152,224)	188,711	4,161,058
21	-	-	-	898,502	(898,502)	92,795	3,355,351
22	-	-	-	798,669	(798,669)	73,900	2,630,583
23	-	-	-	698,835	(698,835)	57,029	1,988,777
24	-	-	-	599,001	(599,001)	42,232	1,432,007
25	-	-	-	499,168	(499,168)	29,561	962,400
26	-	-	-	399,334	(399,334)	19,068	582,134
27	-	-	-	299,501	(299,501)	10,810	293,443
28	-	-	-	199,667	(199,667)	4,840	98,616
29	-	-	-	99,834	(99,834)	1,217	-
			165,688,125	183,172,808		17,484,683	

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Calculation

Wastewater Service Area: Pecan Creek

Year	Number of Years to End of Period	Future Value Escalation: Interest Rate Factor	Future Value Escalation: Recovery Fee Factor	Annual Service Units: Actual	Annual Service Units: Escalated	Annual Expense: Actual	Annual Expense: Escalated
1	29	2.0215	1.0000	925	1,869	$ 9,899,593	$ 20,011,544
2	28	1.9721	1.0000	925	1,824	10,619,842	20,943,895
3	27	1.9240	1.0000	925	1,779	10,648,703	20,488,598
4	26	1.8771	1.0000	925	1,736	10,676,942	20,041,884
5	25	1.8313	1.0000	925	1,694	10,704,579	19,603,670
6	24	1.7867	1.0000	925	1,652	10,731,632	19,173,867
7	23	1.7431	1.0000	925	1,612	10,758,120	18,752,383
8	22	1.7006	1.0000	925	1,573	10,784,061	18,339,123
9	21	1.6591	1.0000	925	1,534	10,809,472	17,933,985
10	20	1.6186	1.0000	925	1,497	11,525,112	18,654,930
11	19	1.5792	1.0000	-	-	7,152,224	11,294,466
12	18	1.5406	1.0000	-	-	7,152,224	11,018,992
13	17	1.5031	1.0000	-	-	7,152,224	10,750,236
14	16	1.4664	1.0000	-	-	7,152,224	10,488,035
15	15	1.4306	1.0000	-	-	7,152,224	10,232,229
16	14	1.3957	1.0000	-	-	7,152,224	9,982,663
17	13	1.3617	1.0000	-	-	7,152,224	9,739,183
18	12	1.3285	1.0000	-	-	7,152,224	9,501,642
19	11	1.2961	1.0000	-	-	7,152,224	9,269,895
20	10	1.2645	1.0000	-	-	7,152,224	9,043,800
21	9	1.2336	1.0000	-	-	898,502	1,108,422
22	8	1.2035	1.0000	-	-	798,669	961,233
23	7	1.1742	1.0000	-	-	698,835	820,565
24	6	1.1456	1.0000	-	-	599,001	686,187
25	5	1.1176	1.0000	-	-	499,168	557,875
26	4	1.0904	1.0000	-	-	399,334	435,415
27	3	1.0638	1.0000	-	-	299,501	318,596
28	2	1.0378	1.0000	-	-	199,667	207,217
29	1	1.0125	1.0000	-	-	99,834	101,082
					16,771		$ 300,461,612

Annual Interest Rate:		2.50%
Present Value of Initial Impact Fee Fund Balance	$	-
Total Escalated Expense for Entire Period	$	300,461,612
Less Future Value of Initial Impact Fee Fund Balance		-
Sub-Total	$	300,461,612
Total Escalated Service Units		16,771
Impact Fee for Wastewater Service Area	**$**	**17,916**

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Project Funding

Wastewater Service Area: Pecan Creek

Impact Fee Project Name[1]	Cost In Service Area [1]	Impact Fee Recoverable Cost[1]	Debt Funded[2] Existing	Debt Funded[2] Proposed	Non-Debt Funded[2]	Impact Fee Recoverable Cost
CCWRP 2.5 MGD MBR Plant	$ 118,800,000	$ 82,034,726	$ 82,034,726	$ -	$ -	$ 82,034,726
Clear Creek Interceptor (27"- 42")	89,440,000	44,055,019	-	-	44,055,019	44,055,019
Milam Creek Sewer Line (18"- 24")	13,750,000	3,630,769	-	3,630,769	-	3,630,769
Denton ICC Sewer Line Oversize (18")	324,720	33,899	-	33,899	-	33,899
Ganzer Rd Sewer Line (12")	2,530,000	1,167,692	-	1,167,692	-	1,167,692
Beaver Creek Sewer Line (12")	2,910,000	1,343,077	-	1,343,077	-	1,343,077
North Milam Sewer Line (12"- 18")	6,890,000	3,667,912	-	3,667,912	-	3,667,912
Stark Farms Sewer Line (8"- 12")	1,340,000	978,783	-	978,783	-	978,783
East Clear Creek Sewer Line (8"- 15")	3,170,000	1,633,769	-	1,633,769	-	1,633,769
East Milam Sewer Line (12"- 15")	2,920,000	1,358,994	-	1,358,994	-	1,358,994
Wastewater Impact Fee Report Preparation	7,788	7,788	-	-	7,788	7,788
Total	$ 242,082,508	$ 139,912,428	$ 82,034,726	$ 13,814,895	$ 44,062,806	$ 139,912,428

(1) Table 3.1 Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

(2) Per discussions with City staff and City files

City of Denton - 2024 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Credit Determination

Wastewater Service Area: Pecan Creek

2024 Service Units[1]	82,096	
Ten Year Growth in Service Units[1]	9,248	
	10	years
Annual Growth in Service Units	925	

	1	2	3	4	5	6	7	8	9	10	Total
Debt Service for Debt Funded Projects Eligible for Impact Fees[2]	$ 6,253,722	$ 6,353,555	$ 6,453,389	$ 6,553,223	$ 6,653,056	$ 6,752,890	$ 6,852,723	$ 6,952,557	$ 7,052,390	$ 7,152,224	$ 67,029,729
Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 6,253,722	$ 6,353,555	$ 6,453,389	$ 6,553,223	$ 6,653,056	$ 6,752,890	$ 6,852,723	$ 6,952,557	$ 7,052,390	$ 7,152,224	$ 67,029,729
Current Service Units	83,021	83,946	84,870	85,795	86,720	87,645	88,570	89,495	90,419	91,344	
Total Net Impact Fee Eligible Debt Service Funded by Other Sources per Service Unit	$ 75.33	$ 75.69	$ 76.04	$ 76.38	$ 76.72	$ 77.05	$ 77.37	$ 77.69	$ 78.00	$ 78.30	
Annual Growth in Service Units (Cumulative)	925	1,850	2,774	3,699	4,624	5,549	6,474	7,399	8,323	9,248	
Service Unit for Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 69,665	$ 139,994	$ 210,967	$ 282,561	$ 354,758	$ 427,538	$ 500,884	$ 574,776	$ 649,199	$ 724,137	$ 3,934,480

Credit Amount **$ 3,934,480**

(1) Derived from Table 3.3 10-year Additional Service Units by Service Area

(2) Wastewater Appendices - page 2 Section II

APPENDIX

CONSIDERATION FOR THE HUNTER RANCH AND COLE RANCH OPERATING AGREEMENTS

APPENDIX – CONSIDERATION FOR THE HUNTER RANCH AND COLE RANCH OPERATING AGREEMENTS

Introduction

Consideration for Hunter Ranch and Cole Ranch Operating Agreement

The City of Denton has operating agreements with the Hunter Ranch District (Ordinance No. 20-763 – Operating Agreement with Hunter Ranch Improvement District No. 1) and the Cole Ranch District (Ordinance No. 20-761 – Operating Agreement with Cole Ranch Improvement District No. 1) which stipulate certain calculations to be included in the Water and Wastewater Impact Fee Study. The purpose of this appendix is to explain what calculations were performed, and how they will be used in the administration of both the Impact Fee Program and the operating agreements. The terms City Offsites, District Cost, District Area Revenue, and District Tax Revenue are defined in Section 4.11 of the operating agreements.

Consideration for Hunter Ranch and Cole Ranch Operating Agreement

The operating agreements define City Offsites as specific water and wastewater infrastructure that are to be constructed by the City. The City Offsites are described in Exhibits K1-A and K1-B of the operating agreements. City Offsite facilities are impact fee eligible water and wastewater infrastructure that are anticipated to be funded in part by impact fees collected within the service area (including within the districts) and by district financial participation in the form of District Tax assessed and paid from properties in the districts. As part of the operating agreements, the Water and Wastewater Impact Fee Study is to include a capacity analysis which shows “what portion of each City Offsite will serve the District Area and what portion will serve other areas of the City”. This preliminary non-binding analysis is provided in the tables included in this appendix. Maps identifying the City Offsite facilities and development Improvement Projects as identified within the context of the 2025 Water and Wastewater Impact Fee CIP are provided in Exhibits 1 and 2. The original maps of the City Offsites from the operating agreements are included in Exhibits K1-A and K1-B.

Executive Summary

Water Capacity Analysis

Hunter Ranch

For Hunter Ranch seven (7) City Offsite projects (See Exhibits 1, K-1A and L) were identified for capacity analysis. Exhibit 1 correlates the City impact fee projects to Exhibit K1-A projects from the Hunter/Cole Agreements. As illustrated in the City's 2025 Water and Wastewater Impact Fee Study the total cost of these projects is approximately $502 million with a 10-year recoverable cost of approximately $325 million and a Hunter Ranch Service Area 2 10-year utilization cost of approximately $27.5 million.

Cole Ranch

For Cole Ranch seven (7) City Offsite projects (See Exhibits 1, K1-A and L) were identified for capacity analysis. As illustrated in the City's 2025 Water and Wastewater Impact Fee the total cost of these projects is approximately $502 million with a 10-year recoverable cost of approximately $325 million and a Cole Ranch Service Area 2 10-year utilization cost of approximately $30.2 million and a Service Area 1B 10-year utilization cost of approximately $745,000.

Wastewater Capacity Analysis

Hunter Ranch

For Hunter Ranch two (2) City Offsite projects (See Exhibit 2, K1-B and L) were identified for capacity analysis. Exhibit 2 correlates the City impact fee projects to Exhibit K1-B projects from the Hunter/Cole Agreements. As illustrated in the City's 2025 Water and Wastewater Impact Fee Study the total cost of these projects is approximately $472 million with a 10-year recoverable cost of approximately $284 million and a Hunter Ranch Hickory Creek Service Area 10-year utilization cost of approximately $34 million.

Cole Ranch

For Cole Ranch two (2) City Offsite projects (See Exhibit 2, K1-B and L) were identified for capacity analysis. As illustrated in the City's 2025 Water and Wastewater Impact Fee the total cost of these projects is approximately $472 million with a 10-year recoverable cost of approximately $284 million and a Cole Ranch Hickory Creek Service Area 10-year utilization cost of approximately $39.7 million.

Calculations

Water Recoverable Cost Calculation

The water capital projects shown in Table 1 match the City of Denton Impact Fee Capital Improvement projects and they correspond to "City Offsite" projects shown on Exhibit K1-A and Exhibit L. The first two columns of Table 1 list the corresponding "City Offsite" and Impact Fee Capital Improvement projects. The last three columns of Table 1 list the recoverable cost attributed to Hunter and Cole Ranch per "City Offsite" project and service area.

Table 1
City-Offsite Water Capital Improvements Plan

City Offsite Project	Impact Fee Project	Description	Total Project Cost	10-Year Recoverable Cost	Area 2 Recoverable Cost	Area 1B Recoverable Cost	Area 2 Hunter Recoverable Cost	Area 2 Cole Recoverable Cost	Area 1B Cole Recoverable Cost
O-1	21	Lake Ray Roberts WTP 20 MGD Expansion to 50 MGD	$195,845,000	$195,845,000	$83,190,538	$112,654,462	$16,638,108	$18,301,918	$450,618
O-1	37	Lake Ray Roberts HSPS Improvements Phase 1	$5,530,000	$5,530,000	$2,349,019	$3,180,981	$469,804	$516,784	$12,724
O-2	42	Southwest PS Improvements	$10,087,000	$2,505,703	$1,064,366	$1,441,337	$212,873	$234,160	$5,765
O-3	40	24/48" Loop 288 Transmission Main	$69,107,000	$40,406,863	$16,638,396	$22,531,284	$3,327,679	$3,660,447	$90,125
O-6	39	Lake Ray Roberts WTP 10 MGD Expansion to 60 MGD	$97,922,500	$9,792,250	$4,159,527	$5,632,723	$831,905	$915,096	$22,531
O-6	41	Lake Ray Roberts HSPS Improvements Phase 2	$5,530,000	$1,908,764	$810,800	$1,097,964	$162,160	$178,376	$4,392
O-7	38	Lake Ray Roberts WTP 54/60" Transmission Main	$117,964,000	$68,973,551	$29,298,408	$39,675,142	$5,859,682	$6,445,650	$158,701
		Total	**$501,985,500**	**$324,962,130**	**$137,511,055**	**$186,213,892**	**$27,502,211**	**$30,252,432**	**$744,856**

Note: From Exhibit L Offsite Projects O-4, O-5 and O-8 do not exist as City Impact Fee Capital Improvement Projects. Therefore, they are not part of the calculation.

Wastewater Impact Fee Calculation

Recoverable Cost Calculation

The wastewater capital projects shown in Table 2 match the listed City of Denton Impact Fee Capital Improvement projects and they correspond to "City Offsite" projects shown on Exhibit K1-B and Exhibit L. The first two columns of Table 2 list the corresponding "City Offsite" and Impact Fee Capital Improvement projects. The last two columns of Table 2 list the recoverable cost attributed to Hunter and Cole Ranch per "City Offsite" project.

Table 2
City-Offsite Wastewater Capital Improvements Plan

City Offsite Project	Impact Fee Project	Description	Total Project Cost	10-Year Recoverable Cost	Hickory Creek Recoverable Cost	Hickory Creek Hunter Recoverable Cost	Hickory Creek Cole Recoverable Cost
Sub O-1*	41	Hickory Creek Peak Flow Basin Improvements	$23,400,000	$23,400,000	$23,400,000	$2,808,000	$3,276,000
O-2	46	HCWRP 10.0 MGD MBR Plant	$448,600,000	$260,188,000	$260,188,000	$31,222,560	$36,426,320
		Total	**$472,000,000**	**$283,588,000**	**$283,588,000**	**$34,030,560**	**$39,702,320**

Note: *Sub O-1 indicates Hunter/Cole Project O-1 is replaced by Impact Fee project 41. From Exhibit L Offsite Project O-3 is no longer a project and O-5 is planned for design and construction beyond the 10-year planning window. Therefore, they are not part of the calculation.

EXHIBITS

Lake Ray Roberts WTP and High Service PS

Northwest EST

Riney EST and Northwest Booster PS

McKenna Park Standpipe and PS

FOR EMERGENCY ONLY

Roselawn EST

Southwest EST

Southwest PS

Lake Lewisville WTP and PS

LEGEND

Background Data
- Railroads
- Roads
- Lakes

Service Areas
- 1A
- 1B
- 2

Existing Infrastructure
- Water Treatment Plant (WTP)
- Existing Pump Station
- Existing Elevated Storage Tank (EST)
- Existing Ground Storage Tank (GST)
- Existing Standpipe
- Existing Water Line (12" or Greater)

City Offsite Projects
- Proposed Water Treatment Plant Expansion
- Proposed Water Line
- I35E Mayhill Water Lines

City Offsite Projects

Agreement Project Number	Impact Fee Project Number	Project Name
O-1	21	Lake Ray Roberts WTP 20 MGD Expansion to 50 MGD
O-1	37	Lake Ray Roberts HSPS Improvements Phase 1
O-2	42	Southwest PS Improvements
O-3	40	24/48" Loop 288 Transmission Main
O-6	39	Lake Ray Roberts WTP 10 MGD Expansion to 60 MGD
O-6	41	Lake Ray Roberts HSPS Improvements Phase 2
O-7	38	Lake Ray Roberts WTP 54/60" Transmission Main

CITY OF DENTON

CITY OF DENTON
CITY OFFSITE
WATER PROJECTS

1 IN = 4,000 FT

June 2025

Kimley»Horn

EXHIBIT 1

Pecan Creek WRP

Hickory Creek Peak Flow Basin

41

Hickory Creek WRP

46

WRP

LEGEND

Background Data
- Railroads
- Roads
- Lakes
- Denton City Limits

Service Areas
- Clear Creek
- Hickory Creek
- Pecan Creek

Existing Infrastructure
- Ex. 8-10-inch Sewer Line*
- Ex. ≥12-inch Sewer Line
- Force Main
- LS Ex. Lift Station**
- WRP Ex. Water Reclamation Facility
- Ex. Peak Flow Basin

City Offsite Projects
- WRP Proposed Water Reclamation Facility

*Existing sewer lines smaller than 8" are not shown.
**Existing lift stations planned to be abandoned are not shown.

City Offsite Projects

Agreement Project Number	Impact Fee Project Number	Project Name
Sub O-1	41	Hickory Creek Peak Flow Basin Improvements
O-2	46	HCWRP 10.0 MGD MBR Plant

CITY OF DENTON

CITY OF DENTON
CITY OFFSITE
WASTEWATER PROJECTS

1 IN = 4,000 FT

March 2025

Kimley»Horn

This map product is for information purposes and may not have been prepared for or be suitable for legal, engineering, or surveying purposes. It does not represent an on-the-ground survey and represents only the approximate relative location of property boundaries.

EXHIBIT

2

EXHIBIT K1-A - MAPS OF CITY OFFSITES

FIGURE 1

CITY OF DENTON

WATER DISTRIBUTION SYSTEM RECOMMENDED IMPROVEMENTS OFFSITE PROJECTS

LEGEND

- Pressure Reducing Valve
- Pump Station
- Ground Storage Tank
- Elevated Storage Tank
- Water Treatment Plant
- Under Design/Construction Water Line
- 10" and Smaller Water Line
- 12" and Larger Water Line
- Road
- Railroad
- Stream
- Lake
- Parcel
- Hunter/Cole Development
- City Limit
- ETJ Boundary
- Other City Limit

CITY OF DENTON

FREESE AND NICHOLS

February 11, 2020

NOTE: Recommended improvements are sized for existing and ultimate Hunter/Cole Development projections. Recommended improvements do not include future growth projections outside of the Hunter/Cole Development.

O-# **Offsite Improvements**

PRESSURE PLANES (HGL)

- Central (826')
- East (745')
- Northwest (900')
- Southeast (745')
- Southwest (905')

RECOMMENDED IMPROVEMENTS

Short-Term Improvements

- WTP Water Treatment Plant

Intermediate-Term Improvements

- Ground Storage Tank
- PS Pump Station
- Water Line

Long-Term Improvements

- Water Line

Lake Ray Roberts Water Treatment Plant
Treatment Capacity = 20.0 MGD
Project O-1: Expand Treatment Capacity to 50.0 MGD
Project O-6: Expand Treatment Capacity to 70.0 MGD
Firm Pumping Capacity = 38.2 MGD
Project O-1: Expand Firm Pumping Capacity to 55.0 MGD
Project O-6: Expand Firm Pumping Capacity to 70.0 MGD

1.0 MG Northwest Elevated Storage Tank
Overflow Elevation = 900'

Highway 380 Booster Pump Station
Firm Pumping Capacity = 10.0 MGD
2.0 MG Ground Storage
Expand Firm Pumping Capacity to 25.0 MGD
4.0 MG Ground Storage

2.0 MG Riney Road Elevated Storage Tank
Overflow Elevation = 826'

2.0 MG McKenna Park Standpipe

McKenna Park Pump Station
Firm Pumping Capacity = 4.3 MGD

Lake Lewisville Water Treatment Plant
Treatment Capacity = 30.0 MGD
Firm Pumping Capacity = 36.5 MGD

3.0 MG Roselawn Elevated Storage Tank
Overflow Elevation = 826'

3.0 MG Southwest Elevated Storage Tank
Overflow Elevation = 905'

2.0 MG Southwest Ground Storage Tank

2.0 MG Southwest #2 Ground Storage Tank

Southwest Pump Station
Firm Pumping Capacity = 6.1 MGD
15.0 MGD Expansion

0 3,600 7,200

SCALE IN FEET

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EXHIBIT K1-B - MAPS OF CITY OFFSITES

FIGURE 2

CITY OF DENTON

WASTEWATER SYSTEM RECOMMENDED IMPROVEMENTS OFFSITE PROJECTS

LEGEND

- Flow Meter
- Manhole
- Lift Station
- Private Lift Station
- Water Reclamation Plant
- 10" and Smaller Wastewater Line
- 12" and Larger Wastewater Line
- Force Main
- Road
- Railroad
- Stream
- Lake
- Parcel
- Hunter/Cole Development
- City Limit
- ETJ Boundary
- Other City Limit

CITY OF DENTON

FREESE AND NICHOLS

February 11, 2020

NOTE: Recommended improvements are sized for existing and ultimate Hunter/Cole Development projections. Recommended improvements do not include future growth projections outside of the Hunter/Cole Development.

O-# Offsite Improvements

MAJOR BASINS

- Basin C
- Basin H
- Basin M
- Basin P
- Basin R
- Basin T

RECOMMENDED IMPROVEMENTS

Under Design/Construction Improvements

- Lift Station
- Water Reclamation Plant
- Wastewater Line
- Force Main

Short-Term Improvements

- Water Reclamation Plant

Intermediate-Term Improvements

- Lift Station
- Weir
- Wastewater Line
- Force Main

Cooper Creek Lift Station

Lakeview Ranch Trinity Lift Station

Lakewood Estates Lift Station

Adkisson Troy H Lagrone Lift Station

Woodrow Buchanan Lift Station

Grissom Lift Station

Tractor Supply Lift Station

Pecan Creek Water Reclamation Plant
Permitted Avg. Day Capacity: 21.00 MGD

PE-A1-047 Flow Meter
Existing Avg. Day Flow: 5.89 MGD
Existing Peak Hour Flow: 20.80 MGD

State School Wet Weather Lift Station

Preserve Lift Station

Classic Used Car Lift Station

Wimbleton Lift Station

Oakmont II Lift Station

Wynstone Lift Station

Hickory Creek Lift Station
Firm Pumping Capacity: 11.00 MGD

Upper Trinity Lift Station

Denton West Lift Station

Good Sam Lift Station

Lexington Park Lift Station

Sundown Lift Station

Granada Lift Station

Teasley Trails Lift Station

Bent Oaks Lift Station

Hobson Lift Station

Golden Triangle Lift Station

Spencer Oaks Lift Station

S I-35E Garner Lift Station

Green House Lift Station

Ruidosa Lift Station

Laredo Lift Station

University Lift Station

Dakota Lift Station

Private Lift Station

Airport Lift Station

Aldi Lift Station
(To Be Decommissioned)

Proposed Hickory Creek Water Reclamation Plant
Permitted Avg. Day Capacity: 3.00 MGD
Expand Permitted Avg. Day Capacity to 6.00 MGD
Expand Permitted Avg. Day Capacity to 11.00 MGD

To Be Abandoned

To Be Abandoned

Vintage Lift Station
(To Be Decommissioned)

Proposed Lift Station
Firm Pumping Capacity: 5.00 MGD

Proposed 4.00 MGD Diversion Weir

O-1 O-2 O-3 O-4 O-5

Robson Water Reclamation Plant
Permitted Capacity: 0.375 MGD
Existing Avg. Day Flow: 0.29 MGD
Existing Peak Day Flow: 0.77 MGD
(To Be Decommissioned)

Robson Ranch East Lift Station
Firm Capacity: 2.25 MGD
(To Be Decommissioned)

Robson Lift Station
Firm Capacity: 1.25 MGD

Robson Southwest Lift Station

0 2,000 4,000
SCALE IN FEET

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EXHIBIT L - LIST OF IMPROVEMENT PROJECTS

Exhibit L - List of Improvement Projects

Project Number	Project Name	Project Type	Construction Party	Service	Facility Type	Required Right of Way	City Utilization	Development Utilization	Estimate	City Cost	MMD/ Development Cost	MMD Reimbursement?	COD Off-Site/ MMD Participation	Ownership	Maintainance
D-1	12/20-inch Robson Ranch Transmission Main	Offsite	MMD	Water					$ 2,856,600	$ -	$ 2,856,600	Eligible	N/A	COD	COD
D-2	36-inch I-35 Transmission Main	Offsite	MMD	Water					$ 13,405,900	$ -	$ 13,405,900	Eligible	N/A	COD	COD
D-3	30-inch Cole Ranch Transmission Main	Offsite	MMD	Water					$ 12,266,600	$ -	$ 12,266,600	Eligible	N/A	COD	COD
D-4	24-inch Southwest EST Transmission Main	Offsite	MMD	Water					$ 12,151,900	$ -	$ 12,151,900	Eligible	N/A	COD	COD
D-5	12/16-inch John Pane Transmission Main	Onsite	MMD	Water					$ 4,388,000	$ -	$ 4,388,000	Eligible	N/A	COD	COD
D-6	12-inch Underwood Transmission Main	Offsite	MMD	Water					$ 2,888,200	$ -	$ 2,888,200	Eligible	N/A	COD	COD
D-7	2.0 MG Hunter Cole Elevated Storage Tank & 24-inch Water Line	Onsite	MMD	Water					$ 10,841,900	$ -	$ 10,841,900	Eligible	N/A	COD	COD
D-8	12/16-inch Hunter Ranch Transmission Main	Onsite	MMD	Water					$ 5,896,600	$ -	$ 5,896,600	Eligible	N/A	COD	COD
D-9	12-inch Cole Ranch Looping Transmission Main	Onsite	MMD	Water					$ 4,326,700	$ -	$ 4,326,700	Eligible	N/A	COD	COD
D-10	12-inch Hunter Ranch Looping Transmission Main	Onsite	MMD	Water					$ 2,284,300	$ -	$ 2,284,300	Eligible	N/A	COD	COD
D-1	27-inch Cole Ranch Interceptor Phase-2	Offsite	MMD	Wastewater					$ 14,177,100	$ -	$ 14,177,100	Eligible	N/A	COD	COD
D-2	24/36-inch Roark Branch Interceptor Phase 1	Offsite	MMD	Wastewater					$ 11,915,200	$ -	$ 11,915,200	Eligible	N/A	COD	COD
D-3	24-inch Creekway Drive Interceptor	Offsite	MMD	Wastewater					$ 8,440,800	$ -	$ 8,440,800	Eligible	N/A	COD	COD
D-4	21/27/30-inch Roark Branch Interceptor Phase 2	Onsite	MMD	Wastewater					$ 17,108,800	$ -	$ 17,108,800	Eligible	N/A	COD	COD
D-5	8/12/15-inch Hunter Ranch West Collectors	Onsite	MMD	Wastewater					$ 4,772,100	$ -	$ 4,772,100	Eligible	N/A	COD	COD
D-6	8/12/15/21-inch Cole Ranch Collectors	Onsite	MMD	Wastewater					$ 13,032,000	$ -	$ 13,032,000	Eligible	N/A	COD	COD
D-7	27-inch Cole Ranch Interceptor Phase 1	Offsite	MMD	Wastewater					$ 3,975,300	$ -	$ 3,975,300	Eligible	N/A	COD	COD
D-8	8/12/15-inch Hunter Ranch East Collectors	Onsite	MMD	Wastewater					$ 7,525,900	$ -	$ 7,525,900	Eligible	N/A	COD	COD
D-9	8/12/15-inch Hunter Ranch Central Collectors	Onsite	MMD	Wastewater					$ 5,737,900	$ -	$ 5,737,900	Eligible	N/A	COD	COD
D-10	8/15-inch Hunter Ranch South Collectors	Onsite	MMD	Wastewater					$ 4,254,800	$ -	$ 4,254,800	Eligible	N/A	COD	COD
O-1	Lake Ray Roberts WTP Expansion #1	Offsite	COD	Water			60.00%	40.00%	$ 70,020,000	$ 70,020,000	$ -	N/A	N/A	COD	COD
O-2	Southwest Pump Station Improvements	Offsite	COD	Water			15.00%	85.00%	$ 6,325,000	$ 6,325,000	$ -	N/A	$ 5,376,250	COD	COD
O-3	36/42-inch North Loop 288 Transmission Main	Offsite	COD	Water			20.00%	80.00%	$ 48,614,700	$ 48,614,700	$ -	N/A	$ 38,891,760	COD	COD
O-4	Highway 380 Pump Station Improvements Phase 1	Offsite	COD	Water			10.00%	90.00%	$ 6,325,000	$ 6,325,000	$ -	N/A	$ 5,692,500	COD	COD
O-5	36-inch West Loop 288 Transmission Main	Offsite	COD	Water			10.00%	90.00%	$ 7,120,400	$ 7,120,400	$ -	N/A	$ 6,408,360	COD	COD
O-6	Lake Ray Roberts WTP Expansion #2	Offsite	COD	Water			50.00%	50.00%	$ 50,331,000	$ 50,331,000	$ -	N/A	N/A	COD	COD
O-7	42-inch LRRWTP Transmission Main	Offsite	COD	Water			40.00%	60.00%	$ 57,716,700	$ 57,716,700	$ -	N/A	N/A	COD	COD
O-8	Highway 380 Pump Station Improvements Phase 2	Offsite	COD	Water			10.00%	90.00%	$ 6,325,000	$ 6,325,000	$ -	N/A	$ 5,692,500	COD	COD
O-9	16-inch Jim Christal Transmission Main	Offsite	COD	Water			30.00%	70.00%	$ 4,528,200	$ 4,528,200	$ -	N/A	$ 3,169,740	COD	COD
O-1	Proposed Hickory Creek WRP Phase 1	Offsite	COD	Wastewater			20.00%	80.00%	$ 65,010,100	$ 65,010,100	$ -	N/A	N/A	COD	COD
O-2	Proposed Hickory Creek WRP Phase 2	Offsite	COD	Wastewater			5.00%	95.00%	$ 44,850,000	$ 44,850,000	$ -	N/A	N/A	COD	COD
O-3	Proposed Diversion Lift Station	Offsite	COD	Wastewater			50.00%	50.00%	$ 10,007,600	$ 10,007,600	$ -	N/A	$ 5,003,800	COD	COD
O-4	12/15-inch Robson Ranch Interceptor	Offsite	COD	Wastewater			100.00%	0.00%	$ 4,884,200	$ 4,884,200	$ -	N/A	N/A	COD	COD
O-5	Proposed Hickory Creek WRP Phase 3	Offsite	COD	Wastewater			40.00%	60.00%	$ 74,750,000	$ 74,750,000	$ -	N/A	N/A	COD	COD
52925	Loop 288 SB - North of R7	Offsite	TXDOT	Roads	Freeway	6-lane divided			$ -	$ -	$ -	N/A	N/A	TXDOT	TXDOT
52946	Loop 288 SB - West of R1	Offsite	TXDOT	Roads	Freeway	6-lane divided			$ -	$ -	$ -	N/A	N/A	TXDOT	TXDOT
51039	Jim Christal Road - East of Loop 288	Offsite	COD	Roads	Minor	4-lane divided	98.59%	1.41%	$ 19,674,900	$ 19,674,900	$ -	N/A	$ 277,416	COD	COD
45891	Vintage Blvd - East of IH 35W	Offsite	COD/County	Roads	Principal	6-lane divided	90.57%	9.43%	$ 15,000,700	$ 15,000,700	$ -	N/A	$ 1,414,566	COD	COD
52790	R3/FM 2449 - West of Loop 288	Onsite	MMD	Roads	Principal	6-lane divided			$ 12,500,200	$ -	$ 12,500,200	Eligible	N/A	COD/TXDOT	COD/TXDOT
52776	R2/Allred Road - East of R9/West of US 377	Offsite	COD	Roads	Principal	6-lane divided	93.75%	6.25%	$ 11,589,900	$ 11,589,900	$ -	N/A	$ 724,369	COD	COD
52771	R2/Allred Road - East of John Paine Road	Onsite	MMD	Roads	Principal	6-lane divided			$ 7,775,700	$ -	$ 7,775,700	Eligible	N/A	COD	COD
52773	R2/Allred Road - West of John Paine Road	Onsite	MMD	Roads	Principal	6-lane divided			$ 26,420,500	$ -	$ 26,420,500	Eligible	N/A	COD	COD
52709	Crawford Road - West of IH 35 W	Offsite	TXDOT/COD/County	Roads	Minor	4-lane divided	83.87%	16.13%	$ 11,470,700	$ 11,470,700	$ -	N/A	$ 1,850,224	COD	COD
52758	Robson Ranch - East/West of R1	Offsite	TXDOT/COD/County	Roads	Principal	6-lane divided	90.77%	9.23%	$ 8,383,600	$ 8,383,600	$ -	N/A	$ 773,806	COD	COD
52879	R6 - South of FM 2449	Onsite	MMD	Roads	Minor	4-lane divided			$ 24,968,700	$ -	$ 24,968,700	Eligible	N/A	COD	COD
52866	R7 - West of Loop 288	Onsite	MMD	Roads	Minor	4-lane divided			$ 10,551,700	$ -	$ 10,551,700	Eligible	N/A	COD	COD
52823	R16 - North of FM 2449	Onsite	MMD	Roads	Collector	4-lane divided			$ 9,842,200	$ -	$ 9,842,200	Eligible	N/A	COD	COD
52943	R10 - East of Loop 288	Onsite	MMD	Roads	Minor	4-lane divided			$ 1,596,100	$ -	$ 1,596,100	Eligible	N/A	COD	COD
52872	R18 - West of John Paine Road	Onsite	MMD	Roads	Collector	4-lane divided			$ 8,423,500	$ -	$ 8,423,500	Eligible	N/A	COD	COD
52791	R15 - North of Allred Road	Onsite	MMD	Roads	Collector	4-lane divided			$ 6,384,200	$ -	$ 6,384,200	Eligible	N/A	COD	COD
52828	R5 - North of Allred Road	Onsite	MMD	Roads	Minor	4-lane divided			$ 19,684,500	$ -	$ 19,684,500	Eligible	N/A	COD	COD
52853	R13 - North of R2	Onsite	MMD	Roads	Collector	4-lane divided			$ 10,019,600	$ -	$ 10,019,600	Eligible	N/A	COD	COD
52767	R12 - West of R4	Onsite	MMD	Roads	Collector	4-lane divided			$ 17,379,400	$ -	$ 17,379,400	Eligible	N/A	COD	COD
52953	R1/John Paine Road - North/South of Allred Road	Onsite	MMD	Roads	Principal	4-lane divided			$ 41,787,600	$ -	$ 41,787,600	Eligible	N/A	COD	COD
52756	R4 - North of Robson Ranch Road	Onsite	MMD	Roads	Principal	4-lane divided			$ 6,445,300	$ -	$ 6,445,300	Eligible	N/A	COD	COD
52777	R9 - South of Allred Road	Onsite	MMD	Roads	Minor	4-lane divided			$ 4,344,600	$ -	$ 4,344,600	Eligible	N/A	COD	COD
52824	R11 - East of R4	Onsite	MMD	Roads	Collector	4-lane divided			$ 12,058,900	$ -	$ 12,058,900	Eligible	N/A	COD	COD
52782	R19 - West of R9	Onsite	MMD	Roads	Collector	4-lane divided			$ 3,901,400	$ -	$ 3,901,400	Eligible	N/A	COD	COD
52782	R20 - West of R9	Onsite	MMD	Roads	Collector	4-lane divided			$ 2,926,000	$ -	$ 2,926,000	Eligible	N/A	COD	COD
52808	R8 - North of Loop 288	Onsite	MMD	Roads	Principal	4-lane divided			$ 5,546,100	$ -	$ 5,546,100	Eligible	N/A	COD	COD
52808	R8 - Underwood Dr - North of Cole Property	Offsite	COD	Roads	Principal	4-lane divided	57.89%	42.11%	$ 12,160,800	$ 12,160,800	$ -	N/A	$ 5,120,913	COD	COD
52897	R6 - North of Tom Cole Rd	Offsite	COD	Roads	Minor	4-lane divided	100.00%	0.00%	$ 11,398,100	$ 11,398,100	$ -	N/A	$ -	COD	COD
52807	R14 - Hunter NE Collector	Onsite	MMD	Roads	Collector	4-lane divided			$ 5,675,000	$ -	$ 5,675,000	Eligible	N/A	COD	COD
52788	R17 - Cole - West Collector	Onsite	MMD	Roads	Collector	4-lane divided			$ 2,926,000	$ -	$ 2,926,000	Eligible	N/A	COD	COD