ORDINANCE NO. 19-008

AN ORDINANCE OF THE CITY OF DENTON, TEXAS UPDATING IMPACT FEES BY AMENDING CHAPTER 26, "UTILITIES," SECTION 26-210 THROUGH SECTION 26-232 OF THE CITY OF DENTON CODE OF ORDINANCES; ADOPTING REVISED LAND USE ASSUMPTIONS AND CAPITAL IMPROVEMENTS PLANS FOR WATER AND WASTEWATER IMPACT FEES; ESTABLISHING NEW SERVICE AREAS FOR WATER AND WASTEWATER IMPACT FEES; ESTABLISHING NEW MAXIMUM IMPACT FEES PER SERVICE UNIT AND IMPACT FEES TO BE COLLECTED; CREATING SCHEDULES FOR THE ASSESSMENT AND COLLECTION OF IMPACT FEES; REPEALING CONFLICTING ORDINANCES AND RESOLUTIONS; PROVIDING FOR A SEVERABILITY CLAUSE; PROVIDING FOR A PENALTY NOT TO EXCEED $2,000 FOR EACH VIOLATION THEREOF; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, Texas Local Government Code, Chapter 395 authorizes a city to adopt and amend impact fees for the purpose of financing capital improvements required by new development; and

WHEREAS, the City Council of the City of Denton, Texas in accordance with State law, initially enacted water and wastewater impact fees in accordance with Ordinance No. 98-301, dated on the September 15, 1998; and

WHEREAS, the City Council, in accordance with State law, then enacted water and wastewater impact fees in accordance with Ordinance No. 2003-137 which was adopted by the City Council on May 13, 2003, and effective as of May 29, 2003; and then enacted Ordinance No. 2004-183, nunc pro tunc on July 20, 2004, and effective as of August 4, 2004 in order to properly recite several provisions that were inadvertently omitted or misstated from the above-referenced Ordinance No. 2003-137; and then enacted Ordinance No. 2008-156 which was adopted by the City Council on the July 15, 2008, and effective as of July 29, 2008 establishing new maximum fees and establishing a new service area for Water impact fees; and

WHEREAS, the City Council of the City of Denton, Texas in accordance with State law, then enacted water and wastewater impact fees in accordance with Ordinance No. 2013-326 on November 19, 2013; and

WHEREAS, five (5) years has passed since the Council considered impact fees, and it is now appropriate and lawfully required that the City once again address the issues of Land Use Assumptions and a Capital Improvements Plan, as well as the subject of Amended Water and Wastewater Impact Fees; and

WHEREAS, the City Council in accordance with law desires to update its impact fee program by amending land use assumptions, service areas, capital improvements plans and impact fees for water and wastewater facilities; and

WHEREAS, the City Council of the City of Denton, Texas has duly appointed a Capital Improvements Advisory Committee (the "Committee") by Ordinance No. 18-411 on March 20, 2018;

the Council has received written comments as required by law from such Committee, on November 29, 2018; and has adopted Land Use Assumptions and a Capital Improvements Plan for amended water and wastewater impact fees all in accordance with the requirements of Texas Local Government Code, Chapter 395; and

WHEREAS, the City Council of the City of Denton, Texas also received a recommendation of the Denton Public Utilities Board (the "Board"), an advisory Board, to consider the impact fees and the zones set forth below in this ordinance, which recommendation was obtained in an open meeting of the Board on October 8, 2018; and

WHEREAS, on December 18, 2018, after due notice being issued in accordance with State law, a public hearing of the City Council was convened during the regularly called City Council meeting regarding the subject of the land use assumptions, capital improvements plans, and amended impact fees; and

WHEREAS, the City Council of the City of Denton, Texas, having complied with all applicable substantive and procedural requirements of Texas Local Government Code, Chapter 395; considering the comments of the Capital Improvements Advisory Committee; considering the recommendation of the Public Utilities Board; and after due deliberation and consideration finds it necessary and appropriate and in the public interest to establish water and wastewater impact fees, and to establish amended water and amended wastewater impact fees to pay the costs of certain capital improvements for new development; NOW THEREFORE,

THE COUNCIL OF THE CITY OF DENTON HEREBY ORDAINS:

SECTION 1. The facts, circumstances, and recitations contained in the preambles to this Ordinance are hereby found and declared to be true and correct.

SECTION 2. The Capital Improvements Plan for Water and Wastewater Impact Fees is hereby amended, as set forth in Exhibit "A," which is attached hereto and incorporated by reference herewith.

SECTION 3. The Land Use Assumptions for Water and Wastewater Impact Fees hereby are amended as set forth in Exhibit "A," which is attached hereto and incorporated by reference herewith.

SECTION 4. Chapter 26 of the Code of Ordinances of the City of Denton, Texas, entitled "Utilities," is hereby amended, which shall hereafter read as follows:

CHAPTER 26: UTILITIES

ARTICLE VI. IMPACT FEES

Sec. 26-210. Short Title.

This Article shall be known and cited as the "Denton Impact Fee Ordinance."

Sec. 26-211. Statement of Purpose.

This Article is intended to assure the provision of adequate public facilities to serve new development in the City by requiring each development to pay its proportional share of the costs of such improvements necessitated by and attributable to such new development as related to water and wastewater capital improvements.

Sec. 26-212. Authority.

This Article is adopted pursuant to Chapter 395 of the Texas Local Government Code and pursuant to the Denton Charter. The provisions of this Article shall not be construed to limit the powers of the City to utilize other methods authorized under state law, or pursuant to other City powers to accomplish the purposes set forth herein, either in substitution or in conjunction with this Article. The effective date of this Article is September 15, 1998.

Sec. 26-213. Definitions.

The following words, terms and phrases, as used in this Article, shall have the meanings respectively ascribed to them in this Section, unless the context clearly indicates otherwise:

(1) Area-related facility means a capital improvement or facility expansion which is designated in the Impact Fee Capital Improvements Plan and which is not a site-related facility. Area-related facility may include a capital improvement, which is located offsite, within, or on the perimeter of the development site.

(2) Assessment means the determination of the amount of the maximum impact fee per service unit that can be imposed on new development pursuant to this Article.

(3) Capital improvement means any water supply; or treatment, transmission, pumping and storage facilities; or wastewater treatment and conveyance facilities that have a life expectancy of three (3) or more years, and are owned and operated by or on behalf of the City.

(4) Director means the Director of Water or Wastewater Utilities, or General Manager of Utilities for the City of Denton, or his or her designee.

(5) Facility expansion means the expansion of the capacity of any existing facility for the purpose of serving new development. The term does not include the repair, maintenance, modernization or expansion of an existing facility to serve existing development.

(6) Impact fee capital improvements plan means the adopted plan for a service area, as may be amended from time to time, which identifies the water facilities or wastewater facilities and their associated costs which are necessitated by and which are attributable to new development, for a period not to exceed ten (10) years, and which are to be financed in whole or in part through the imposition of water or wastewater impact fees pursuant to this Chapter 26, Article VI.

(7) Land use assumptions means the projections of population and employment growth and associated changes in land uses, densities and intensities for a service area adopted by the City, as may be amended from time to time, upon which the impact fee capital improvements plan for the

service area is based.

(8) New development means an activity involving the construction, reconstruction, redevelopment, conversion, structural alteration, relocation, or enlargement of any structure, or any use or extension of land, which has the effect of increasing water or wastewater demand, measured by an increase in the number of the service units utilizing the City's water or wastewater system that are attributable to such activity, and which requires either the approval and filing of a plat, or a re-plat pursuant to the City's subdivision regulations, or the issuance of a building permit, or a utility connection.

(9) Service area means a geographic area within the City or within the City's extraterritorial jurisdiction, within which impact fees for water or wastewater facilities may be collected for new development occurring within such area and within which fees so collected will be expended for those types of improvements identified in the type of capital improvements plan applicable to the service area.

(10) Service unit means a standardized measure of consumption, use, generation or discharge attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards, for a particular category of capital improvements or facility expansions. For water and wastewater facilities, the service unit shall constitute the basis for establishing equivalency within various customer classes based upon the relationship of the continuous duty maximum flow rate in gallons per minute for a water meter of a given size and type compared to the continuous duty maximum flow rate in gallons per minute for a 3/4-inch diameter simple water meter.

(11) Single-family equivalency ("SFE") means an equivalency factor, based on the demand associated with the smallest water meter used in the City of Denton, Texas utility system. SFE's are utilized to establish the number of service units to be allocated to various meter sizes used in the City of Denton, Texas Water and Wastewater utilities system.

(12) Site-related facility means an improvement or facility which is for the primary use or benefit of a new development and/or which is the for the primary purpose of safe and adequate provision of water and wastewater facilities to serve the new development and which is not included in the impact fee capital improvements plan and for which the developer or property owner is solely responsible under subdivision and other applicable regulations.

(13) Small residential housing unit means a single-family residence of less than 1,300 square feet on a lot of less than 6,000 square feet.

(14) Utility connection means connection of an individual meter to the City's water or wastewater system, or an increase in the size of an existing meter.

Sec. 26-214. Impact fee as condition of development approval.

No new development shall be connected to the City's water or wastewater system within the service

area without the assessment of an impact fee pursuant to this Article, and no building permit or request for service shall be issued until the applicant has paid the impact fee imposed herein, except for those entities that are expressly exempt from impact fees as set forth in Texas Local Government Code, Chapter 395.

Sec. 26-215. Land use assumptions.

(a) Said land use assumptions for the City shall be updated at least every five (5) years utilizing the amendment procedure set forth in Texas Local Government Code, Chapter 395.

(b) Amendment to the land use assumptions shall incorporate projections of changes in land uses, densities, intensities and population for the service area over at least a ten (10) year period.

Sec. 26-216. Water impact fee service area.

There are hereby established three (3) water impact fee service areas, to include all land within the City and its extraterritorial jurisdiction, the boundaries of which are depicted in Exhibit A, which Exhibit is attached hereto and incorporated by reference herein.

Sec. 26-217. Wastewater impact fee service areas.

There is hereby established one (1) wastewater impact fee service area, to include all land within the City and its extraterritorial jurisdiction, the boundaries of which are depicted in Exhibit A, which Exhibit is attached hereto and incorporated by reference herein.

Sec. 26-218. Determination of service units.

The number of service units for both water or wastewater impact fees shall be determined by using the land use, and the service unit equivalencies table which converts the demands for water or wastewater improvements generated by typical land uses to water meter size, and which table is included within Exhibit B and incorporated by reference herein.

Sec. 26-219. Impact fees per service unit.

(a) Maximum impact fees per service unit for each service area shall be established by category of capital improvements. The maximum impact fee per service unit for each service area for each category of capital improvement shall be computed in the following manner:

(1) For each category of capital improvements, calculate the total projected costs of capital improvements necessitated by and attributable to new development in the service area identified in the impact fee capital improvements plan;

(2) From such amount, subtract a credit in the amount of that portion of utility service revenues, if any, including the payment of debt, to be generated by new service units during the period the capital improvements plan is in effect, including the payment of debt, associated with the capital improvements in the plan;

(3) Divide the resultant amount by the total number of service units anticipated within the service area, based upon the land use assumptions for that service area.

(b) The maximum impact fee per service unit for water or wastewater facilities by service area shall be as set forth in Schedule 1, which is attached hereto and incorporated herein by reference. Schedule 1 shall be used to assess impact fees. Schedule 1 may be amended from time to time utilizing the amendment procedure set forth in Section 26-228.

(c) The impact fee per service unit which is to be paid by each new development within a service area shall be as set forth in Schedule 2, which is attached hereto and incorporated by reference, and shall be an amount less than or equal to the maximum impact fee per service unit established in Schedule 1. Schedule 2 may be amended from time to time utilizing the amendment procedure set forth in Section 26-228.

Sec. 26-220. Assessment of impact fees.

(a) Assessment of impact fees for any new development in all of the Denton Water and Wastewater Service Areas shall be made as follows:

(1) For land which is unplatted at the time of application for a building permit or utility connection, or for a new development which received final plat approval prior to the effective date of this Article, and for which no re-platting is necessary pursuant to the City's subdivision regulations prior to development, assessment of impact fees shall occur at the time application is made for the building permit or utility connection, whichever first occurs, and shall be the amount of the maximum impact fee per service unit in effect, as set forth in Schedule 1.

(2) For a new development which is submitted for approval pursuant to the City's subdivision regulations on or after the effective date of this Article, or for which re-platting results in an increase in the number of service units after such date, assessment of impact fees shall be at the time of final plat recordation, and shall be the amount of the maximum impact fee per service unit in effect as set forth in Schedule 1.

(b) Following assessment of impact fees pursuant to subsection (a), the amount of impact fee assessment per service unit for that development cannot be increased, unless the owner proposes to change the approved development by the submission of a new application for final plat approval or other development application that results in approval of additional service units, in which case a new assessment shall occur at the Schedule 1 rate then in effect for such additional service units.

(c) Following the vacating of any plat or approval of any re-plat, a new assessment must be made in accordance with subsection (a)(2).

(d) An application for an amending plat made pursuant to Texas Local Government Code §212.016 and the City of Denton Subdivision Ordinance, and for which no new development is proposed, is not subject to reassessment for an impact fee.

Sec. 26-221. Computation of impact fees.

(a) Following the filing and acceptance of a written application for building permit or utility connection, the City shall compute the impact fee due in the following manner:

(1) The number of service units shall be determined by the size of the water meter purchased using the Land Use and Service Unit/SFE Equivalencies table incorporated as Exhibit B herein. The service units for multi-family apartment projects with eight (8) or more units shall be determined by multiplying the number of bedrooms in said apartment project by 0.26 SFE;

(2) Service units shall be summed for all meters, or for all bedrooms within a multi-family apartment project with eight (8) or more units purchased for the development;

(3) The total number of service units shall be multiplied by the impact fee per service unit for water and/or wastewater service facilities using Schedule 2 then in effect as established in Section 26-219;

(4) The amount of each impact fee shall be reduced by any allowable offsets or credits for that category of capital improvements, in the manner provided in Section 26-223.

(b) The amount of impact fee due for new development shall not exceed the amount computed by multiplying the assessed fee for water and/or wastewater service by the total number of service units generated by the development. The amount of impact fee due for redevelopment shall not exceed the amount computed by multiplying the assessed fee for water and/or wastewater service by the net increase in service units generated by the redevelopment.

(c) The developer may submit or the Director may require the submission of a study, prepared by a professional engineer, licensed in the State of Texas, clearly indicating the number of water and/or wastewater service units which will be consumed or generated by the new development. The Director will review the information for completeness and conformity with generally accepted engineering practices and will, when satisfied with the completeness and conformity of the study, multiply the number of service units determined by the study, times the impact fee per service unit contained in Section 26-219 above to determine the total impact fee to be collected for the development. The Director may also use recent historical water billing records for existing customers to determine water demands and single-family equivalents ("SFE") in accordance with data from the most recent Capital Improvements Plan.

(d) Whenever the property owner increases the number of service units for a development, the additional impact fees collected for such new service units shall be determined based on Schedule 2 and applicable offsets, credits, and discounts then in effect, and such additional fee shall be assessed and collected at the time the additional meters are purchased.

(e) In the event the property owner decreases the number of service units for a development, the property owner shall be entitled to a refund of the impact fee or impact fees actually paid, but only for the amounts represented by the decrease in service units based on the assessed fee and offsets,

credits, or discounts applicable at the time the fee was paid.

(f) If the building permit for the property on which an impact fee is paid has expired and a new application for a building permit is thereafter filed for the identical property and the identical number of service units, the impact fee previously paid satisfies the requirements of this Article, unless the earlier impact fee was refunded to the applicant at the expiration of the previously-issued building permit, or is otherwise refunded.

(g) The impact fee shall attach to the property for which the impact fee was paid and shall not be transferable to other properties or service units.

(h) No building permit or utility connection shall be issued if the applicant cannot verify payment to Staff of the appropriate impact fee and other applicable fees, or if existing facilities do not have actual capacity to provide service to the new connection(s), except for those entities that are exempted from impact fees as are specifically set forth in Texas Local Government Code, Chapter 395.

(i) All matters pertaining to the enforcement, assessment, computation, or collection of impact fees provided for herein shall be determined by the Director, or his or her designate.

Sec. 26-222. Collection of impact fees.

(a) Except as otherwise provided in this Section, the impact fee for the new development shall be collected at the time the City issues a building permit, or if a building permit is not required, at the time an application is filed for a new connection, to the City's water or wastewater system or for an increase in water meter size.

(b) Except as otherwise provided by contracts with political subdivisions, developer's contracts, or wholesale customers, no building permit shall be issued until all impact fees due and owing have been paid to the City.

(c) The City may enter into an agreement for capital improvements with a property owner pursuant to Section 26-229 that establishes a different time and manner of payment.

(d) In the event that a property owner agrees to construct or finance capital improvements in the capital improvements plan pursuant to Section 26-229, the costs of which are to be reimbursed to the owner from impact fees paid from other new developments that will use such facilities, the City may collect impact fees from such other new developments at the time final plats are recorded for such development.

(e) Schedule 1 sets the assessment rate and establishes maximum impact fees as set forth in subparagraphs (e)(1) through (e)(4) below:

(1) For a new development for which final plat recordation occurred on or after September 15, 1998, but before May 29, 2003, the maximum impact fee per service unit shall be $2,044 for the water service area, and $483 for the wastewater service area.

(2) For a new development for which final plat recordation occurred on or after May 29, 2003, but before July 29, 2008, the maximum impact fee per service unit shall be $3,155 for the water service area; and $1,703 for the Zone 1 wastewater service area.

(3) For a new development for which final plat recordation occurred on or after July 29, 2008, but before December 3, 2013 the maximum impact fee per service unit shall be as follows: $3,400 for the Zone 1 water service area and $4,000 for the Zone 2 water service area; and $1,700 for the Zone 1 wastewater service area and $1,760 for the Zone 2 wastewater service area.

(4) For a new development for which final plat recordation occurred on or after December 3, 2013, but before January 9, 2019, the maximum impact fee per service unit shall be as follows: $3,167 for the Zone 1A water service area, $5,250 for the Zone 1B water service area, and $5,753 for the Zone 2 water service area; and $2,851 for the wastewater service area.

(5) For a new development for which final plat recordation occurred on or after January 9, 2019, or for any plats filed prior to September 15, 1998, the maximum impact fee per service unit shall be as follows: $3,569 for the Zone 1A water service area, $5,352 for the Zone 1B water service area, and $7,638 for the Zone 2 water service area; and $4,716 for the wastewater service area.

(f) Schedule 2 sets the collection rate for impact fees as set forth in subparagraph (f)(1) through (f)(5) below:

(1) Except as provided in paragraph (2-5) below, impact fees shall be collected and paid as follows:

Water Service Area (Zone 1A)	$3,569 per service unit
Water Service Area (Zone 1B)	$5,352 per service unit
Water Service Area (Zone 2)	$7,638 per service unit
Wastewater Service Area	$4,716 per service unit

(2) For a new development for which final plat recordation occurred on or after September 15, 1998, but before May 29, 2003, and for which no new service units have been added, impact fees shall be collected as follows:

Water Service Area	$2,044 per service unit
Wastewater Service Area (Zone 1)	$483 per service unit

(3) For a new development for which final plat recordation occurred on or after May 29, 2003, but before July 29, 2008, and for which no new service units have been added, impact fees shall be collected as follows:

Water Service Area (Zone 1)	$3,155 per service unit
Wastewater Service Area (Zone 1)	$1,703 per service unit

(4) For a new development for which final plat recordation occurred on or after July 29, 2008, but before December 3, 2013, and for which no new service units have been added, impact fees shall be collected as follows:

Water Service Area (Zone 1)	$3,400 per service unit
Water Service Area (Zone 2)	$4,000 per service unit
Wastewater Service Area (Zone 1)	$1,700 per service unit
Wastewater Service Area (Zone 2)	$1,760 per service unit

(5) For a new development for which final plat recordation occurred on or after December 3, 2013, but before January 9, 2019 for which no new service units have been added, impact fees shall be collected as follows:

Water Service Area (Zone 1A)	$3,100 per service unit
Water Service Area (Zone 1B)	$3,900 per service unit
Water Service Area (Zone 2)	$4,500 per service unit
Wastewater Service Area (Zone 1)	$2,200 per service unit

Provided, however, if the service unit is a "small residential housing unit" as defined herein, which consists of a residence of less than 1,300 square feet, which is also located on a lot of less than 6,000 square feet, that service unit shall be assessed and charged a 0.5. SFE charge, no matter in which Zone it is located in, and no matter when the lot is platted.

Sec. 26-223. Offsets and credits.

(a) The City shall offset the reasonable value of any area-related facilities, identified in the impact fee capital improvements plan and constructed pursuant to an agreement with the City, except as otherwise provided therein, which are dedicated to and received by the City on or after the effective date of this ordinance, against the amount of the impact fee due for that category of capital improvement. No offsets or credits shall be provided for required over-sizing of water and wastewater lines or lift stations not identified in the capital improvements plan or for pro-rata payments to repay other developers for such over-sizing.

(b) The City shall credit any new development that occurs subsequent to the effective date of this Article, any amount of capital recovery fees which have been collected by the City pursuant to duly adopted ordinances and any impact fees collected by the City pursuant to this Article.

(c) All offsets and credits against impact fees shall be subject to the following limitations and shall be granted based on this Article and additional standards promulgated by the City, which may be adopted as administrative guidelines.

(1) No offset or credit shall be given for the dedication or construction of site-related facilities.

(2) No offset or credit shall exceed the impact fee to be collected from new

development as established in Section 26-219.

(3) The unit costs used to calculate the offsets shall not exceed those assumed for the capital improvements included in the impact fee capital improvements plan for the category of facility within the service area for which the impact fee is imposed.

(4) If an offset or credit applicable to a plat has not been exhausted within ten (10) years from the date of the acquisition of the first building permit issued or connection made after the effective date of this Article or within such period as may be otherwise designated by agreement for capital improvements pursuant to Section 26-229, such offset or credit shall lapse.

(5) In no event will the City reimburse the property owner or developer for an offset or credit when no impact fees for the new development can be collected pursuant to this Article or for any amount exceeding the total impact fees collected or due for the development for that category of capital improvement, unless otherwise agreed to by the City.

(6) No offset shall exceed an amount equal to the eligible costs of the improvement multiplied by a fraction, the numerator of which is the impact fee per service unit due for the new development as computed using Schedule 2 and the denominator of which is the maximum impact fee per service unit for the new development as computed using Schedule 1.

(7) Offsets or credits for area-related facilities dedicated to and accepted by the City for a development prior to the effective date of this Article shall be prorated among the total number of service units within such development and reduced by an amount equivalent to the number of existing service units within such development and shall be further reduced by the amount of any participation funds received from the City and by any payments received from other developments who utilize the system facility.

(8) The City may participate in the costs of an area-related improvement to be dedicated to the City, including costs that exceed the amount of the impact fees due for the development under Schedule 1 for that category of capital improvements, in accordance with policies and rules established under the City's subdivision regulations and when incorporated into an agreement for capital improvements pursuant to Section 26-229. The amount of any offset shall not include the amount of the City's participation.

(d) Unless an agreement for capital improvements is executed providing for a different manner of offsetting or crediting impact fees due pursuant to Section 26-229, an offset or credit associated with a plat shall be applied to reduce an impact fee at the time of application for the first building permit or at the time of application for the first utility connection for the property, in the case of land located within the City's extraterritorial jurisdiction, and, thereafter, to reduce impact fees subsequently to be collected, until the offset or credit is exhausted.

Sec. 26-224. Establishment of accounts.

(a) The City's Department of Finance shall establish separate interest-bearing accounts

clearly identifying the category of capital improvement (i.e., water facilities and wastewater facilities) within the service area for which the impact fee is collected.

(b) Interest earned by each account shall be credited to the account on which it is earned and shall be used solely for the purposes specified for impact fees as authorized herein.

(c) The City's Department of Finance shall establish adequate financial and accounting controls to ensure that impact fees disbursed from the account are utilized solely for the purposes authorized in this Article. Disbursement of funds shall be authorized by the City at such times as are reasonably necessary to carry out the purposes and intent of this Article; provided, however, that any fee paid shall be expended within a reasonable period of time, but not to exceed ten (10) years from the date the fee is deposited into the account.

(d) The City's Department of Finance shall maintain and keep adequate financial records for each such account, which shall show the source and disbursement of all revenues, which shall account for all monies received, the number of service units for which the monies are received, and which shall ensure that the disbursement of funds from each account shall be used solely and exclusively for the provision of projects specified in the impact fee capital improvements plan as area-related capital projects. The City's Department of Finance shall also maintain such records as are necessary to ensure that refunds are appropriately made in accordance with this Article. The records of the account into which impact fees are deposited shall be open for public inspection and copying during ordinary business hours. The City may establish a fee for copying services

Sec. 26-225. Use of proceeds of impact fee accounts.

(a) The impact fee collected pursuant to this Article may be used to finance or to recoup capital construction costs for water and wastewater facilities identified in the impact fee capital improvements plan and for any purpose authorized in Texas Local Government Code, Chapter 395, as amended. Impact fees may also be used to pay the principal sum and interest and other finance costs on bonds, notes or other obligations issued by or on behalf of the City to finance such capital improvements or facilities expansions.

(b) Impact fees collected pursuant to this Article shall not be used to pay for any of the following expenses:

(1) Construction, acquisition, or expansion of capital improvements or assets other than those identified for the water and wastewater utility in the impact fee capital improvements plan;

(2) Repair, operation, or maintenance of existing or new capital improvements or facilities expansions;

(3) Upgrading, expanding, or replacing existing capital improvements to serve existing development in order to meet stricter safety, efficiency, environmental or regulatory standards;

(4) Upgrading, expanding, or replacing existing capital improvements to serve

existing development; provided, however, that impact fees may be used to pay the costs of upgrading, expanding or replacing existing capital improvements in order to meet the need for new capital improvements generated by new development; or

(5) Administrative and operating costs of the City.

Sec. 26-226. Appeals.

(a) The property owner or applicant for new development may appeal the following Staff decisions and determinations to the Denton Public Utilities Board: (a) the applicability of an impact fee to the new development; (b) the method of calculating the amount of the impact fee due; (c) the availability or the amount of an offset, credit or rebate; (d) the application of an offset or credit against an impact fee due; or (e) the amount of a refund due, if any. The Property Owner or Applicant shall notify the City Secretary of the City of Denton, Texas in writing, of its desire to appeal any such decision and determination to the Public Utilities Board, no later than thirty (30) days following the date of Staff decision or determination. This notice shall be untimely if it is received by the City Secretary more than thirty (30) days following the date of Staff decision and determination.

(b) The Owner and/or Applicant must file a notice of appeal with the City Secretary within thirty (30) days following the determination of the amount of the impact fees to be paid by the development by city Staff. If the notice of appeal is accompanied by a bond or other sufficient surety satisfactory to the City Attorney in an amount equal to the original determination of the impact fee due, the development application may be processed while the appeal of the impact fee is pending.

(c) The written notice to the City Secretary requesting an appeal shall contain the following information:

(1) The name of the Owner and/or Applicant of the Appeal; and

(2) The business address and telephone number of the Owner and/or Applicant; and

(3) The specific decision or determination of Staff which Owner and/or Applicant are complaining of, and the date of issuance thereof; and

(4) State specifically the grounds regarding Owner's and/or Applicant's application for appeal; and

(5) State specifically what amount of money that you believe is owing the City, as well as your basis therefor; and

(6) The name and address of any legal counsel who will appear before the Public Utilities Board to argue on your behalf; and

(7) The signature of the Owner and/or Applicant regarding this Appeal.

(d) The burden of proof shall be on the property owner and/or applicant to demonstrate that the amount of the fee or the amount of the offset, credit or rebate was not calculated according to the provisions of this Article. Upon submission of the case and the hearing held before the Public Utilities Board (the "Board"), a decision shall be made by the Board, upon Public Hearing, which shall constitute a formal recommendation to the Denton City Council. The Board shall submit all of the materials that it receives as evidence from Staff and all of the materials that it receives as evidence from the Owner and/or Applicant to the City Council for its final consideration. All evidence as well as the record shall be closed by the Public Utilities Board. A record shall be made of the Public Utilities Board hearing and shall be forwarded to the City Council. The City Council shall then make its decision on the record produced by the Public Utilities Board and upon the oral arguments that are limited to not more than fifteen (15) minutes each for the Owner and/or Applicant, and the City. The City Council shall then determine the appeal and issue its written decision.

Sec. 26-227. Refunds.

(a) Any impact fee or portion thereof collected pursuant to this Article which has not been expended within ten (10) years from the date of payment, shall be refunded, upon application, to the record owner of the property at the time the refund is paid, or, if the impact fee was paid by another governmental entity, to such governmental entity, together with interest calculated from the date of collection to the date of refund at the statutory rate as set forth in Texas Local Government Code, Section 395.025(d) which states that Texas Finance Code, Section 302.002, or any successor statute applies.

(b) Upon the written request of an owner of the property on which an impact fee has been paid, the City shall refund such fees if:

(1) Existing service is available and service is denied; or

(2) Service was not available when the fee was collected and the City has failed to commence construction of facilities to provide service within two (2) years of fee payment; or

(3) Service was not available when the fee was collected and has not subsequently been made available within a reasonable period of time considering the type of capital improvement or facility expansion to be constructed, but in any event no later than five (5) years from the date of the payment.

(c) The City shall refund an appropriate proportion of impact fee payments in the event that a previously purchased but uninstalled water meter for which the impact fee has been paid is replaced with a smaller meter, based on the service unit differential of the two (2) meter sizes and the fee per service unit at the time of the original fee payment.

(d) A petition for refund under this section shall be submitted to the Director on a form provided by the City for such purpose. Within one (1) month of the date of receipt of a petition for refund, the Director must provide the petitioner, in writing, with a decision on the refund request,

including the reasons for the decision. If a refund is due to the petitioner, the Director shall notify the General Manager of Utilities and request that a refund payment be made to the petitioner.

Sec. 26-228. Update of plan and revision of fees.

(a) The City shall update its land use assumptions and capital improvements plans at least every five (5) years, commencing approximately from the date of adoption of such plans, and shall recalculate the impact fees based thereon in accordance with the procedures set forth in Texas Local Government Code, Chapter 395, or in any successor statute.

(b) The City may review its land use assumptions, impact fees, capital improvements plans and other factors such as market conditions more frequently than provided in subsection (a) to determine whether the land use assumptions and capital improvements plans should be updated and the impact fee recalculated accordingly, or whether Schedules 1 or 2 should be changed. Schedule 2 may be amended without revising land use assumptions and capital improvements plans at any time prior to the update provided for in subsection (a), provided that the impact fees to be collected under Schedule 2 do not exceed the impact fees assessed under Schedule 1.

(c) If, at the time an update is required pursuant to Subsection (a), the City Council determines that no change to the land use assumptions, capital improvements plan or impact fee is needed, it may dispense with such update by following the procedures in Texas Local Government Code, Section 395.0575.

(d) The City may amend by resolution the Land Use and Service Unit/SFE Equivalency table (Exhibit B), at any time prior to the update provided for in Subsection (a), provided that the number of service units associated with a particular land use shall not be increased.

Sec. 26-229. Agreement for capital improvements.

An owner of a new development may construct or finance a capital improvement or facility expansion designated in the impact fee capital improvements plan, if required or authorized by the City, by entering into an agreement with the City prior to the issuance of any building permit for the development. The agreement shall be on a form approved by the City and shall identify the estimated cost of the improvement or expansion, the schedule for initiation and completion of the improvement or expansion, a requirement that the improvement be designed and completed to City standards and such other terms and conditions as deemed necessary by the City. The agreement shall provide for the method to be used to determine the amount of the offset to be given against the impact fees due for the development or any reimbursement to the owner for construction of the facility.

Sec. 26-230. Use of other financing mechanisms.

(a) In addition to the use of impact fees, the City may finance water and wastewater capital improvements or facilities expansions designated in the impact fee capital improvements plan through the issuance of bonds, through the formation of public improvements districts or other assessment districts, or through any other authorized mechanism, in such manner and subject to such limitations

as may be provided by law.

(b) Except as otherwise provided herein, the assessment and collection of an impact fee shall be additional and supplemental to, and not in substitution of, any other tax, fee, charge or assessment which is lawfully imposed on and due against the property.

(c) The City may pay all or part of impact fees due for a new development taking into account available offsets and credits pursuant to duly adopted criteria.

Sec. 26-231. Conflicting ordinances.

All ordinances or parts of ordinances that are in force when the provisions of this ordinance become effective, which are inconsistent or in conflict with the terms or provisions contained in this ordinance, are hereby repealed to the extent of the conflict.

Sec. 26-232. Reserved.

SECTION 4. Any person violating any provision of this Ordinance shall, upon conviction, be fined a sum not to exceed $2,000. Each day that a provision of this Ordinance is violated shall constitute a separate and distinct offense.

SECTION 5. If any section, subsection, paragraph, sentence, clause, phrase or word in this Ordinance, or application thereof to any person or circumstances is held invalid by any court of competent jurisdiction, such holding shall not affect the validity of the remaining portions of this Ordinance, and the City Council of the City of Denton, Texas hereby declares it would have enacted such remaining portions, despite any such invalidity.

SECTION 6. This Ordinance shall repeal any conflicting ordinances and resolutions to the contrary; it being the intention of the City Council to fully amend all provisions of Chapter 26 of the City of Denton, Texas Code of Ordinances dealing with Impact Fees.

SECTION 7. This Ordinance shall become effective fourteen (14) days from the date of its passage, and the City Secretary is hereby directed to cause the caption of this Ordinance to be published twice in the *Denton Record Chronicle,* a daily newspaper published in the City of Denton, Denton County, Texas, within ten (10) days of the date of its passage.

The motion to approve this Ordinance was made by PAUL MELTZER and seconded by GERARD HUDSPETH; the Ordinance was passed and approved by the following vote [4 - 2]:

	Aye	Nay	Abstain	Absent
Chris Watts, Mayor:	✓			
Gerard Hudspeth, District 1:	✓			
Keely G. Briggs, District 2:		✓		
Don Duff, District 3:				✓
John Ryan, District 4:	✓			

Deb Armintor, At Large Place 5:	___	✓	___	___
Paul Meltzer, At Large Place 6:	✓	___	___	___

PASSED AND APPROVED this the 15th day of January, 2019.

CHRIS WATTS, MAYOR

ATTEST:
JENNIFER WALTERS, CITY SECRETARY

BY: Jane Richardson, Asst.

APPROVED AS TO LEGAL FORM:
AARON LEAL, CITY ATTORNEY

BY: _____

EXHIBIT A

CITY OF DENTON

2018 Water and Wastewater Impact Fee Updates

Kimley»Horn

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Chapter 1:
Land Use Assumptions for the 2018 Water and Wastewater Impact Fee Update

Prepared for:

City of Denton, Texas

Prepared by:

Kimley-Horn and Associates, Inc.
801 Cherry Street, Unit 11, Suite 1300
Fort Worth, TX 76102
817.335.6511
Firm Registration No. F-928

September 2018

061024024

1.1 LAND USE ASSUMPTIONS

A. Purpose and Overview

In order to assess an impact fee, Land Use Assumptions must be developed to provide the basis for residential and employment 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 development in the service area. The land use assumptions are then used in determining the need and timing of water and wastewater improvements to serve future development.

Information from the following sources was compiled to complete the land use assumptions:

- Denton Plan 2030 (City of Denton Comprehensive Plan)
- Denton Water Master Plan
- Denton Wastewater Master Plan
- North Central Texas Council of Governments (NCTCOG)
- City of Denton staff

Development of the Land Use Assumptions include the following components:

- **Land Use Assumptions Methodology** – An overview of the general methodology used to generate the land use assumptions.
- **Impact Fee Service Areas** – Explanation of the division of Denton into service areas for Water and Wastewater facilities.
- **Population** – Data on population growth within the service area over the next ten years (2018 – 2028).
- **Land Use Assumptions Summary** – A synopsis of the land use assumptions.

B. Land Use Assumptions Methodology

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

- Character, type, density, and quantity of existing development;
- Current zoning plans;
- Future Land Use Plan (based on Denton Plan 2030);
- Growth trends;
- Location of vacant land;
- Physical restrictions (i.e. flood plains, railroads); and
- Physical development capacity of Denton.

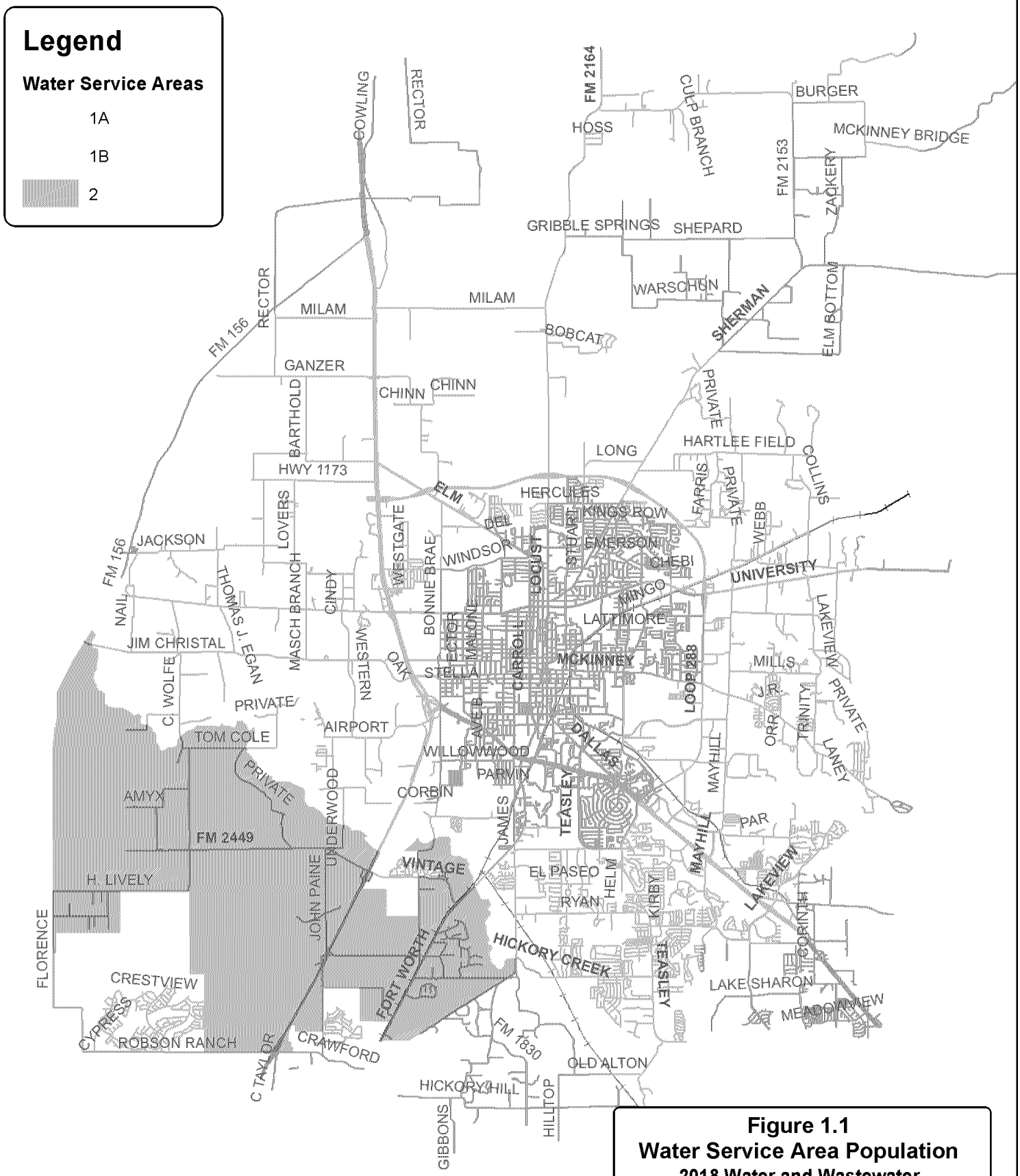
Existing and future population estimates were obtained using projections provided in the on-going Water Master Plan study. These projections are organized into Traffic Analysis Zones (TAZs). The TAZ population projections were applied to the Water and Wastewater Impact Fee service areas to obtain the 10-year growth by service area.

In addition, the Water and Wastewater population projects were compared against the household and employment projections developed for the 2015 Roadway Impact Fee study, as well as estimates provided by City staff.

C. Water and Wastewater Impact Fee Service Areas

The geographic boundary of the proposed impact fee service areas for water facilities is shown in **Figure 1.1**. These three service areas cover the Certificate of Convenience and Necessity (CCN) area in the City of Denton and its Extra-Territorial Jurisdiction (ETJ) that are currently being served or are planned to be served in the future by City water facilities. Service area 1A represents the inner core of the City, while zone 1B represents the outer edge, and service area 2 represents a large portion of the southwest area of the City.

The geographic boundary of the proposed impact fee service area for wastewater facilities is shown in **Figure 1.2.** The wastewater service area covers the CCN area in the City of Denton and its ETJ that are currently being served or are planned to be served in the future by City wastewater facilities.



Water Impact Fee Service Area Population Growth

Year	1A	1B	2	Total
2018	63,736	61,190	5,213	130,139
2028	77,440	74,668	6,538	158,646
Growth	13,704	13,478	1,325	28,507

Figure 1.1
Water Service Area Population
2018 Water and Wastewater Impact Fee Update

0 0.5 1 2 Miles

Kimley»Horn

CITY OF DENTON

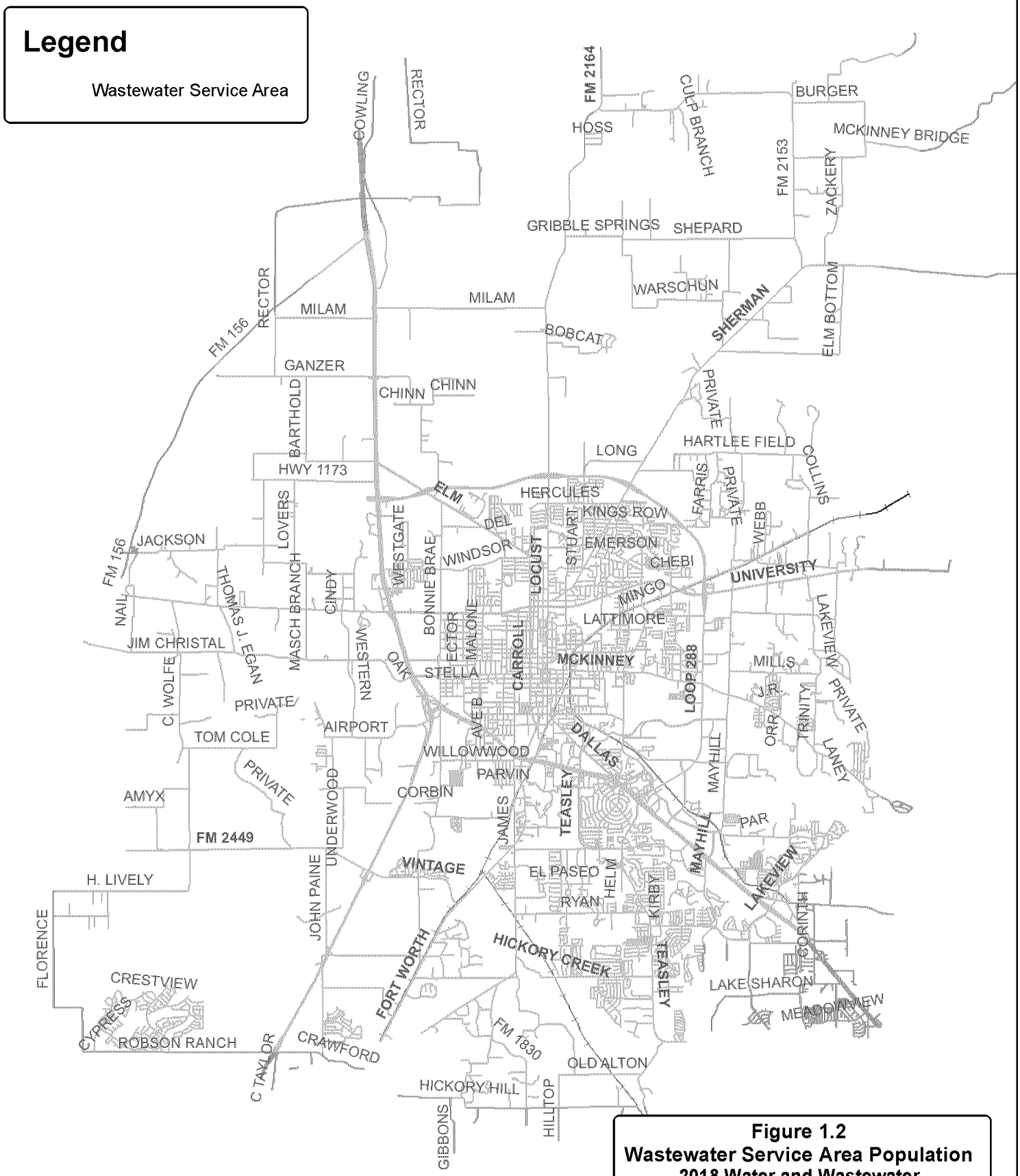


Figure 1.2
Wastewater Service Area Population
2018 Water and Wastewater Impact Fee Update

0 0.5 1 2 Miles

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Wastewater Impact Fee Service Area Growth

Year	Total
2018	130,170
2028	160,076
Growth	29,906

D. Population

Population estimates for the base year (2018) and ten-year window (2028) were performed based upon the Waster master plan, the Water and Wastewater service area boundaries, the 2015 Roadway Impact Fee Study, and input from City staff.

E. Land Use Assumptions Summary

Table 1.1 summarizes the Existing and 10-year growth projections for the Water service areas. **Table 1.2** summarizes the Existing and 10-year growth projections for the Wastewater service area. The projected growth over the next ten years is reasonable compared to 2015 Roadway Impact Fee Study and estimates provided by City staff.

Table 1.1. Population Projections by Water Service Area

Year	Water Service Area			Total
	1A	1B	2	
2018	63,736	61,190	5,213	130,139
2028	77,440	74,668	6,538	158,646
Growth	*13,704*	*13,478*	*1,325*	*28,507*

Table 1.2. Population Projections by Wastewater Service Area

Year	Wastewater Service Area
2018	130,170
2028	160,076
Growth	*29,906*

Chapter 2:
2018 Water Impact Fee Update

Prepared for:

City of Denton, Texas

Prepared by:

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Firm Registration No. F-928

9/25/2018

STATE OF TEXAS
JOSH KERCHO
113002
LICENSED
PROFESSIONAL ENGINEER

September 2018

061024024

2.1 EXECUTIVE SUMMARY

This study was performed for the 5-year update of the City of Denton's Water System Impact Fees. Water system analysis and the Water System Master Plan are important tools for facilitating orderly growth of the water system and for providing adequate facilities that promote economic development in the City of Denton.

Elements of the water system, including storage facilities, pumping facilities, and the distribution network itself, were evaluated against industry standards as outlined in the Design Criteria section of this report. Water system improvements necessary to serve 10-year (2028) and ultimate system needs were evaluated as well. Typically, infrastructure improvements are sized beyond the 10-year requirements; however, the state's impact fee law (Chapter 395) only allows recovery of costs to serve the 10-year planning period. The remainder can be assessed as the planning window extends beyond 2028 and as the impact fees are updated in the future. Information related to the growth of the City has been provided in Chapter 1 – Land Use Assumptions.

Based on the City's 10-year growth projections and the resulting water demand projections, water service will be required for an additional **15,773** single family equivalents. The calculation is as follows:

- A single family equivalent (SFE), which is a unit of development that consumes approximately **317** gallons per day (GPD), is a typical residential connection that uses a 5/8x3/4-inch meter.

Table 2.1. 10-year Additional Single-Family Equivalent Calculation

Year	Average Day Flow (MGD)[1]	SFE Demand (GPD)	Projected SFEs
2018	22.0	317	69,401
2028	27.0	317	85,174
10-year Additional SFEs			**15,773**

(1) Data Sources:
- City of Denton Water Master Plan, prepared by Freese and Nichols, Inc.

The City of Denton defines a single-family equivalent, as a unit of development that consumes the amount of water requiring a standard 5/8x3/4-inch meter. Based on the additional SFEs and the recoverable capital improvements plan the City may assess a maximum of **$3,569** per single-family equivalent in Zone 1A, **$5,352** per single-family equivalent in Zone 1B, and **$7,638** per single-family equivalent in Zone 2. For a development that requires a different size meter, a single-family equivalent is established at a multiplier based on meter capacity with respect to the 5/8-inch meter. The maximum impact fee that could be assessed for other meter sizes is based on the Equivalency Table (**Table 2.2**).

Table 2.2. Maximum Assessable Water Impact Fee by Zone and Meter Size

Meter Size	Single Family Equivalent[1]	Zone 1A Maximum Assessible Impact Fee	Zone 1B Maximum Assessible Impact Fee	Zone 2 Maximum Assessible Impact Fee
5/8x3/4"	1	$3,569	$5,352	$7,638
1"	2.5	$8,923	$13,380	$19,095
1-1/2"	5	$17,845	$26,760	$38,190
2"	8	$28,552	$42,816	$61,104
3"	22.5	$80,303	$120,420	$171,855
4"	50	$178,450	$267,600	$381,900
6"	100	$356,900	$535,200	$763,800
8"	200	$713,800	$1,070,400	$1,527,600
10"	325	$1,159,925	$1,739,400	$2,482,350

(1) Data Sources:
- City of Denton Code of Ordinances, Chapter 26, Article VI, Exhibit F

2.2 INTRODUCTION

The City of Denton retained the services of Kimley-Horn and Associates, Inc., for the purpose of the 5-year update of the impact fees for water system improvements required to serve new development. These fees were originally developed in 1998, and updated in the years 2003, 2008 and 2013 in accordance with Chapter 395 of the Local Government Code (impact fees).

The purpose of this report is to satisfy the requirements of the law and provide the City with an updated 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) a plan for awarding:

(A) a credit for the portion of ad valorem tax and utility service revenues generated by new service unit 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 study process was comprised of four tasks:

A. Land Use Assumptions

The development of land use assumptions included the following:

- Establishing impact fee service areas (SA) for water and wastewater;
- Collection/determination of population and employment data by SA; and
- Projection of the ten-year population and employment by SA.

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

B. Evaluation of the Water System Master Plan

This task involved coordination with City Staff to determine compatibility between the growth projections of the City's Water System Master Plan as prepared by Freese and Nichols, Inc., and Land Use Assumptions. The water demand projections were then used to determine the additional single-family equivalents (SFEs).

C. Impact Fee Capital Improvements Plan

This task involved coordination with City staff to identify proposed water capital improvements outlined in the master plan that will be built in the 10-year planning window and meet the design criteria included in **Section 2.3** below.

D. Impact Fee Analysis

This task included calculating the additional single-family equivalent units, and credit reduction. These values were then used to determine the impact fee per SFE and the maximum assessable impact fee by meter size.

2.3 DESIGN CRITERIA

A. Water Transmission Lines (12-inch and Larger)

Water transmission lines shall be sized to maintain a minimum of 50 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 pipeline velocity of 7.0 feet per second with a maximum friction loss of 5 feet per 1,000 feet of pipeline length for 16-inch and 12-inch waterlines. For waterlines 20-inch and larger, a maximum friction loss of 3 feet per 1,000 feet of pipeline length shall be used.

B. Elevated Storage Tanks

The design criteria used to size elevated storage tank capacity is the capacity to provide adequate storage for peak hour demands plus emergency storage for fire protection. The required capacity for the peak hour demands is calculated as the storage volume to allow a minimum of a three (3) hour drain time using 2/3rds of the tank volume during a summer peak hour operating condition. The required capacity for emergency fire protection storage is calculated as the volume of water needed to meet a 3,000 gallon per minute (gpm) fire for a three (3) hour time period, which typically is met through the remaining 1/3rd tank volume.

In addition to these criteria, the City must also meet the TCEQ elevated storage capacity requirements of 100 gallons per connection. The above recommended design criteria (to provide storage for peak hour demands plus fire protection) is this most restrictive criteria and therefore recommended for use in sizing future elevated storage facilities.

C. Ground Storage Tanks

The design criteria recommended to size ground storage tank capacity within each pressure plane is to provide adequate storage volume to meet 12 hours of maximum day summer demand utilizing 2/3rds of the available ground storage tank capacity.

In addition to these criteria, the City must also meet TCEQ ground storage capacity requirements of 200 gallons per connection (this is for ground storage plus elevated storage). The above recommended criterion (for 12 hours of storage capacity) is the most restrictive criteria and will be used here to size recommended storage capacity.

D. Pump Stations

The design criteria recommended for pump station capacity is providing a firm pumping capacity to meet 125% of the summer maximum day demands. The firm pumping capacity is defined as the available total pumping capacity with the largest pump out of service.

2.4 IMPACT FEE CAPITAL IMPROVEMENTS PLAN

The City Council commissioned Freese and Nichols, Inc. to update the Water System Master Plan. The purpose of the 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. Freese and Nichols, Inc. completed the *Water System Master Plan* and recommended system improvements to accommodate growth through the year 2043.

Seventeen (17) previously constructed projects as well as fifteen (15) proposed projects identified in the *Water System Master Plan* are determined eligible for recoverable cost through impact fee over the next 10 years. The total projected cost of these projects is **$393,730,167**, and has been broken up into Zone 1A, Zone 1B and Zone 2 below. These impact fee capital improvements are shown in **Table 2.3.**

ZONE 1A

The projected total recoverable cost in the next 10 years through impact fees in Zone 1A is **$25,711,201**. After financing costs are added and the credit reduction calculation is complete, **$27,521,502** is recoverable through impact fees serving the 10-year system needs.

ZONE 1B

The projected total recoverable cost in the next 10 years through impact fees in Zone 1B is **$36,084,557**. After financing costs are added and the credit reduction calculation is complete, **$39,703,198** is recoverable through impact fees serving the 10-year system needs.

ZONE 2

The projected total recoverable cost in the next 10 years through impact fees in Zone 2 is **$4,254,101**. After financing costs are added and the credit reduction calculation is complete, **$4,903,866** is recoverable through impact fees serving the 10-year system needs.

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CITY OF DENTON

Table 2.3. Water Impact Fee Capital Improvements
Project Cost and 10-Year Recoverable Cost

Proj. #	Description	2018 Required Capacity (Percent Utilization)	2028 Required Capacity (Percent Utilization)	2018-2028 Required Capacity (Percent Utilization)	2028 Projected Recoverable Cost	Total Project Cost	Zone 1A Utilization	Zone 1A Recoverable Cost	Zone 1B Utilization	Zone 1B Recoverable Cost	Zone 2 Utilization	Zone 2 Recoverable Cost
EXISTING												
1	Lake Ray Roberts	90.0%	100.0%	10%	$ 15,330,617	$ 153,306,163	48%	$ 7,358,696	47%	$ 7,205,390	5%	$ 766,531
2	Lake Ray Roberts Water Treatment Plant	60%	100%	40%	$ 22,578,094	$ 56,445,235	48%	$ 10,837,485	47%	$ 10,611,704	5%	$ 1,128,905
3	54" Finished Water Transmission Line	35%	60%	25%	$ 2,397,575	$ 9,590,299	48%	$ 1,150,836	47%	$ 1,126,860	5%	$ 119,879
4	Loop 288 Water Main - Sherman to UNT	35%	65%	30%	$ 1,308,555	$ 4,361,849	48%	$ 628,106	47%	$ 615,021	5%	$ 65,428
5	Loop 288 Water Main - Sherman to Hwy 380	40%	65%	25%	$ 879,588	$ 3,518,352	48%	$ 422,202	47%	$ 413,406	5%	$ 43,979
6	Northwest Elevated Storage Tank	55%	75%	20%	$ 467,998	$ 2,339,988	0%	$ -	100%	$ 467,998	0%	$ -
7	Southwest Pump Station	50%	75%	25%	$ 1,478,001	$ 5,912,002	0%	$ -	90%	$ 1,330,201	10%	$ 147,800
8	Southwest PS Oversize Discharge Line (30" to 36"	15%	20%	5%	$ 14,224	$ 284,477	0%	$ -	90%	$ 12,802	10%	$ 1,422
9	Vintage Oversize Line (12" to 20")	50%	70%	20%	$ 50,854	$ 254,269	0%	$ -	80%	$ 40,683	20%	$ 10,171
10	North-South Water Line Phase I	25%	50%	25%	$ 1,509,651	$ 6,038,601	48%	$ 724,632	47%	$ 709,536	5%	$ 75,483
11	Roselawn Elevated Storage Tank	60%	85%	25%	$ 1,574,860	$ 6,299,440	48%	$ 755,933	47%	$ 740,184	5%	$ 78,743
12	Roselawn Water Line	35%	55%	20%	$ 359,473	$ 1,797,363	48%	$ 172,547	47%	$ 168,952	5%	$ 17,974
13	Masch Branch Road Water Line Extension	15%	20%	5%	$ 32,290	$ 645,781	0%	$ -	100%	$ 32,290	0%	$ -
14	US 380 Urban Utility Relocation	25%	30%	5%	$ 68,105	$ 1,362,086	0%	$ -	100%	$ 68,105	0%	$ -
15	Rayzor Ranch Oversize Line (16" to 20")	20%	25%	5%	$ 6,662	$ 133,226	0%	$ -	100%	$ 6,662	0%	$ -
16	Southwest Elevated Storage Tank	55%	65%	10%	$ 541,028	$ 5,410,280	0%	$ -	90%	$ 486,925	10%	$ 54,103
17	University Water Line and PRV	25%	55%	30%	$ 247,941	$ 826,468	0%	$ -	100%	$ 247,941	0%	$ -
PROPOSED												
1	North-South Water Line	0%	30%	30%	$ 3,261,090	$ 10,870,300	10%	$ 326,109	70%	$ 2,282,763	20%	$ 652,218
2	I-35 Parallel Line Crossing	15%	30%	15%	$ 150,600	$ 1,004,000	0%	$ -	100%	$ 150,600	0%	$ -
3	Riney Road Booster Pump Station	15%	25%	10%	$ 786,600	$ 7,866,000	0%	$ -	100%	$ 786,600	0%	$ -
4	Elm/Loop 288 Water Lines	0%	35%	35%	$ 1,938,055	$ 5,537,300	0%	$ -	100%	$ 1,938,055	0%	$ -
5	Allred Road / John Paine Road Water Lines	0%	30%	30%	$ 1,779,000	$ 5,930,000	0%	$ -	80%	$ 1,423,200	20%	$ 355,800
6	Ray Roberts WTP Expansion	0%	4%	4%	$ 3,571,200	$ 89,280,000	48%	$ 1,714,176	47%	$ 1,678,464	5%	$ 178,560
7	McKinney Water Line	0%	35%	35%	$ 420,210	$ 1,200,600	0%	$ -	100%	$ 420,210	0%	$ -
8	I-35E Frontage Road Water Line Betterment	0%	65%	65%	$ 663,332	$ 1,020,510	0%	$ -	100%	$ 663,332	0%	$ -
9	Locust Water Line Upsize	0%	90%	90%	$ 1,153,598	$ 1,281,776	100%	$ 1,153,598	0%	$ -	0%	$ -
10	I-35W Water Line	0%	30%	30%	$ 1,955,190	$ 6,517,300	0%	$ -	80%	$ 1,564,152	20%	$ 391,038
11	I-35W/Corbin Water Line	0%	30%	30%	$ 816,630	$ 2,722,100	0%	$ -	80%	$ 653,304	20%	$ 163,326
12	Hickory Water Line Upsize	0%	90%	90%	$ 448,600	$ 498,444	100%	$ 448,600	0%	$ -	0%	$ -
13	Jim Christal Oversize Line (16" to 20")	0%	15%	15%	$ 19,164	$ 127,758	0%	$ -	100%	$ 19,164	0%	$ -
14	Jim Christal Water Line / I-35 Crossing	0%	15%	15%	$ 195,375	$ 1,302,500	0%	$ -	100%	$ 195,375	0%	$ -
15	Water Impact Fee Report Preparation	0%	100%	100%	$ 45,700	$ 45,700	40%	$ 18,280	54%	$ 24,678	6%	$ 2,742
	Total				**$ 66,049,859**	**$ 393,730,167**		**$ 25,711,201**		**$ 36,084,557**		**$ 4,254,101**

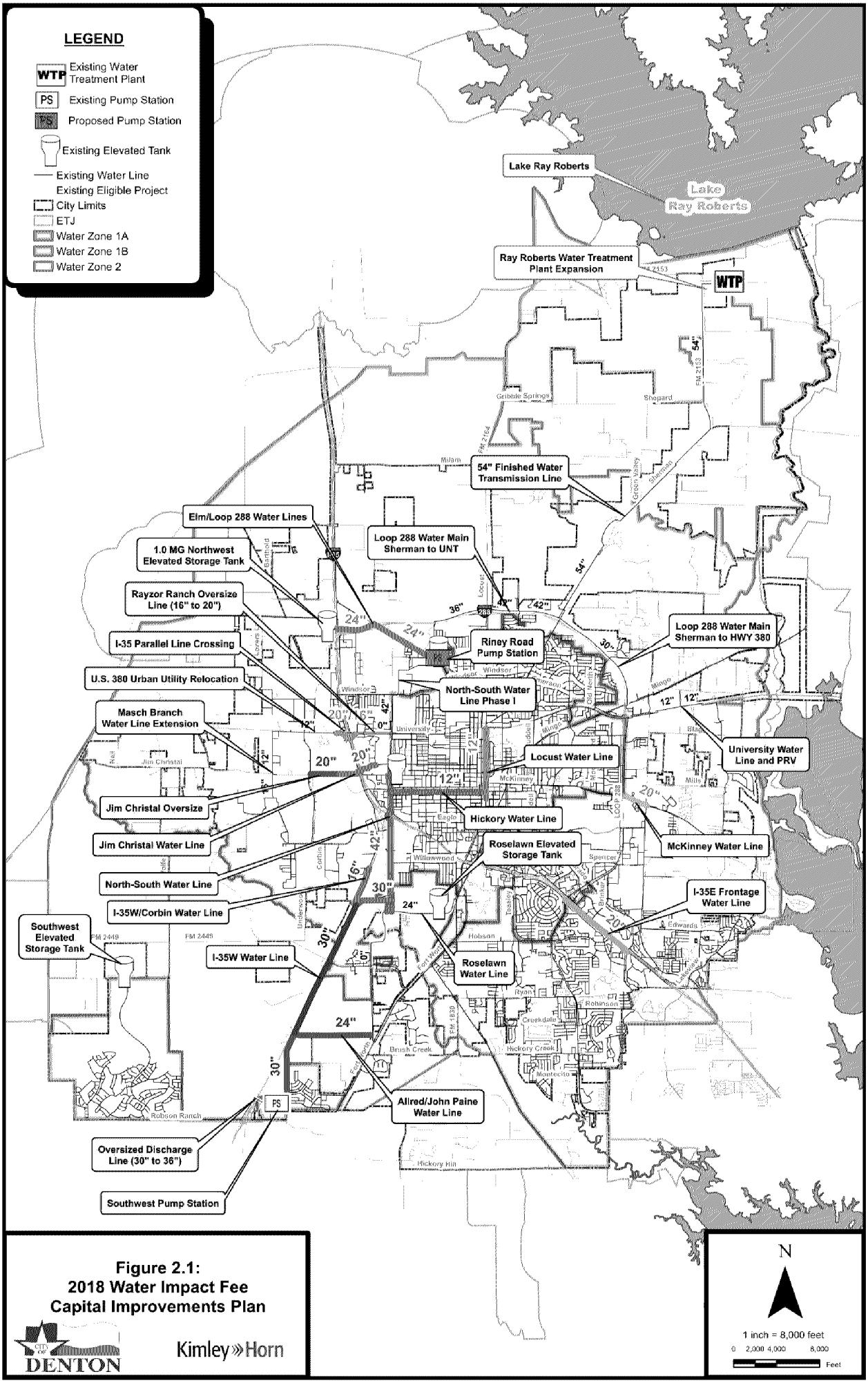


Figure 2.1:
2018 Water Impact Fee
Capital Improvements Plan

CITY OF DENTON

Kimley»Horn

2.5 WATER IMPACT FEE CALCULATION

The City's water system provides retail water distribution and treatment to customers within the CCN area, as well as some wholesale treated and raw water to the Upper Trinity Regional Water District. The impact fees calculated in this report exclude costs to serve the City's wholesale customers.

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."

The service unit for Denton's water and wastewater impact fees is the "single family equivalent" (SFE), which is based on the size of the water meter. An SFE is the water or wastewater demand or flow associated with the smallest water meter used in the system (5/8"x3/4"), which is the meter typically used by a single-family residence. The ratio of each larger meter's capacity to the capacity of the base meter determines the SFE multiplier applied to each larger meter size. The current SFE equivalency factors are shown in **Table 2.4**.

Table 2.4. Meter Capacity Ratios

Meter Size	SFEs/ 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

(1) Data Sources:
- City of Denton Code of Ordinances, Chapter 26, Article VI, Exhibit F

Multiplying the number of existing connections for each meter size by the SFEs per meter yields the total SFEs for that meter size. Summing for all meter sizes yields the total number of water service units connected to the City's water system as shown in **Table 2.5**. The current population in the water service area is divided by the total number of SFEs yielding a Persons per SFE number.

Table 2.5. Capita per Single-Family Equivalent (SFE)

Meter Size	Existing Connections[1]	SFEs/ Meter	Single Family Equivalents
5/8"x3/4"	32,001	1	32,001
1"	1,441	2.5	3,603
1-1/2"	847	5	4,235
2"	1,314	8	10,512
3"	151	22.5	3,398
4"	63	50	3,150
6"	17	100	1,700
8"	17	200	3,400
10"	2	325	650
Total Existing Connections:	35,853	Total SFEs:	62,649
		Total Served Population:	130,139
		Persons per SFE:	**2.08**

(1) Data Sources:
- City of Denton

The City of Denton defines a single-family equivalent (SFE) based on historical water demand over the past 10 years as compared to the estimated residential units. The residential unit is the development type that predominately uses a 5/8x3/4-inch meter. The measure of consumption per SFE is based on a 5/8x3/4-inch meter and the data shown in **Table 2.6**.

Table 2.6. SFE Consumption Calculation

Year	Population[1]	Residential Units (2.08 capita/SFE)	Water Average Day Demand (MGD)[1]	Demand per SFE (GPD)
2008	108,775	52,296	17.9	342
2009	110,828	53,283	16.5	310
2010	112,324	54,002	17.5	324
2011	113,627	54,628	19.8	362
2012	114,907	55,244	19.0	344
2013	117,061	56,279	18.2	323
2014	120001	57,693	16.8	291
2015	122,428	58,860	17.9	304
2016	125,256	60,219	17.0	282
2017	128,813	61,929	17.5	283
Average Historical Flow per SFE				**317**

(1) Data Sources:
- City of Denton Water Master Plan, prepared by Freese and Nichols, Inc.

Based on the City's 10-year growth projections and the resulting water flow projections, water service will be required for an additional **15,773** single family equivalents. The calculation is as follows:

- A single family equivalent (SFE), which is a unit of development that consumes approximately **317** gallons per day (GPD), is a typical residential connection that uses a 5/8x3/4-inch meter.

Table 2.7. 10-year Additional Single-Family Equivalent Calculation

Year	Average Day Flow (MGD)[1]	SFE Demand (GPD)	Projected SFEs
2018	22.0	317	69,401
2028	27.0	317	85,174
10-year Additional SFEs			**15,773**

(1) Data Sources:
- City of Denton Water Master Plan, prepared by Freese and Nichols, Inc.

The City's existing water service area is divided into three zones (Zone 1A, Zone 1B and Zone 2 as indicated in the Land Use Assumptions chapter). The calculated 10-year additional SFEs have been distributed across the three zones based on current and projected population distribution as shown in **Table 2.7**.

Table 2.8. 10-year Additional SFE Water Zone Distribution

Year		Zone 1A	Zone 1B	Zone 2	Total
2018	Population	63,736	61,190	5,213	130,139
	Distribution	48.98%	47.02%	4.01%	100.00%
2028	Population	77,440	74,668	6,538	158,646
	Distribution	48.81%	47.07%	4.12%	100.00%
Average Distribution		48.89%	47.04%	4.06%	100.00%
10-year Additional SFEs		**7,712**	**7,419**	**642**	**15,773**

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 the 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. Newgen Strategies and Solutions, LLC. has detailed the credit calculation in the Water Appendix.

A breakdown of the 10-year recoverable costs and the associated impact fee per SFE for Zone 1A, Zone 1B, and Zone 2 is as follows:

Table 2.9. Zone 1A – 10-year Recoverable Cost Breakdown[1]

Recoverable Impact Fee CIP Costs	$25,711,201
Financing Costs	$ 8,980,911
Existing Fund Balance	$ (2,593,606)
Interest Earnings	$ (3,644,999)
Pre Credit Recoverable Cost for Impact Fee	$ 28,453,507
Credit for Utility Revenues	$ (932,006)
Maximum Zone 1A Recoverable Cost for Impact Fee	**$ 27,521,502**

(1) Per Newgen Strategies and Solutions, LLC financial analysis, see Water Appendix – Summary of Water Impact Fee Determination

$$\text{Zone 1A – Impact fee SFE} = \frac{\text{Zone 1A – 10-year recoverable costs}}{\text{Zone 1A – 10-year additional SFEs}}$$

$$\text{Zone 1A – 10-year recoverable costs} = \$27,521,502$$

$$\text{Zone 1A – Impact fee per SFE} = \frac{\$27,521,502}{7,712}$$

$$\text{Zone 1A – Impact fee per SFE} = \$3,569$$

Therefore, the maximum assessable impact fee for Zone 1A per SFE is **$3,569**.

Table 2.10. Zone 1B – 10-year Recoverable Cost Breakdown[1]

Recoverable Impact Fee CIP Costs	$36,084,557
Financing Costs	$ 14,607,078
Existing Fund Balance	$ (3,657,649)
Interest Earnings	$ (6,112,187)
Pre Credit Recoverable Cost for Impact Fee	$ 40,921,799
Credit for Utility Revenues	$ (1,218,601)
Maximum Zone 1B Recoverable Cost for Impact Fee	**$ 39,703,198**

(1) Per Newgen Strategies and Solutions, LLC financial analysis, see Water Appendix – Summary of Water Impact Fee Determination

$$\text{Zone 1B – Impact fee per SFE} = \frac{\text{Zone 1B – 10-year recoverable costs}}{\text{Zone 1B – 10-year additional SFEs}}$$

$$\text{Zone 1B – 10-year recoverable costs} = \$39{,}703{,}198$$

$$\text{Zone 1B – Impact fee per SFE} = \frac{\$39{,}703{,}198}{7{,}419}$$

$$\text{Zone 1B – Impact fee per SFE} = \$5{,}352$$

Therefore, the maximum assessable impact fee for Zone 1B per SFE is **$5,352.**

Table 2.11. Zone 2 – 10-year Recoverable Cost Breakdown[1]

Recoverable Impact Fee CIP Costs	$4,254,101
Financing Costs	$ 1,841,055
Existing Fund Balance	$ (399,016)
Interest Earnings	$ (779,037)
Pre Credit Recoverable Cost for Impact Fee	$ 4,917,103
Credit for Utility Revenues	$ (13,237)
Maximum Zone 2 Recoverable Cost for Impact Fee	**$ 4,903,866**

(1) Per Newgen Strategies and Solutions, LLC financial analysis, see Water Appendix – Summary of Water Impact Fee Determination

$$\text{Zone 2 – Impact fee per SFE} = \frac{\text{Zone 2 – 10-year recoverable costs}}{\text{Zone 2 – 10-year additional SFEs}}$$

$$\text{Zone 2 – 10-year recoverable costs} = \$4{,}903{,}866$$

$$\text{Zone 2 – Impact fee per SFE} = \frac{\$4{,}903{,}866}{642}$$

$$\text{Zone 2 – Impact fee per SFE} = \$7{,}638$$

Therefore, the maximum assessable impact fee for Zone 2 per SFE is **$7,638.**

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 meter. The maximum impact fee that could be assessed for other meter sizes is based on the Equivalency Table (**Table 2.12**).

Table 2.12. Maximum Assessable Water Impact Fee by Zone and Meter Size

Meter Size	Single Family Equivalent[1]	Zone 1A Maximum Assessible Impact Fee	Zone 1B Maximum Assessible Impact Fee	Zone 2 Maximum Assessible Impact Fee
5/8x3/4"	1	$3,569	$5,352	$7,638
1"	2.5	$8,923	$13,380	$19,095
1-1/2"	5	$17,845	$26,760	$38,190
2"	8	$28,552	$42,816	$61,104
3"	22.5	$80,303	$120,420	$171,855
4"	50	$178,450	$267,600	$381,900
6"	100	$356,900	$535,200	$763,800
8"	200	$713,800	$1,070,400	$1,527,600
10"	325	$1,159,925	$1,739,400	$2,482,350

(1) Data Sources:
- City of Denton Code of Ordinances, Chapter 26, Article VI, Exhibit F

WATER APPENDICES

City of Denton - 2018 Water Impact Fee Update
Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Water Service Area Zone 1A

0	Existing Fund Balance	$ 2,593,606
1	Existing Number of Service Units	69,401
2	Total Number of Services Units for Planning Period	77,113
3	Additional Service Units Added During Planning Period (Line 2 - Line 1)	7,712
4	Total Cost of the Water Impact Fee CIP	$ 161,591,439
5	Recoverable Cost for Impact Fee Planning Period	$ 25,711,201
6	Percent Recoverable for Water Impact Fee Planning Period (Line 5 / Line 4)	15.91%
7	Financing Costs (From Financial Analysis)	$ 8,980,911
8	Interest Earnings (From Financial Analysis)	$ (3,644,999)
9	Recoverable Cost of Water Impact Fee and Financing Costs Less Balance (Line 5 + Line 7 + Line 8 - Line 0)	$ 28,453,507
10	Pre-Credit Maximum Fee (Line 9 / Line 3)	$ 3,690
11	Credit for Utility Revenues (From Financial Analysis)	$ (932,006)
12	Recoverable Cost of Water Impact Fee and Financing (Line 9 + Line 11)	$ 27,521,502
13	Maximum Assessable Fee (Line 12 / Line 3)	$ 3,569

SUMMARY OF WATER IMPACT FEE DETERMINATION

Water Service Area Zone 1A

Recoverable Impact Fee CIP Costs	$	25,711,201	Table 2.3
Financing Cost		8,980,911	See Detail Below
Existing Fund Balance		(2,593,606)	Water Appendices - page 1
Interest Earnings		(3,644,999)	Water Appendices - page 3
Pre Credit Recoverable Cost for Impact Fee	$	28,453,507	Sum of Above
Credit for Utility Revenues		(932,006)	Water Appendices - page 6
Maximum Recoverable Cost for Impact Fee	**$**	**27,521,502**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees.
Reference is Table 2.3 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	$	5,890,699	Water Appendices - page 2
Existing Annual Debt Service		28,783,133	Water Appendices - page 2
Principal Component (New and Existing Debt)		(25,692,921)	Water Appendices - page 1
Financing Costs	$	8,980,911	

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 - 2018 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]	1.89%
Annual Service Unit Growth[2]	771
Existing Fund Balance[3]	$ 2,593,606

Portion of Projects Funded by Existing Debt[4]	$ 22,050,438
Non-debt Funded Project Cost[5]	18,280
New Project Cost Funded Through New Debt[6]	3,642,483
Total Recoverable Project Cost[7]	$ 25,711,201

II. New Debt Issues Assumptions

Year	Principal[8]	Interest[9]	Term
1	$ 364,248	4.65%	20
2	364,248	5.00%	20
3	364,248	5.00%	20
4	364,248	5.00%	20
5	364,248	5.00%	20
6	364,248	5.25%	20
7	364,248	5.25%	20
8	364,248	5.25%	20
9	364,248	5.25%	20
10	364,248	5.25%	20
Total	$ 3,642,483		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[10]
1	$ 183,952
2	366,076
3	366,076
4	366,076
5	366,076
6	366,076
7	366,076
8	366,076
9	366,076
10	548,200
Total	$ 3,660,763

(1) Investment Portfolio Yield as of 08/05/2018
(2) Derived from Table 2.8 10-year Additional SFE Water Zone Distribution
(3) Balance from 09/30/2017 provided by City Staff distributed proportionally to recoverable cost
(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 2.3 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 from City's Financial Advisor April 26, 2018
(10) Assumes new debt proceeds expended over a 2-year timeframe.
Non-debt funded capital expenditures allocated in equal annual amounts

City of Denton - 2018 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	$ 28,367	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 28,367
2	28,367	29,228	-	-	-	-	-	-	-	-	57,595
3	28,367	29,228	29,228	-	-	-	-	-	-	-	86,824
4	28,367	29,228	29,228	29,228	-	-	-	-	-	-	116,052
5	28,367	29,228	29,228	29,228	29,228	-	-	-	-	-	145,280
6	28,367	29,228	29,228	29,228	29,228	29,851	-	-	-	-	175,131
7	28,367	29,228	29,228	29,228	29,228	29,851	29,851	-	-	-	204,982
8	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	-	-	234,833
9	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	-	264,684
10	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	294,535
11	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	294,535
12	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	294,535
13	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	294,535
14	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	294,535
15	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	294,535
16	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	294,535
17	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	294,535
18	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	294,535
19	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	294,535
20	28,367	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	294,535
21	-	29,228	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	266,168
22	-	-	29,228	29,228	29,228	29,851	29,851	29,851	29,851	29,851	236,940
23	-	-	-	29,228	29,228	29,851	29,851	29,851	29,851	29,851	207,711
24	-	-	-	-	29,228	29,851	29,851	29,851	29,851	29,851	178,483
25	-	-	-	-	-	29,851	29,851	29,851	29,851	29,851	149,255
26	-	-	-	-	-	-	29,851	29,851	29,851	29,851	119,404
27	-	-	-	-	-	-	-	29,851	29,851	29,851	89,553
28	-	-	-	-	-	-	-	-	29,851	29,851	59,702
29	-	-	-	-	-	-	-	-	-	29,851	29,851
	$ 567,343	$ 584,565	$ 584,565	$ 584,565	$ 584,565	$ 597,020	$ 597,020	$ 597,020	$ 597,020	$ 597,020	$ 5,890,699

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	$ 28,367	$ 183,952	$ (364,248)	$ 1,439,157	$ (16,128)	$ 1,271,099
2	57,595	366,076	(364,248)	1,439,157	(32,541)	1,466,039
3	86,824	366,076	(364,248)	1,439,157	(49,230)	1,478,578
4	116,052	366,076	(364,248)	1,439,157	(66,185)	1,490,851
5	145,280	366,076	(364,248)	1,439,157	(83,399)	1,502,865
6	175,131	366,076	(364,248)	1,439,157	(100,903)	1,515,213
7	204,982	366,076	(364,248)	1,439,157	(118,660)	1,527,306
8	234,833	366,076	(364,248)	1,439,157	(136,665)	1,539,153
9	264,684	366,076	(364,248)	1,439,157	(154,909)	1,550,760
10	294,535	548,200	(364,248)	1,439,157	(173,385)	1,744,259
11	294,535	-	-	1,439,157	-	1,733,692
12	294,535	-	-	1,439,157	-	1,733,692
13	294,535	-	-	1,439,157	-	1,733,692
14	294,535	-	-	1,439,157	-	1,733,692
15	294,535	-	-	1,439,157	-	1,733,692
16	294,535	-	-	1,439,157	-	1,733,692
17	294,535	-	-	1,439,157	-	1,733,692
18	294,535	-	-	1,439,157	-	1,733,692
19	294,535	-	-	1,439,157	-	1,733,692
20	294,535	-	-	1,439,157	-	1,733,692
21	266,168	-	-	-	-	266,168
22	236,940	-	-	-	-	236,940
23	207,711	-	-	-	-	207,711
24	178,483	-	-	-	-	178,483
25	149,255	-	-	-	-	149,255
26	119,404	-	-	-	-	119,404
27	89,553	-	-	-	-	89,553
28	59,702	-	-	-	-	59,702
29	29,851	-	-	-	-	29,851
	$ 5,890,699	$ 3,660,763	$ (3,642,483)	$ 28,783,133	$ (932,006)	$ 33,760,106

(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 - 2018 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							$ 2,593,606
1	$ 3,569	771	$ 2,752,150	$ 1,271,099	$ 1,481,051	$ 62,992	4,137,648
2	3,569	771	2,752,150	1,466,039	1,286,111	90,322	5,514,081
3	3,569	771	2,752,150	1,478,578	1,273,572	116,208	6,903,862
4	3,569	771	2,752,150	1,490,851	1,261,299	142,350	8,307,510
5	3,569	771	2,752,150	1,502,865	1,249,285	168,755	9,725,550
6	3,569	771	2,752,150	1,515,213	1,236,937	195,430	11,157,917
7	3,569	771	2,752,150	1,527,306	1,224,844	222,377	12,605,138
8	3,569	771	2,752,150	1,539,153	1,212,997	249,607	14,067,742
9	3,569	771	2,752,150	1,550,760	1,201,390	277,131	15,546,264
10	3,569	771	2,752,150	1,744,259	1,007,891	303,237	16,857,392
11	-	-	-	1,733,692	(1,733,692)	302,109	15,425,809
12	-	-	-	1,733,692	(1,733,692)	275,062	13,967,180
13	-	-	-	1,733,692	(1,733,692)	247,505	12,480,993
14	-	-	-	1,733,692	(1,733,692)	219,426	10,966,728
15	-	-	-	1,733,692	(1,733,692)	190,817	9,423,853
16	-	-	-	1,733,692	(1,733,692)	161,668	7,851,829
17	-	-	-	1,733,692	(1,733,692)	131,967	6,250,105
18	-	-	-	1,733,692	(1,733,692)	101,706	4,618,119
19	-	-	-	1,733,692	(1,733,692)	70,873	2,955,300
20	-	-	-	1,733,692	(1,733,692)	39,457	1,261,066
21	-	-	-	266,168	(266,168)	21,311	1,016,209
22	-	-	-	236,940	(236,940)	16,961	796,230
23	-	-	-	207,711	(207,711)	13,081	601,600
24	-	-	-	178,483	(178,483)	9,680	432,797
25	-	-	-	149,255	(149,255)	6,767	290,309
26	-	-	-	119,404	(119,404)	4,357	175,262
27	-	-	-	89,553	(89,553)	2,465	88,174
28	-	-	-	59,702	(59,702)	1,102	29,574
29	-	-	-	29,851	(29,851)	277	-
			27,521,502	33,760,106		3,644,999	

City of Denton - 2018 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	1.7048	1.0000	771	1,315	$ 1,271,099	$ 2,167,021
2	28	1.6732	1.0000	771	1,290	1,466,039	2,453,016
3	27	1.6422	1.0000	771	1,266	1,478,578	2,428,123
4	26	1.6118	1.0000	771	1,243	1,490,851	2,402,880
5	25	1.5819	1.0000	771	1,220	1,502,865	2,377,329
6	24	1.5525	1.0000	771	1,197	1,515,213	2,352,417
7	23	1.5237	1.0000	771	1,175	1,527,306	2,327,224
8	22	1.4955	1.0000	771	1,153	1,539,153	2,301,787
9	21	1.4678	1.0000	771	1,132	1,550,760	2,276,142
10	20	1.4405	1.0000	771	1,111	1,744,259	2,512,680
11	19	1.4138	1.0000	-	-	1,733,692	2,451,148
12	18	1.3876	1.0000	-	-	1,733,692	2,405,697
13	17	1.3619	1.0000	-	-	1,733,692	2,361,089
14	16	1.3366	1.0000	-	-	1,733,692	2,317,308
15	15	1.3118	1.0000	-	-	1,733,692	2,274,339
16	14	1.2875	1.0000	-	-	1,733,692	2,232,167
17	13	1.2636	1.0000	-	-	1,733,692	2,190,777
18	12	1.2402	1.0000	-	-	1,733,692	2,150,154
19	11	1.2172	1.0000	-	-	1,733,692	2,110,284
20	10	1.1946	1.0000	-	-	1,733,692	2,071,154
21	9	1.1725	1.0000	-	-	266,168	312,081
22	8	1.1508	1.0000	-	-	236,940	272,660
23	7	1.1294	1.0000	-	-	207,711	234,593
24	6	1.1085	1.0000	-	-	178,483	197,844
25	5	1.0879	1.0000	-	-	149,255	162,378
26	4	1.0677	1.0000	-	-	119,404	127,493
27	3	1.0479	1.0000	-	-	89,553	93,847
28	2	1.0285	1.0000	-	-	59,702	61,405
29	1	1.0094	1.0000	-	-	29,851	30,133
					12,103		$ 47,655,170

Annual Interest Rate:		1.89%
Present Value of Initial Impact Fee Fund Balance	$	2,593,606
Total Escalated Expense for Entire Period	$	47,655,170
Less Future Value of Initial Impact Fee Fund Balance		4,463,060
Sub-Total	$	43,192,110
Total Escalated Service Units		12,103
Impact Fee for Water Service Area	**$**	**3,569**

City of Denton - 2018 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]	Note	Impact Fee Recoverable Cost[1]	Debt Funded[2] Existing	Debt Funded[2] Proposed	Non-Debt Funded[2]	Impact Fee Recoverable Cost
Lake Ray Roberts	$ 73,586,959	A	$ 7,358,696	$ 7,358,696	$ -	$ -	$ 7,358,696
Lake Ray Roberts Water Treatment Plant	27,093,713	A	10,837,485	10,837,485	-	-	10,837,485
54" Transmission Line	4,603,344	A	1,150,836	1,150,836	-	-	1,150,836
Loop 288 Water Main - Sherman to UNT	2,093,688	A	628,106	628,106	-	-	628,106
Loop 288 Water Main - Sherman to Hwy 380	1,688,809	A	422,202	422,202	-	-	422,202
North-South Water Line Phase I	2,898,529	A	724,632	724,632	-	-	724,632
Roselawn Elevated Storage Tank	3,023,732	A	755,933	755,933	-	-	755,933
Roselawn Water Line	862,735	A	172,547	172,547	-	-	172,547
North-South Water Line	1,087,030	C	326,109	-	326,109	-	326,109
Ray Roberts WTP Expansion	42,854,400	C	1,714,176	-	1,714,176	-	1,714,176
Locust Water Line Upsize	1,281,776	C	1,153,598	-	1,153,598	-	1,153,598
Hickory Water Line Upsize	498,444	C	448,600	-	448,600	-	448,600
Water Impact Fee Report Preparation	18,280	C	18,280	-	-	18,280	18,280
Total	$ 161,591,439		$ 25,711,201	$ 22,050,438	$ 3,642,483	$ 18,280	$ 25,711,201

(1) Derived from Table 3.2 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost for Zone 1A

(2) Per discussions with City staff and City files

Project Note A: Project costs from 2013 study

Project Note B: Costs of projects completed since 2013 per City Staff

Project Note C: Proposed projects in 2018 dollars

City of Denton - 2018 Water Impact Fee Update

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

2018 Service Units[1]	69,401	
Ten Year Growth in Service Units[2]	7,712	
	10	years
Annual Growth in Service Units	771	

	1	2	3	4	5	6	7	8	9	10	Total
Debt Service for Debt Funded Projects Eligible for Impact Fees[3]	$1,467,524	$1,496,752	$1,525,980	$1,555,208	$1,584,437	$1,614,288	$1,644,139	$1,673,990	$1,703,841	$1,733,692	$ 15,999,849
Net Impact Fee Eligible Debt Service Funded by Other Sources	$1,467,524	$1,496,752	$1,525,980	$1,555,208	$1,584,437	$1,614,288	$1,644,139	$1,673,990	$1,703,841	$1,733,692	$ 15,999,849
Current Service Units	70,172	70,943	71,715	72,486	73,257	74,028	74,799	75,571	76,342	77,113	
Total Net Impact Fee Eligible Debt Service Funded by Other Sources per Service Unit	$ 20.91	$ 21.10	$ 21.28	$ 21.46	$ 21.63	$ 21.81	$ 21.98	$ 22.15	$ 22.32	$ 22.48	
Annual Growth in Service Units (Cumulative)	771	1,542	2,314	3,085	3,856	4,627	5,398	6,170	6,941	7,712	
Annual Water Rate Revenue Generated by Service Unit for Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 16,128	$ 32,541	$ 49,230	$ 66,185	$ 83,399	$ 100,903	$ 118,660	$ 136,665	$ 154,909	$ 173,385	$ 932,006

Credit Amount **$ 932,006**

(1) Derived from Table 2.1 10-year Additional Single-Family Equivalent Calculation
(2) Derived from Table 2.8 10-year Additional SFE Water Zone Distribution
(3) Water Appendices - page 2 Section II

City of Denton - 2018 Water Impact Fee Update
Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Water Service Area Zone 1B

0	Existing Fund Balance	$ 3,657,649
1	Existing Number of Service Units	69,401
2	Total Number of Services Units for Planning Period	76,820
3	Additional Service Units Added During Planning Period (Line 2 - Line 1)	7,419
4	Total Cost of the Water Impact Fee CIP	$ 209,184,655
5	Recoverable Cost for Impact Fee Planning Period	$ 36,084,557
6	Percent Recoverable for Water Impact Fee Planning Period (Line 5 / Line 4)	17.25%
7	Financing Costs (From Financial Analysis)	$ 14,607,078
8	Interest Earnings (From Financial Analysis)	$ (6,112,187)
9	Recoverable Cost of Water Impact Fee and Financing Costs Less Balance (Line 5 + Line 7 + Line 8 - Line 0)	$ 40,921,799
10	Pre-Credit Maximum Fee (Line 9 / Line 3)	$ 5,516
11	Credit for Utility Revenues (From Financial Analysis)	$ (1,218,601)
12	Recoverable Cost of Water Impact Fee and Financing (Line 9 + Line 11)	$ 39,703,198
13	Maximum Assessable Fee (Line 12 / Line 3)	$ 5,352

SUMMARY OF WATER IMPACT FEE DETERMINATION

Water Service Area Zone 1B

Recoverable Impact Fee CIP Costs	$	36,084,557	Table 2.3
Financing Cost		14,607,078	See Detail Below
Existing Fund Balance		(3,657,649)	Water Appendices - page 1
Interest Earnings		(6,112,187)	Water Appendices - page 3
Pre Credit Recoverable Cost for Impact Fee	$	40,921,799	Sum of Above
Credit for Utility Revenues		(1,218,601)	Water Appendices - page 6
Maximum Recoverable Cost for Impact Fee	**$**	**39,703,198**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees.
Reference is Table 2.3 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	$	19,043,128	Water Appendices - page 2
Existing Annual Debt Service		31,375,888	Water Appendices - page 2
Principal Component (New and Existing Debt)		(35,811,938)	Water Appendices - page 1
Financing Costs	$	14,607,078	

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 - 2018 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]	1.89%
Annual Service Unit Growth[2]	742
Existing Fund Balance[3]	$ 3,657,649

Portion of Projects Funded by Existing Debt[4]	$ 24,036,719
Non-debt Funded Project Cost[5]	272,619
New Project Cost Funded Through New Debt[6]	11,775,219
Total Recoverable Project Cost[7]	$ 36,084,557

II. New Debt Issues Assumptions

Year	Principal[8]	Interest[9]	Term
1	$ 1,177,522	4.65%	20
2	1,177,522	5.00%	20
3	1,177,522	5.00%	20
4	1,177,522	5.00%	20
5	1,177,522	5.00%	20
6	1,177,522	5.25%	20
7	1,177,522	5.25%	20
8	1,177,522	5.25%	20
9	1,177,522	5.25%	20
10	1,177,522	5.25%	20
Total	$ 11,775,219		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[10]
1	$ 616,023
2	1,204,784
3	1,204,784
4	1,204,784
5	1,204,784
6	1,204,784
7	1,204,784
8	1,204,784
9	1,204,784
10	1,793,545
Total	$ 12,047,838

(1) Investment Portfolio Yield as of 08/05/2018
(2) Derived from Table 2.8 10-year Additional SFE Water Zone Distribution
(3) Balance from 09/30/2017 provided by City Staff distributed proportionally to recoverable cost
(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 2.3 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 from City's Financial Advisor April 26, 2018
(10) Assumes new debt proceeds expended over a 2-year timeframe.
Non-debt funded capital expenditures allocated in equal annual amounts

City of Denton - 2018 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 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	$ 91,704	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 91,704
2	91,704	94,487	-	-	-	-	-	-	-	-	186,191
3	91,704	94,487	94,487	-	-	-	-	-	-	-	280,679
4	91,704	94,487	94,487	94,487	-	-	-	-	-	-	375,166
5	91,704	94,487	94,487	94,487	94,487	-	-	-	-	-	469,653
6	91,704	94,487	94,487	94,487	94,487	96,501	-	-	-	-	566,154
7	91,704	94,487	94,487	94,487	94,487	96,501	96,501	-	-	-	662,655
8	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	-	-	759,155
9	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	-	855,656
10	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	952,156
11	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	952,156
12	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	952,156
13	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	952,156
14	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	952,156
15	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	952,156
16	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	952,156
17	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	952,156
18	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	952,156
19	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	952,156
20	91,704	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	952,156
21	-	94,487	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	860,453
22	-	-	94,487	94,487	94,487	96,501	96,501	96,501	96,501	96,501	765,965
23	-	-	-	94,487	94,487	96,501	96,501	96,501	96,501	96,501	671,478
24	-	-	-	-	94,487	96,501	96,501	96,501	96,501	96,501	576,990
25	-	-	-	-	-	96,501	96,501	96,501	96,501	96,501	482,503
26	-	-	-	-	-	-	96,501	96,501	96,501	96,501	386,002
27	-	-	-	-	-	-	-	96,501	96,501	96,501	289,502
28	-	-	-	-	-	-	-	-	96,501	96,501	193,001
29	-	-	-	-	-	-	-	-	-	96,501	96,501
	$ 1,834,075	$ 1,889,748	$ 1,889,748	$ 1,889,748	$ 1,889,748	$ 1,930,012	$ 1,930,012	$ 1,930,012	$ 1,930,012	$ 1,930,012	$ 19,043,128

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	$ 91,704	$ 616,023	$ (1,177,522)	$ 1,568,794	$ (17,563)	$ 1,081,436
2	186,191	1,204,784	(1,177,522)	1,568,794	(36,736)	1,745,511
3	280,679	1,204,784	(1,177,522)	1,568,794	(57,470)	1,819,265
4	375,166	1,204,784	(1,177,522)	1,568,794	(79,715)	1,891,507
5	469,653	1,204,784	(1,177,522)	1,568,794	(103,427)	1,962,282
6	566,154	1,204,784	(1,177,522)	1,568,794	(128,682)	2,033,528
7	662,655	1,204,784	(1,177,522)	1,568,794	(155,355)	2,103,356
8	759,155	1,204,784	(1,177,522)	1,568,794	(183,402)	2,171,809
9	855,656	1,204,784	(1,177,522)	1,568,794	(212,785)	2,238,927
10	952,156	1,793,545	(1,177,522)	1,568,794	(243,464)	2,893,509
11	952,156	-	-	1,568,794	-	2,520,951
12	952,156	-	-	1,568,794	-	2,520,951
13	952,156	-	-	1,568,794	-	2,520,951
14	952,156	-	-	1,568,794	-	2,520,951
15	952,156	-	-	1,568,794	-	2,520,951
16	952,156	-	-	1,568,794	-	2,520,951
17	952,156	-	-	1,568,794	-	2,520,951
18	952,156	-	-	1,568,794	-	2,520,951
19	952,156	-	-	1,568,794	-	2,520,951
20	952,156	-	-	1,568,794	-	2,520,951
21	860,453	-	-	-	-	860,453
22	765,965	-	-	-	-	765,965
23	671,478	-	-	-	-	671,478
24	576,990	-	-	-	-	576,990
25	482,503	-	-	-	-	482,503
26	386,002	-	-	-	-	386,002
27	289,502	-	-	-	-	289,502
28	193,001	-	-	-	-	193,001
29	96,501	-	-	-	-	96,501
	$ 19,043,128	$ 12,047,838	$ (11,775,219)	$ 31,375,888	$ (1,218,601)	$ 49,473,034

(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 - 2018 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							$ 3,657,649
1	$ 5,352	742	$ 3,970,320	$ 1,081,436	$ 2,888,884	$ 96,394	6,642,927
2	5,352	742	3,970,320	1,745,511	2,224,809	146,521	9,014,257
3	5,352	742	3,970,320	1,819,265	2,151,055	190,626	11,355,938
4	5,352	742	3,970,320	1,891,507	2,078,813	234,185	13,668,936
5	5,352	742	3,970,320	1,962,282	2,008,037	277,216	15,954,189
6	5,352	742	3,970,320	2,033,528	1,936,792	319,718	18,210,700
7	5,352	742	3,970,320	2,103,356	1,866,964	361,691	20,439,354
8	5,352	742	3,970,320	2,171,809	1,798,511	403,150	22,641,016
9	5,352	742	3,970,320	2,238,927	1,731,393	444,112	24,816,521
10	5,352	742	3,970,320	2,893,509	1,076,810	479,031	26,372,362
11	-	-	-	2,520,951	(2,520,951)	474,439	24,325,850
12	-	-	-	2,520,951	(2,520,951)	435,774	22,240,673
13	-	-	-	2,520,951	(2,520,951)	396,379	20,116,101
14	-	-	-	2,520,951	(2,520,951)	356,239	17,951,390
15	-	-	-	2,520,951	(2,520,951)	315,341	15,745,780
16	-	-	-	2,520,951	(2,520,951)	273,671	13,498,501
17	-	-	-	2,520,951	(2,520,951)	231,213	11,208,763
18	-	-	-	2,520,951	(2,520,951)	187,953	8,875,765
19	-	-	-	2,520,951	(2,520,951)	143,876	6,498,690
20	-	-	-	2,520,951	(2,520,951)	98,966	4,076,705
21	-	-	-	860,453	(860,453)	68,893	3,285,145
22	-	-	-	765,965	(765,965)	54,831	2,574,010
23	-	-	-	671,478	(671,478)	42,288	1,944,820
24	-	-	-	576,990	(576,990)	31,293	1,399,122
25	-	-	-	482,503	(482,503)	21,876	938,495
26	-	-	-	386,002	(386,002)	14,085	566,577
27	-	-	-	289,502	(289,502)	7,970	285,045
28	-	-	-	193,001	(193,001)	3,562	95,606
29	-	-	-	96,501	(96,501)	895	-
			39,703,198	49,473,034		6,112,187	

City of Denton - 2018 Water Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Calculation

Water Service Area Zone 1B

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	1.7048	1.0000	742	1,265	$ 1,081,436	$ 1,843,675
2	28	1.6732	1.0000	742	1,241	1,745,511	2,920,637
3	27	1.6422	1.0000	742	1,218	1,819,265	2,987,599
4	26	1.6118	1.0000	742	1,196	1,891,507	3,048,637
5	25	1.5819	1.0000	742	1,174	1,962,282	3,104,064
6	24	1.5525	1.0000	742	1,152	2,033,528	3,157,117
7	23	1.5237	1.0000	742	1,130	2,103,356	3,204,976
8	22	1.4955	1.0000	742	1,110	2,171,809	3,247,918
9	21	1.4678	1.0000	742	1,089	2,238,927	3,286,206
10	20	1.4405	1.0000	742	1,069	2,893,509	4,168,225
11	19	1.4138	1.0000	-	-	2,520,951	3,564,200
12	18	1.3876	1.0000	-	-	2,520,951	3,498,110
13	17	1.3619	1.0000	-	-	2,520,951	3,433,246
14	16	1.3366	1.0000	-	-	2,520,951	3,369,585
15	15	1.3118	1.0000	-	-	2,520,951	3,307,103
16	14	1.2875	1.0000	-	-	2,520,951	3,245,781
17	13	1.2636	1.0000	-	-	2,520,951	3,185,595
18	12	1.2402	1.0000	-	-	2,520,951	3,126,526
19	11	1.2172	1.0000	-	-	2,520,951	3,068,552
20	10	1.1946	1.0000	-	-	2,520,951	3,011,653
21	9	1.1725	1.0000	-	-	860,453	1,008,879
22	8	1.1508	1.0000	-	-	765,965	881,439
23	7	1.1294	1.0000	-	-	671,478	758,379
24	6	1.1085	1.0000	-	-	576,990	639,580
25	5	1.0879	1.0000	-	-	482,503	524,926
26	4	1.0677	1.0000	-	-	386,002	412,154
27	3	1.0479	1.0000	-	-	289,502	303,383
28	2	1.0285	1.0000	-	-	193,001	198,505
29	1	1.0094	1.0000	-	-	96,501	97,412
					11,643		$ 68,604,064

Annual Interest Rate:		1.89%
Present Value of Initial Impact Fee Fund Balance	$	3,657,649
Total Escalated Expense for Entire Period	$	68,604,064
Less Future Value of Initial Impact Fee Fund Balance		6,294,059
Sub-Total	$	62,310,005
Total Escalated Service Units		11,643
Impact Fee for Water Service Area	**$**	**5,352**

City of Denton - 2018 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]	Note	Impact Fee Recoverable Cost[1]	Debt Funded[2] Existing	Debt Funded[2] Proposed	Non-Debt Funded[2]	Impact Fee Recoverable Cost
Lake Ray Roberts	$ 72,053,897	A	$ 7,205,390	$ 7,205,390	$ -	$ -	$ 7,205,390
Lake Ray Roberts Water Treatment Plant	26,529,260	A	10,611,704	10,611,704	-	-	10,611,704
54" Transmission Line	4,507,441	A	1,126,860	1,126,860	-	-	1,126,860
Loop 288 Water Main - Sherman to UNT	2,050,069	A	615,021	615,021	-	-	615,021
Loop 288 Water Main - Sherman to Hwy 380	1,653,625	A	413,406	413,406	-	-	413,406
Northwest Elevated Storage Tank	2,339,988	A	467,998	467,998	-	-	467,998
Southwest Pump Station	5,320,802	A	1,330,201	1,330,201	-	-	1,330,201
Southwest PS Oversize Discharge Line (30" to 36")	256,029	A	12,802	12,802	-	-	12,802
Vintage Oversize Line (12" to 20")	203,415	A	40,683	40,683	-	-	40,683
North-South Water Line Phase I	2,838,142	A	709,536	709,536	-	-	709,536
Roselawn Elevated Storage Tank	2,960,737	A	740,184	740,184	-	-	740,184
Roselawn Water Line	844,761	A	168,952	168,952	-	-	168,952
Masch Branch Road Water Line Extension	645,781	A	32,290	32,290	-	-	32,290
US 380 Urban Utility Relocation	1,362,086	A	68,105	68,105	-	-	68,105
Rayzor Ranch Oversize Line (16" to 20")	133,226	A	6,662	6,662	-	-	6,662
Southwest Elevated Storage Tank	4,869,252	B	486,925	486,925	-	-	486,925
University Water Line and PRV	826,468	B	247,941	-	-	247,941	247,941
North-South Water Line	7,609,210	C	2,282,763	-	2,282,763	-	2,282,763
I-35 Parallel Line Crossing	1,004,000	C	150,600	-	150,600	-	150,600
Riney Road Booster Pump Station	7,866,000	C	786,600	-	786,600	-	786,600
Elm/Loop 288 Water Lines	5,537,300	C	1,938,055	-	1,938,055	-	1,938,055
Allred Road / John Paine Road Water Lines	4,744,000	C	1,423,200	-	1,423,200	-	1,423,200
Ray Roberts WTP Expansion	41,961,600	C	1,678,464	-	1,678,464	-	1,678,464
McKinney Water Line	1,200,600	C	420,210	-	420,210	-	420,210
I-35E Frontage Road Water Line Betterment	1,020,510	C	663,332	-	663,332	-	663,332
I-35W Water Line	5,213,840	C	1,564,152	-	1,564,152	-	1,564,152
I-35W/Corbin Water Line	2,177,680	C	653,304	-	653,304	-	653,304
Jim Christal Oversize Line (16" to 20")	127,758	C	19,164	-	19,164	-	19,164
Jim Christal Water Line / I-35 Crossing	1,302,500	C	195,375	-	195,375	-	195,375
Water Impact Fee Report Preparation	24,678	C	24,678	-	-	24,678	24,678
Total	$ 209,184,655		$ 36,084,557	$ 24,036,719	$ 11,775,219	$ 272,619	$ 36,084,557

(1) Derived from Table 3.2 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost for Zone 1B

(2) Per discussions with City staff and City files

Project Note A: Project costs from 2013 study

Project Note B: Costs of projects completed since 2013 per City Staff

Project Note C: Proposed projects in 2018 dollars

City of Denton - 2018 Water Impact Fee Update

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

2018 Service Units[1]	69,401	
Ten Year Growth in Service Units[2]	7,419	
	10	years
Annual Growth in Service Units	742	

	1	2	3	4	5	6	7	8	9	10	Total
Debt Service for Debt Funded Projects Eligible for Impact Fees[3]	$1,660,498	$1,754,986	$1,849,473	$1,943,960	$2,038,448	$2,134,948	$2,231,449	$2,327,950	$2,424,450	$2,520,951	$ 20,887,113
Net Impact Fee Eligible Debt Service Funded by Other Sources	$1,660,498	$1,754,986	$1,849,473	$1,943,960	$2,038,448	$2,134,948	$2,231,449	$2,327,950	$2,424,450	$2,520,951	$ 20,887,113
Current Service Units	70,143	70,885	71,627	72,369	73,111	73,852	74,594	75,336	76,078	76,820	
Total Net Impact Fee Eligible Debt Service Funded by Other Sources per Service Unit	$ 23.67	$ 24.76	$ 25.82	$ 26.86	$ 27.88	$ 28.91	$ 29.91	$ 30.90	$ 31.87	$ 32.82	
Annual Growth in Service Units (Cumulative)	742	1,484	2,226	2,968	3,710	4,451	5,193	5,935	6,677	7,419	
Annual Water Rate Revenue Generated by Service Unit for Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 17,563	$ 36,736	$ 57,470	$ 79,715	$ 103,427	$ 128,682	$ 155,355	$ 183,402	$ 212,785	$ 243,464	$ 1,218,601

Credit Amount	**$**	**1,218,601**

(1) Derived from Table 2.1 10-year Additional Single-Family Equivalent Calculation
(2) Derived from Table 2.8 10-year Additional SFE Water Zone Distribution
(3) Water Appendices - page 2 Section II

City of Denton - 2018 Water Impact Fee Update
Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Water Service Area Zone 2

0	Existing Fund Balance	$ 399,016
1	Existing Number of Service Units	69,401
2	Total Number of Services Units for Planning Period	70,043
3	Additional Service Units Added During Planning Period (Line 2 - Line 1)	642
4	Total Cost of the Water Impact Fee CIP	$ 22,954,077
5	Recoverable Cost for Impact Fee Planning Period	$ 4,254,101
6	Percent Recoverable for Water Impact Fee Planning Period (Line 5 / Line 4)	18.53%
7	Financing Costs (From Financial Analysis)	$ 1,841,055
8	Interest Earnings (From Financial Analysis)	$ (779,037)
9	Recoverable Cost of Water Impact Fee and Financing Costs Less Balance (Line 5 + Line 7 + Line 8 - Line 0)	$ 4,917,103
10	Pre-Credit Maximum Fee (Line 9 / Line 3)	$ 7,659
11	Credit for Utility Revenues (From Financial Analysis)	$ (13,237)
12	Recoverable Cost of Water Impact Fee and Financing (Line 9 + Line 11)	$ 4,903,866
13	Maximum Assessable Fee (Line 12 / Line 3)	$ 7,638

SUMMARY OF WATER IMPACT FEE DETERMINATION

Water Service Area Zone 2

Recoverable Impact Fee CIP Costs	$	4,254,101	Table 2.3
Financing Cost		1,841,055	See Detail Below
Existing Fund Balance		(399,016)	Water Appendices - page 1
Interest Earnings		(779,037)	Water Appendices - page 3
Pre Credit Recoverable Cost for Impact Fee	$	4,917,103	Sum of Above
Credit for Utility Revenues		(13,237)	Water Appendices - page 6
Maximum Recoverable Cost for Impact Fee	**$**	**4,903,866**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees.
Reference is Table 2.3 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	$	2,815,487	Water Appendices - page 2
Existing Annual Debt Service		3,276,926	Water Appendices - page 2
Principal Component (New and Existing Debt)		(4,251,359)	Water Appendices - page 1
Financing Costs	$	1,841,055	

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 - 2018 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]	1.89%
Annual Service Unit Growth[2]	64
Existing Fund Balance[3]	$ 399,016

Portion of Projects Funded by Existing Debt[4]	$ 2,510,417
Non-debt Funded Project Cost[5]	2,742
New Project Cost Funded Through New Debt[6]	1,740,942
Total Recoverable Project Cost[7]	$ 4,254,101

II. New Debt Issues Assumptions

Year	Principal[8]	Interest[9]	Term
1	$ 174,094	4.65%	20
2	174,094	5.00%	20
3	174,094	5.00%	20
4	174,094	5.00%	20
5	174,094	5.00%	20
6	174,094	5.25%	20
7	174,094	5.25%	20
8	174,094	5.25%	20
9	174,094	5.25%	20
10	174,094	5.25%	20
Total	$ 1,740,942		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[10]
1	$ 87,321
2	174,368
3	174,368
4	174,368
5	174,368
6	174,368
7	174,368
8	174,368
9	174,368
10	261,416
Total	$ 1,743,684

(1) Investment Portfolio Yield as of 08/05/2018
(2) Derived from Table 2.8 10-year Additional SFE Water Zone Distribution
(3) Balance from 09/30/2017 provided by City Staff distributed proportionally to recoverable cost
(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 2.3 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 from City's Financial Advisor April 26, 2018
(10) Assumes new debt proceeds expended over a 2-year timeframe.
Non-debt funded capital expenditures allocated in equal annual amounts

City of Denton - 2018 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	$ 13,558	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 13,558
2	13,558	13,970	-	-	-	-	-	-	-	-	27,528
3	13,558	13,970	13,970	-	-	-	-	-	-	-	41,498
4	13,558	13,970	13,970	13,970	-	-	-	-	-	-	55,468
5	13,558	13,970	13,970	13,970	13,970	-	-	-	-	-	69,437
6	13,558	13,970	13,970	13,970	13,970	14,267	-	-	-	-	83,705
7	13,558	13,970	13,970	13,970	13,970	14,267	14,267	-	-	-	97,972
8	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	-	-	112,240
9	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	-	126,507
10	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	140,774
11	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	140,774
12	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	140,774
13	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	140,774
14	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	140,774
15	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	140,774
16	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	140,774
17	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	140,774
18	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	140,774
19	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	140,774
20	13,558	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	140,774
21	-	13,970	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	127,216
22	-	-	13,970	13,970	13,970	14,267	14,267	14,267	14,267	14,267	113,246
23	-	-	-	13,970	13,970	14,267	14,267	14,267	14,267	14,267	99,277
24	-	-	-	-	13,970	14,267	14,267	14,267	14,267	14,267	85,307
25	-	-	-	-	-	14,267	14,267	14,267	14,267	14,267	71,337
26	-	-	-	-	-	-	14,267	14,267	14,267	14,267	57,070
27	-	-	-	-	-	-	-	14,267	14,267	14,267	42,802
28	-	-	-	-	-	-	-	-	14,267	14,267	28,535
29	-	-	-	-	-	-	-	-	-	14,267	14,267
	$ 271,164	$ 279,395	$ 279,395	$ 279,395	$ 279,395	$ 285,348	$ 285,348	$ 285,348	$ 285,348	$ 285,348	$ 2,815,487

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	$ 13,558	$ 87,321	$ (174,094)	$ 163,846	$ (164)	$ 90,468
2	27,528	174,368	(174,094)	163,846	(353)	191,295
3	41,498	174,368	(174,094)	163,846	(568)	205,050
4	55,468	174,368	(174,094)	163,846	(809)	218,779
5	69,437	174,368	(174,094)	163,846	(1,074)	232,484
6	83,705	174,368	(174,094)	163,846	(1,366)	246,459
7	97,972	174,368	(174,094)	163,846	(1,684)	260,408
8	112,240	174,368	(174,094)	163,846	(2,028)	274,332
9	126,507	174,368	(174,094)	163,846	(2,397)	288,230
10	140,774	261,416	(174,094)	163,846	(2,792)	389,150
11	140,774	-	-	163,846	-	304,621
12	140,774	-	-	163,846	-	304,621
13	140,774	-	-	163,846	-	304,621
14	140,774	-	-	163,846	-	304,621
15	140,774	-	-	163,846	-	304,621
16	140,774	-	-	163,846	-	304,621
17	140,774	-	-	163,846	-	304,621
18	140,774	-	-	163,846	-	304,621
19	140,774	-	-	163,846	-	304,621
20	140,774	-	-	163,846	-	304,621
21	127,216	-	-	-	-	127,216
22	113,246	-	-	-	-	113,246
23	99,277	-	-	-	-	99,277
24	85,307	-	-	-	-	85,307
25	71,337	-	-	-	-	71,337
26	57,070	-	-	-	-	57,070
27	42,802	-	-	-	-	42,802
28	28,535	-	-	-	-	28,535
29	14,267	-	-	-	-	14,267
	$ 2,815,487	$ 1,743,684	$ (1,740,942)	$ 3,276,926	$ (13,237)	$ 6,081,919

(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 - 2018 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							$ 399,016
1	$ 7,638	64	$ 490,387	$ 90,468	$ 399,919	$ 11,316	810,252
2	7,638	64	490,387	191,295	299,092	18,133	1,127,477
3	7,638	64	490,387	205,050	285,337	23,997	1,436,810
4	7,638	64	490,387	218,779	271,607	29,711	1,738,129
5	7,638	64	490,387	232,484	257,903	35,275	2,031,306
6	7,638	64	490,387	246,459	243,928	40,682	2,315,916
7	7,638	64	490,387	260,408	229,978	45,927	2,591,821
8	7,638	64	490,387	274,332	216,055	51,008	2,858,884
9	7,638	64	490,387	288,230	202,157	55,923	3,116,963
10	7,638	64	490,387	389,150	101,237	59,845	3,278,045
11	-	-	-	304,621	(304,621)	59,055	3,032,479
12	-	-	-	304,621	(304,621)	54,415	2,782,273
13	-	-	-	304,621	(304,621)	49,688	2,527,340
14	-	-	-	304,621	(304,621)	44,871	2,267,591
15	-	-	-	304,621	(304,621)	39,964	2,002,934
16	-	-	-	304,621	(304,621)	34,964	1,733,278
17	-	-	-	304,621	(304,621)	29,869	1,458,526
18	-	-	-	304,621	(304,621)	24,678	1,178,584
19	-	-	-	304,621	(304,621)	19,389	893,353
20	-	-	-	304,621	(304,621)	14,001	602,732
21	-	-	-	127,216	(127,216)	10,186	485,702
22	-	-	-	113,246	(113,246)	8,107	380,562
23	-	-	-	99,277	(99,277)	6,252	287,538
24	-	-	-	85,307	(85,307)	4,627	206,857
25	-	-	-	71,337	(71,337)	3,234	138,755
26	-	-	-	57,070	(57,070)	2,082	83,767
27	-	-	-	42,802	(42,802)	1,178	42,143
28	-	-	-	28,535	(28,535)	527	14,135
29	-	-	-	14,267	(14,267)	132	-
			4,903,866	6,081,919		779,037	

City of Denton - 2018 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	1.7048	1.0000	64	109	$ 90,468	$ 154,233
2	28	1.6732	1.0000	64	107	191,295	320,080
3	27	1.6422	1.0000	64	105	205,050	336,733
4	26	1.6118	1.0000	64	103	218,779	352,618
5	25	1.5819	1.0000	64	102	232,484	367,758
6	24	1.5525	1.0000	64	100	246,459	382,635
7	23	1.5237	1.0000	64	98	260,408	396,795
8	22	1.4955	1.0000	64	96	274,332	410,261
9	21	1.4678	1.0000	64	94	288,230	423,052
10	20	1.4405	1.0000	64	92	389,150	560,587
11	19	1.4138	1.0000	-	-	304,621	430,682
12	18	1.3876	1.0000	-	-	304,621	422,696
13	17	1.3619	1.0000	-	-	304,621	414,858
14	16	1.3366	1.0000	-	-	304,621	407,166
15	15	1.3118	1.0000	-	-	304,621	399,616
16	14	1.2875	1.0000	-	-	304,621	392,206
17	13	1.2636	1.0000	-	-	304,621	384,933
18	12	1.2402	1.0000	-	-	304,621	377,796
19	11	1.2172	1.0000	-	-	304,621	370,790
20	10	1.1946	1.0000	-	-	304,621	363,915
21	9	1.1725	1.0000	-	-	127,216	149,161
22	8	1.1508	1.0000	-	-	113,246	130,319
23	7	1.1294	1.0000	-	-	99,277	112,125
24	6	1.1085	1.0000	-	-	85,307	94,561
25	5	1.0879	1.0000	-	-	71,337	77,609
26	4	1.0677	1.0000	-	-	57,070	60,936
27	3	1.0479	1.0000	-	-	42,802	44,855
28	2	1.0285	1.0000	-	-	28,535	29,349
29	1	1.0094	1.0000	-	-	14,267	14,402
					1,008		$ 8,382,728

Annual Interest Rate:		1.89%
Present Value of Initial Impact Fee Fund Balance	$	399,016
Total Escalated Expense for Entire Period	$	8,382,728
Less Future Value of Initial Impact Fee Fund Balance		686,625
Sub-Total	$	7,696,103
Total Escalated Service Units		1,008
Impact Fee for Water Service Area	**$**	**7,638**

City of Denton - 2018 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]	Note	Impact Fee Recoverable Cost[1]	Debt Funded[2] Existing	Debt Funded[2] Proposed	Non-Debt Funded[2]	Impact Fee Recoverable Cost
Lake Ray Roberts	$ 7,665,308	A	$ 766,531	$ 766,531	$ -	$ -	$ 766,531
Lake Ray Roberts Water Treatment Plant	2,822,262	A	1,128,905	1,128,905	-	-	1,128,905
54" Transmission Line	479,515	A	119,879	119,879	-	-	119,879
Loop 288 Water Main - Sherman to UNT	218,092	A	65,428	65,428	-	-	65,428
Loop 288 Water Main - Sherman to Hwy 380	175,918	A	43,980	43,980	-	-	43,980
Southwest Pump Station	591,200	A	147,800	147,800	-	-	147,800
Southwest PS Oversize Discharge Line (30" to 36")	28,448	A	1,422	1,422	-	-	1,422
Vintage Oversize Line (12" to 20")	50,854	A	10,171	10,171	-	-	10,171
North-South Water Line Phase I	301,930	A	75,483	75,483	-	-	75,483
Roselawn Elevated Storage Tank	314,972	A	78,743	78,743	-	-	78,743
Roselawn Water Line	89,868	A	17,974	17,974	-	-	17,974
Southwest Elevated Storage Tank	541,028	B	54,103	54,103	-	-	54,103
North-South Water Line	2,174,060	C	652,218	-	652,218	-	652,218
Allred Road / John Paine Road Water Lines	1,186,000	C	355,800	-	355,800	-	355,800
Ray Roberts WTP Expansion	4,464,000	C	178,560	-	178,560	-	178,560
I-35W Water Line	1,303,460	C	391,038	-	391,038	-	391,038
I-35W/Corbin Water Line	544,420	C	163,326	-	163,326	-	163,326
Water Impact Fee Report Preparation	2,742	C	2,742	-	-	2,742	2,742
Total	$ 22,954,077		$ 4,254,101	$ 2,510,417	$ 1,740,942	$ 2,742	$ 4,254,101

(1) Derived from Table 3.2 Water Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost for Zone 2

(2) Per discussions with City staff and City files

Project Note A: Project costs from 2013 study

Project Note B: Costs of projects completed since 2013 per City Staff

Project Note C: Proposed projects in 2018 dollars

City of Denton - 2018 Water Impact Fee Update

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

2018 Service Units[1]	69,401	
Ten Year Growth in Service Units[2]	642	
	10	years
Annual Growth in Service Units	64	

	1	2	3	4	5	6	7	8	9	10	Total
Debt Service for Debt Funded Projects Eligible for Impact Fees[3]	$ 177,405	$ 191,374	$ 205,344	$ 219,314	$ 233,284	$ 247,551	$ 261,818	$ 276,086	$ 290,353	$ 304,621	$ 2,407,149
Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 177,405	$ 191,374	$ 205,344	$ 219,314	$ 233,284	$ 247,551	$ 261,818	$ 276,086	$ 290,353	$ 304,621	$ 2,407,149
Current Service Units	69,465	69,529	69,594	69,658	69,722	69,786	69,850	69,915	69,979	70,043	
Total Net Impact Fee Eligible Debt Service Funded by Other Sources per Service Unit	$ 2.55	$ 2.75	$ 2.95	$ 3.15	$ 3.35	$ 3.55	$ 3.75	$ 3.95	$ 4.15	$ 4.35	
Annual Growth in Service Units (Cumulative)	64	128	193	257	321	385	449	514	578	642	
Annual Water Rate Revenue Generated by Service Unit for Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 164	$ 353	$ 568	$ 809	$ 1,074	$ 1,366	$ 1,684	$ 2,028	$ 2,397	$ 2,792	$ 13,237

Credit Amount **$ 13,237**

(1) Derived from Table 2.1 10-year Additional Single-Family Equivalent Calculation
(2) Derived from Table 2.8 10-year Additional SFE Water Zone Distribution
(3) Water Appendices - page 2 Section II

TECHNICAL MEMORANDUM

FREESE AND NICHOLS

Innovative approaches
Practical results
Outstanding service

TO:	Tim Fisher, P.E., City of Denton
FROM:	Stephanie Neises, P.E., Freese and Nichols, Inc. Scott Cole, P.E., Freese and Nichols, Inc.
SUBJECT:	Water Impact Fee Utilization Calculations
DATE:	September 26, 2018
PROJECT:	Water Distribution System Master Plan

STATE OF TEXAS
STEPHANIE NEISES
106195
LICENSED
PROFESSIONAL ENGINEER
9/26/18
STEPHANIE NEISES

FREESE AND NICHOLS, INC.
TEXAS REGISTERED
ENGINEERING FIRM
F-2144

1.0 INTRODUCTION

Freese and Nichols, Inc. developed a capital improvements plan as part of the ongoing Water Distribution System Master Plan. Projects identified in the 10-year CIP, along with recently constructed projects, are eligible for cost recovery through impact fees. The Impact Fee Capital Improvements Plan is shown on **Figure 1**. The portion of each project associated with growth that will be utilized within the 10-year timeframe is impact fee eligible. Utilization percentages were calculated by evaluating the existing capacity and future capacity of each project. The following sections document this analysis.

2.0 DEVELOPMENT OF UTILIZATION PERCENTAGES

The hydraulic model was used as a tool to determine the utilization of the pipeline improvements. For the recently constructed projects, the 2018 percent utilized was calculated by dividing the flow observed in the existing system model runs by the ultimate capacity of the pipe. The ultimate capacity of a pipe was assumed to be the capacity calculated in the 2043 system analysis performed as part of the ongoing Water Distribution System Master Plan. The 2018 utilization for proposed projects indicates the portion of the project that will be used to address deficiencies in the existing system or improvements that serve existing customers. The 2028 utilization percentages were calculated by taking the flow observed in the 10-year model runs and dividing it by the ultimate capacity of the pipe.

Created by: Freese and Nichols, Inc.
Job No.: [DTN17240]
Location: H:\W_WW_PLANNING\01_DELIVERABLES\11-Impact_Fee_CIP\Figure_1\Impact_Fee_CIP_(11x17).mxd
Updated: April 13, 2018

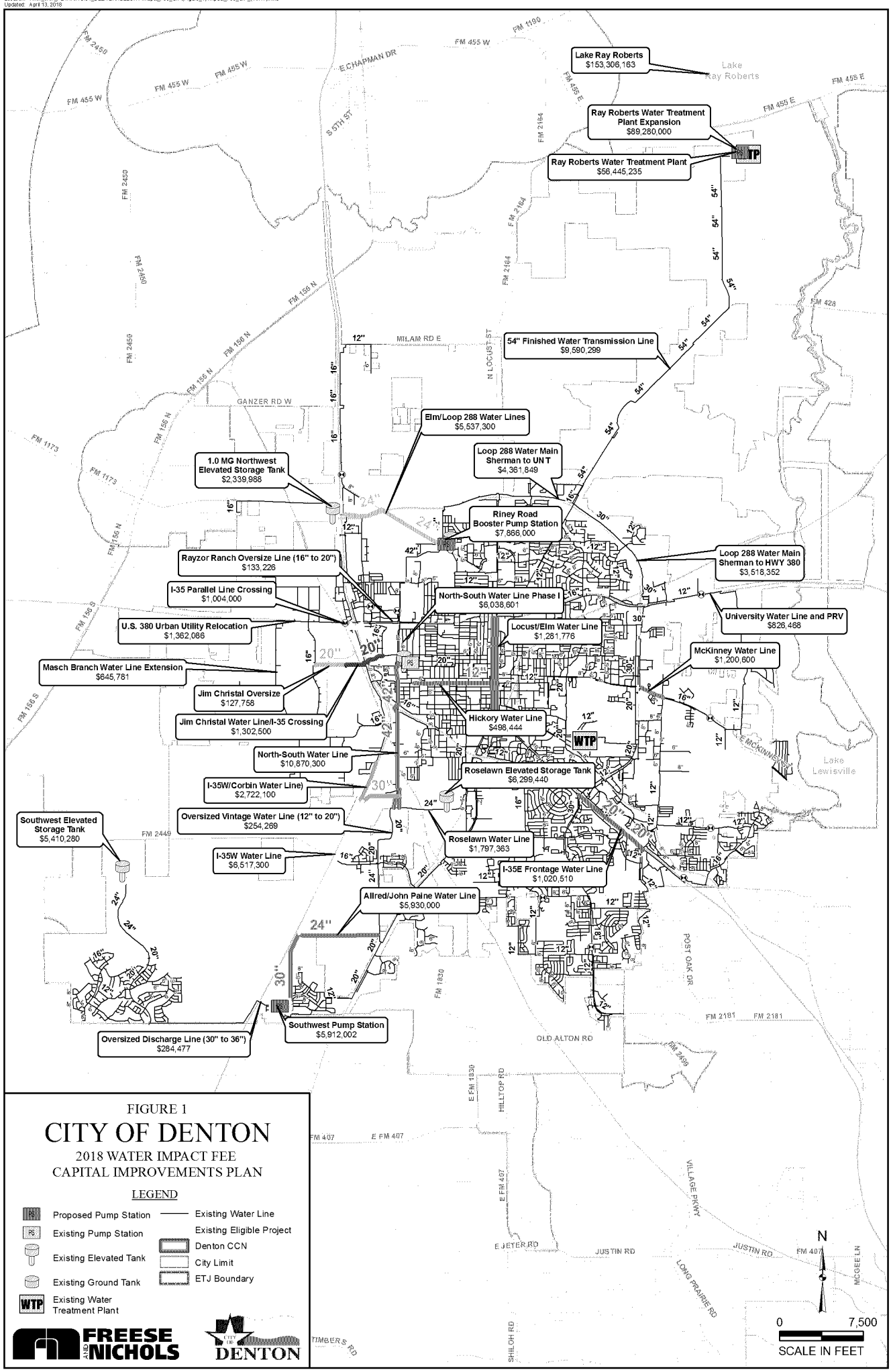


FIGURE 1

CITY OF DENTON

2018 WATER IMPACT FEE CAPITAL IMPROVEMENTS PLAN

LEGEND

- Proposed Pump Station
- Existing Pump Station
- Existing Elevated Tank
- Existing Ground Tank
- Existing Water Treatment Plant
- Existing Water Line
- Existing Eligible Project
- Denton CCN
- City Limit
- ETJ Boundary

FREESE AND NICHOLS

CITY OF DENTON

N

0 7,500

SCALE IN FEET

Utilization percentages for water system facilities (i.e. water treatment plants, pump stations, storage tanks) were calculated based on the recommended capacities developed as part of the ongoing Water Distribution System Master Plan for the existing and projected demands. The 2018 percentages account for existing system deficiencies or projects designed to serve existing customers while the 2028 percentages indicate the portion of the capacity that will be utilized within the 10-year timeframe.

The following provides example calculations for each type of project:

- *Pipe (42-inch Loop 288 Sherman to UNT)*

  Existing Flow = 14.5 mgd

  10-year Flow = 27.4 mgd

  Ultimate Flow = 42.0 mgd

  2018 % Utilization = $\frac{14.5 \text{ mgd}}{42.0 \text{ mgd}} = 0.345 \approx 35\%$

  2028 % Utilization = $\frac{27.4 \text{ mgd}}{42.0 \text{ mgd}} = 0.652 \approx 65\%$

  Eligible % = 65% - 35% = 30%

- *Water Treatment Plant (Ray Roberts Water Treatment Plant)*

  Existing Total WTP Capacity (LLWTP + RRWTP) = 50.0 mgd

  Proposed RRWTP Expansion = 30.0 mgd

  Existing Treatment Requirement = 42.1 mgd

  10-year Treatment Requirement = 51.3 mgd

  2018 % Utilization = 42.1 mgd < 50.0 mgd → 0.0%

  2028 % Utilization = $\frac{51.3 \text{ mgd} - 50.0 \text{ mgd}}{30.0 \text{ mgd}} = 0.04 \rightarrow 4\%$

  Eligible % = 4% - 0% = 4%

- *Pump Station (Southwest Booster Pump Station)*

  Existing Firm Capacity = 6.05 mgd

  Existing Pumping Requirement = 3.17 mgd

  10-year Pumping Requirement = 4.42 mgd

  2018 % Utilization = $\frac{3.17 \text{ mgd}}{6.05 \text{ mgd}}$ = 0.524 ≈ 50%

  2028 % Utilization = $\frac{4.42 \text{ mgd}}{6.05 \text{ mgd}}$ = 0.730 ≈ 75%

  Eligible % = 75% - 50% = 25%

- *Storage Tank (Roselawn EST)*

  Existing Storage Capacity (Central Pressure Plane) = 3.0 MG

  New Storage Capacity = 3.0 MG

  Existing Storage Requirement = 4.70 MG

  10-year Storage Requirement = 5.63 MG

  2018 % Utilization = $\frac{4.70 \text{ MG} - 3.0 \text{ MG}}{3.0 \text{ MG}}$ = 0.567 = 60%

  2028 % Utilization = $\frac{5.63 \text{ MG} - 3.0 \text{ MG}}{3.0 \text{ MG}}$ = 0.876 = 85%

  Eligible % = 85% - 60% = 25%

3.0 ZONE PERCENTAGES

The City divided the water service area into three zones:

- Infill Zone (1A) – the area bounded to the west by Bonnie Brae Street, to the north by Windsor Drive, to the east by Old North Road, Mockingbird Lane, and Woodrow Lane, and to the south by I-35E and Willowwood Street
- Zone 1B – the area north of Hickory Creek and the Robson Ranch, Country Lakes, Meadows at Hickory Creek, and The Vintage developments
- Zone 2 – the area south of Hickory Creek, with the exception of the exacted developments that are included in Zone 1B

After the utilization percentages were calculated, each project was evaluated to determine the zone percentages. Percentages for projects that improve the entire system equally (such as water treatment plants) were calculated based on growth in population over the next 10 years. Approximately 48% of the

10-year growth occurs in Zone 1A while 47% occurs in Zone 1B and 5% in Zone 2. **Table 1** shows the population for each zone. The model was utilized as a tool to assign various percentages to the remaining improvements based on the hydraulic relevance to each zone. For example, the new Riney Road Booster Pump Station provides no benefit to the customers in Zone 2 and therefore is 100% attributable to Zone 1B. Similarly, projects that offer more hydraulic benefit to Zone 2 customers were given percentages higher than 5% for Zone 2. **Table 2** presents the utilization percentages, as well as the zone percentages for each project.

Table 1: Water Service Population by Zone

Zone	2018 Population	2028 Population	% of Total Growth
Zone 1A	63,736	77,440	48%
Zone 1B	61,190	74,668	47%
Zone 2	5,213	6,538	5%
Total	130,139	158,646	100%

4.0 COST ESTIMATES

Cost estimates were developed for the proposed future projects as part of the ongoing Water Distribution System Master Plan. The costs are in 2018 dollars and include an allowance for engineering, surveying, and contingencies, with the exception of several projects that are already in the process of design. For these projects, cost estimates were provided by the City based on information from the current design projects. For existing eligible projects, costs from the 2013 Impact Fee Report were utilized. It should be noted that for projects consisting of oversize participation and upsize replacement, only the costs associated with the increase in capacity were included in the impact fee calculations.

Table 2: Cost Allocation for Impact Fees

No.	Description of Project	2018* Utilization	2028 Utilization	2018-2028 Utilization	Capital Cost	10-Year Cost	Zone 1B Utilization	Zone 1 Cost	Zone 2 Utilization	Zone 2 Cost	Zone 1A Utilization	Infill Cost
EXISTING ELIGIBLE												
A	Lake Ray Roberts	90%	100%	10%	$153,306,163	$15,330,616	47%	$7,205,390	5%	$766,531	48%	$7,358,695
B	Lake Ray Roberts Water Treatment Plant	60%	100%	40%	$56,445,235	$22,578,094	47%	$10,611,704	5%	$1,128,905	48%	$10,837,485
C	54" Finished Water Transmission Line	35%	60%	25%	$9,590,299	$2,397,575	47%	$1,126,860	5%	$119,879	48%	$1,150,836
D	Loop 288 Water Main - Sherman to UNT	35%	65%	30%	$4,361,849	$1,308,555	47%	$615,021	5%	$65,428	48%	$628,106
E	Loop 288 Water Main - Sherman to Hwy 380	40%	65%	25%	$3,518,352	$879,588	47%	$413,406	5%	$43,979	48%	$422,203
F	Northwest Elevated Storage Tank	55%	75%	20%	$2,339,988	$467,998	100%	$467,998	0%	$0	0%	$0
G	Southwest Pump Station	50%	75%	25%	$5,912,002	$1,478,001	90%	$1,330,201	10%	$147,800	0%	$0
H	Southwest PS Oversize Discharge Line (30" to 36")**	15%	20%	5%	$284,477	$14,224	90%	$12,802	10%	$1,422	0%	$0
I	Vintage Oversize Line (12" to 20")**	50%	70%	20%	$254,269	$50,854	80%	$40,683	20%	$10,171	0%	$0
J	North-South Water Line Phase I	25%	50%	25%	$6,038,601	$1,509,650	47%	$709,536	5%	$75,483	48%	$724,631
K	Roselawn Elevated Storage Tank	60%	85%	25%	$6,299,440	$1,574,860	47%	$740,184	5%	$78,743	48%	$755,933
L	Roselawn Water Line	35%	55%	20%	$1,797,363	$359,473	47%	$168,952	5%	$17,974	48%	$172,547
M	Masch Branch Road Water Line Extension	15%	20%	5%	$645,781	$32,289	100%	$32,289	0%	$0	0%	$0
N	U.S 380 Urban Utility Relocation	25%	30%	5%	$1,362,086	$68,104	100%	$68,104	0%	$0	0%	$0
O	Rayzor Ranch Oversize Line (16" to 20")**	20%	25%	5%	$133,226	$6,661	100%	$6,661	0%	$0	0%	$0
P	Southwest Elevated Storage Tank	55%	65%	10%	$5,410,280	$541,028	90%	$486,925	10%	$54,103	0%	$0
Q	University Water Line and PRV	25%	55%	30%	$826,468	$247,940	100%	$247,940	0%	$0	0%	$0
PROPOSED ELIGIBLE												
1	North-South Water Line	0%	30%	30%	$10,870,300	$3,261,090	70%	$2,282,763	20%	$652,218	10%	$326,109
2	I-35 Parallel Line Crossing	15%	30%	15%	$1,004,000	$150,600	100%	$150,600	0%	$0	0%	$0
3	Riney Road Booster Pump Station	15%	25%	10%	$7,866,000	$786,600	100%	$786,600	0%	$0	0%	$0
4	Elm/Loop 288 Water Lines	0%	35%	35%	$5,537,300	$1,938,055	100%	$1,938,055	0%	$0	0%	$0
5	Allred Road /John Paine Road Water Lines	0%	30%	30%	$5,930,000	$1,779,000	80%	$1,423,200	20%	$355,800	0%	$0
6	Ray Roberts WTP Expansion	0%	4%	4%	$89,280,000	$3,571,200	47%	$1,678,464	5%	$178,560	48%	$1,714,176
7	McKinney Water Line	0%	35%	35%	$1,200,600	$420,210	100%	$420,210	0%	$0	0%	$0
8	I-35E Frontage Road Water Line Betterment**	0%	65%	65%	$1,020,510	$663,332	100%	$663,332	0%	$0	0%	$0
9	Locust/Elm Water Line Upsize**	0%	90%	90%	$1,281,776	$1,153,599	0%	$0	0%	$0	100%	$1,153,599
10	I-35W Water Line	0%	30%	30%	$6,517,300	$1,955,190	80%	$1,564,152	20%	$391,038	0%	$0
11	I-35W/Corbin Water Line	0%	30%	30%	$2,722,100	$816,630	80%	$653,304	20%	$163,326	0%	$0
12	Hickory Water Line Upsize**	0%	90%	90%	$498,444	$448,599	0%	$0	0%	$0	100%	$448,599
13	Jim Christal Oversize Line (16" to 20")**	0%	15%	15%	$127,758	$19,164	100%	$19,164	0%	$0	0%	$0
14	Jim Christal Water Line/I-35 Crossing	0%	15%	15%	$1,302,500	$195,375	100%	$195,375	0%	$0	0%	$0
Total Capital Improvements Cost					**$393,684,467**	**$66,004,154**		**$36,059,875**		**$4,251,360**		**$25,692,919**

* Utilization in 2018 on Proposed Projects indicates a portion of the project that will be used to address deficiencies within the existing system, and therefore are not eligible for impact fee cost recovery for future growth.

** Project costs for oversize and upsize improvements only include costs associated with the increased capacity.

Chapter 3:
2018 Wastewater Impact Fee Update

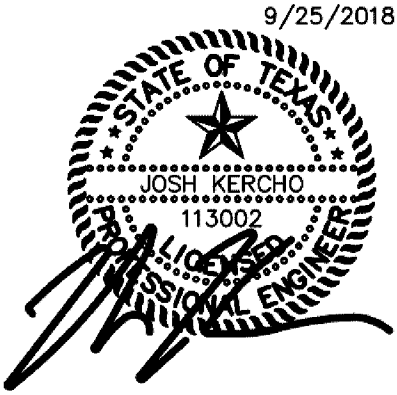
Prepared for:

City of Denton, Texas

Prepared by:

Kimley-Horn and Associates, Inc.
801 Cherry Street, Unit 11, Suite 1300
Fort Worth, TX 76102
817.335.6511
Firm Registration No. F-928

9/25/2018



September 2018

061024024

3.1 EXECUTIVE SUMMARY

This study was performed for the 5-year update of the City of Denton's Wastewater System Impact Fees. Wastewater system analysis and the Wastewater System Master Plan are important tools for facilitating orderly growth of the wastewater system and for providing adequate facilities that promote economic development in the City of Denton.

Elements of the wastewater system, including water reclamation plant improvements, peak wet weather facilities, gravity pipes, force mains and lift station facilities, were evaluated against industry standards as outlined in the Design Criteria section of this report. Wastewater system improvements necessary to serve 10-year (2028) and ultimate system needs were evaluated as well. Typically, infrastructure improvements are sized beyond the 10-year requirements; however, the state's impact fee law (Chapter 395) only allows recovery of costs to serve the 10-year planning period. The remainder can be assessed as the planning window extends beyond 2028 and as the impact fees are updated in the future. Information related to the growth of the City has been provided in Chapter 1 – Land Use Assumptions.

Based on the City's 10-year growth projections and the resulting wastewater flow projections, wastewater service will be required for an additional **12,041** single family equivalents. The calculation is as follows:

- A single family equivalent (SFE), which is a unit of development that discharges approximately **299** gallons per day (GPD), is a typical residential connection that uses a 5/8x3/4-inch meter.

Table 3.1. 10-year Additional Single-Family Equivalent Calculation

Year	Average Day Flow (MGD)[1]	SFE Demand (GPD)	Projected SFEs
2018	15.6	299	52,174
2028	19.2	299	64,215
10-year Additional SFEs			**12,041**

(1) Data Sources:
- City of Denton

The City of Denton defines a single-family equivalent, as a unit of development that consumes the amount of water requiring a standard 5/8x3/4-inch meter. Based on the additional SFEs and the recoverable capital improvements plan the City may assess a maximum of **$4,716** per single-family equivalent. For a development that requires a different size meter, a single-family equivalent is established at a multiplier based on its capacity with respect to the 5/8-inch meter. The maximum impact fee that could be assessed for other meter sizes is based on the Equivalency Table (**Table 3.2**).

Table 3.2. Maximum Assessable Wastewater Impact Fee by Meter Size

Meter Size	Single Family Equivalent[1]	Maximum Assessible Impact Fee
5/8x3/4"	1	$4,716
1"	2.5	$11,790
1-1/2"	5	$23,580
2"	8	$37,728
3"	22.5	$106,110
4"	50	$235,800
6"	100	$471,600
8"	200	$943,200
10"	325	$1,532,700

(1) Data Sources:
- City of Denton Code of Ordinances, Chapter 26, Article VI, Exhibit F

3.2 INTRODUCTION

The City of Denton retained the services of Kimley-Horn and Associates, Inc., for the purpose of 5-year update of the impact fees for wastewater system improvements required to serve new development. These fees were originally developed in 1998, and updated in the years 2003, 2008 and 2013 in accordance with Chapter 395 of the Local Government Code (impact fees).

The purpose of this report is to satisfy the requirements of the law and provide the City with an updated 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) a plan for awarding:

(A) a credit for the portion of ad valorem tax and utility service revenues generated by new service unit 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 study process was comprised of four tasks:

A. Land Use Assumptions

The development of land use assumptions included the following:

- Establishing impact fee service areas (SA) for water and wastewater;
- Collection/determination of population by SA; and
- Projection of the ten-year population by SA.

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

B. Evaluation of the Wastewater System Master Plan

This task involved coordination with City Staff to determine compatibility between the growth projections of the City's Wastewater System Master Plan and the Land Use Assumptions. The wastewater flow projections were then used to determine the additional single-family equivalents (SFEs).

C. Impact Fee Capital Improvements Plan

This task involved coordination with City staff to identify proposed wastewater capital improvements outlined in the master plan that will be built in the 10-year planning window and meet the design criteria included in **Section 3.3** below.

D. Impact Fee Analysis

This task included calculating the additional single-family equivalent units, and credit reduction. These values were then used to determine the impact fee per SFE and the maximum assessable impact fee by meter size.

3.3 DESIGN CRITERIA

A. Sewer Trunk Lines (Interceptors)

Proposed sewers lines shall be designed with slopes sufficient to give a velocity of not less than 2 feet per second with a Manning's "n" value of 0.013. Minimum and maximum slopes shall be in accordance with the City of Denton Water and Wastewater Criteria Manual.

B. Lift Stations Pumping Capacity

The design criteria for lift station pumping shall be to provide firm pumping capacity to be 100% of the projected peak flows. The firm pumping capacity is defined as the available total pumping capacity with the largest pump out of service.

C. Lift Station Wet Well Capacity

Wet well volume shall be calculated by the following method:

$t = V/(D-Q) + V/Q$ where,

t = Total time between successive pump starts in minutes (operating cycle)

D = Rated pump capacity in GPM

V = Storage volume between lead pump on and pump off elevations in gallons

Q = Inflow to wet well in GPM

The operation cycle 't' shall not be less than 10 minutes for Average Flow and not more than 60 minutes for Minimum Flow conditions.

D. Force Mains

Force main capacity shall be sized to meet the capacity of the entire basin. The minimum recommended velocity is 3 feet per second, and the velocity shall not be less than 2 feet per second when only the smallest pump is in operation.

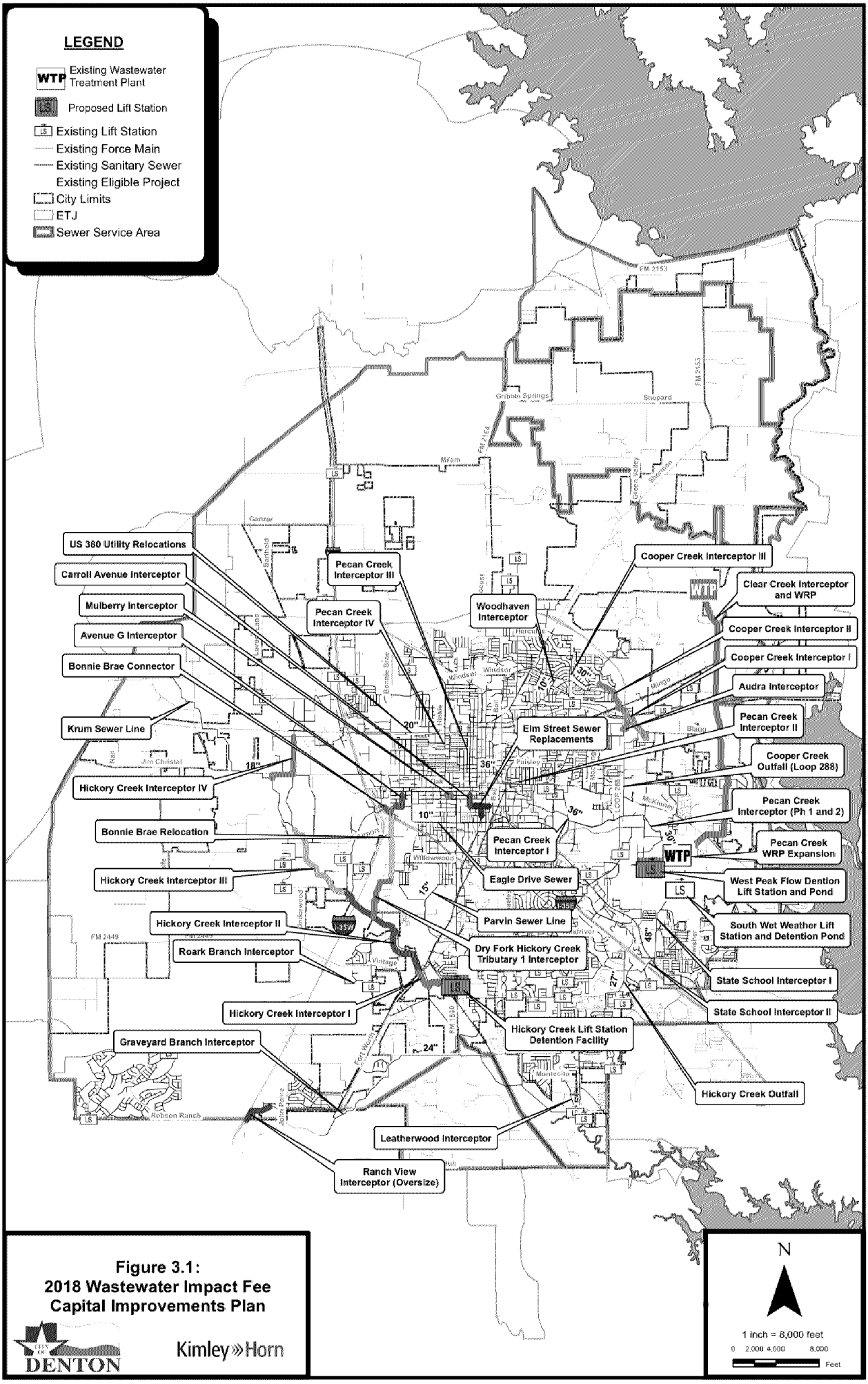
3.4 IMPACT FEE CAPITAL IMPROVEMENTS PLAN

The City of Denton staff has developed a Wastewater System Master Plan. The purpose of the 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. City staff completed the *Wastewater System Master Plan* and recommended system improvements to accommodate growth through the year 2040.

Twenty-one (21) previously constructed projects as well as nineteen (19) proposed projects identified in the *Wastewater System Master Plan* are determined eligible for recoverable cost through impact fee over the next 10 years. The total projected cost of these projects is **$156,586,808**. The projected total recoverable cost in the next 10 years through impact fees is **$49,714,840**. After financing costs are added and the credit reduction calculation is complete, **$56,786,844** is recoverable through impact fees serving the 10-year system needs. These impact fee capital improvements are shown in **Table 3.3.**

Table 3.3. Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

Proj. #	Description	2018 Required Capacity (Percent Utilization)	2028 Required Capacity (Percent Utilization)	2018-2028 Required Capacity (Percent Utilization)	2028 Projected Recoverable Cost	Total Project Cost
	EXISTING					
1	South Wet Weather Lift Station & Detention Pond	48.4%	62.4%	14.0%	$ 217,406	$ 1,552,898
2	Cooper Creek Interceptor III	47.6%	49.5%	1.9%	$ 24,282	$ 1,277,970
3	Cooper Creek Outfall (Loop 288)	64.7%	72.3%	7.6%	$ 296,310	$ 3,898,807
4	Eagle Drive Sewer	18.1%	19.4%	1.3%	$ 11,731	$ 902,329
5	Krum Sewer Line	10.0%	51.3%	41.3%	$ 164,560	$ 398,450
6	Graveyard Branch Interceptor	6.6%	18.1%	11.5%	$ 575,570	$ 5,004,952
7	Hickory Creek Outfall	34.4%	38.5%	4.1%	$ 45,572	$ 1,111,495
8	Leatherwood Interceptor	32.0%	33.5%	1.5%	$ 2,349	$ 156,592
9	Parvin Sewer Line	59.0%	71.9%	12.9%	$ 42,116	$ 326,474
10	Pecan Creek Interceptor (Ph 1 & 2)	96.0%	100.0%	4.0%	$ 134,528	$ 3,363,189
11	Pecan Creek Interceptor I	53.4%	66.9%	13.5%	$ 266,716	$ 1,975,672
12	Pecan Creek Interceptor II	40.6%	46.0%	5.4%	$ 100,558	$ 1,862,175
13	Pecan Creek Interceptor III	36.1%	41.0%	4.9%	$ 150,879	$ 3,079,149
14	Pecan Creek Interceptor IV	26.9%	32.5%	5.6%	$ 54,784	$ 978,285
15	Pecan WRP (15MGD)	85.0%	100.0%	15.0%	$ 5,929,227	$ 39,528,174
16	Pecan WRP Expansion (6MGD)	0.0%	70.0%	70.0%	$ 21,003,588	$ 30,005,125
17	Roark Branch Interceptor	0.0%	60.6%	60.6%	$ 517,994	$ 854,774
18	State School Interceptor I	82.4%	91.6%	9.2%	$ 152,800	$ 1,660,869
19	State School Interceptor II	35.3%	46.2%	10.9%	$ 362,579	$ 3,326,406
20	US 380 Utility Relocations	26.5%	30.6%	4.1%	$ 115,747	$ 2,823,082
21	Woodhaven Interceptor	41.8%	44.5%	2.7%	$ 26,075	$ 965,735
	PROPOSED					
1	Audra Interceptor	75.9%	82.0%	6.1%	$ 16,990	$ 278,530
2	Ave G Interceptor	92.2%	99.3%	7.1%	$ 30,749	$ 433,078
3	Bonnie Brae Connector	0.0%	79.4%	79.4%	$ 152,247	$ 191,746
4	Bonnie Brae Relocation	30.9%	89.3%	58.4%	$ 1,101,486	$ 1,886,106
5	Carroll Ave Interceptor	70.4%	73.6%	3.2%	$ 14,036	$ 438,623
6	Clear Creek Interceptor	0.0%	16.0%	16.0%	$ 2,400,000	$ 15,000,000
7	Cooper Creek Interceptor I	74.2%	83.0%	8.8%	$ 231,616	$ 2,632,000
8	Cooper Creek Interceptor II	54.6%	58.3%	3.7%	$ 41,736	$ 1,128,000
9	Dry Fork Hickory Creek Tributary 1 Interceptor	80.5%	84.1%	3.6%	$ 41,190	$ 1,144,159
10	Elm Street Sewer Replacements	48.7%	52.5%	3.8%	$ 25,752	$ 677,674
11	Hickory Creek Interceptor I	50.2%	72.6%	22.4%	$ 324,240	$ 1,447,500
12	Hickory Creek Interceptor II	46.7%	87.2%	40.5%	$ 3,281,513	$ 8,102,500
13	Hickory Creek Interceptor III	29.1%	70.3%	41.2%	$ 1,184,678	$ 2,875,433
14	Hickory Creek Interceptor IV	29.8%	39.1%	9.3%	$ 117,892	$ 1,267,658
15	Hickory Creek Lift Station Detention Facility	0.0%	96.3%	96.3%	$ 9,533,700	$ 9,900,000
16	Mulberry Interceptor	44.4%	50.7%	6.3%	$ 7,927	$ 125,820
17	Ranch View Interceptor (Oversize)	0.0%	56.5%	56.5%	$ 90,219	$ 159,680
18	West Peak Flow Detention Lift Station and Pond	0.0%	23.1%	23.1%	$ 877,800	$ 3,800,000
19	Wastewater Impact Fee Report Preparation	0.0%	100.0%	100.0%	$ 45,700	$ 45,700
	Total				**$ 49,714,840**	**$ 156,586,808**


LEGEND
Existing Wastewater Treatment Plant
Proposed Lift Station
Existing Lift Station
Existing Force Main
Existing Sanitary Sewer
Existing Eligible Project
City Limits
ETJ
Sewer Service Area
US 380 Utility Relocations
Carroll Avenue Interceptor
Mulberry Interceptor
Avenue G Interceptor
Bonnie Brae Connector
Krum Sewer Line
Hickory Creek Interceptor IV
Bonnie Brae Relocation
Hickory Creek Interceptor III
Hickory Creek Interceptor II
Roark Branch Interceptor
Hickory Creek Interceptor I
Graveyard Branch Interceptor
Ranch View Interceptor (Oversize)
Leatherwood Interceptor
Pecan Creek Interceptor III
Pecan Creek Interceptor IV
Woodhaven Interceptor
Elm Street Sewer Replacements
Pecan Creek Interceptor I
Eagle Drive Sewer
Parvin Sewer Line
Dry Fork Hickory Creek Tributary 1 Interceptor
Hickory Creek Lift Station Detention Facility
Cooper Creek Interceptor III
Clear Creek Interceptor and WRP
Cooper Creek Interceptor II
Cooper Creek Interceptor I
Audra Interceptor
Pecan Creek Interceptor II
Cooper Creek Outfall (Loop 288)
Pecan Creek Interceptor (Ph 1 and 2)
Pecan Creek WRP Expansion
West Peak Flow Dention Lift Station and Pond
South Wet Weather Lift Station and Detention Pond
State School Interceptor I
State School Interceptor II
Hickory Creek Outfall
WTP
LS
FM 2153
Gribble Springs
Shepard
Milam
Ganzer
Jim Christal
Vintage
Robson Ranch
Montecito
Windsor
Parkway
Willowwood
McKinney
Pittsburg
Bonnie Brae
Green Valley
Sherman
Fort Worth
John Payne
Underwood
Hickory
Bell
Locust
Elm
Bridges
Audra
Bingo
Loop 288
I-35W
FM 2449
FM 1830
20"
18"
10"
15"
24"
36"
30"
27"
48"
N
1 inch = 8,000 feet
0 2,000 4,000 8,000
Feet
Figure 3.1:
2018 Wastewater Impact Fee
Capital Improvements Plan
CITY OF DENTON
Kimley»Horn

3.5 WASTEWATER IMPACT FEE CALCULATION

The City's wastewater system provides retail wastewater collection and treatment to customers within the defined service area, as well as wastewater treatment to four wholesale customers – Corinth, Krum, Argyle and the Lake City Municipal Utility District. The impact fees calculated in this report exclude costs to serve the City's wholesale customers.

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."

The service unit for Denton's water and wastewater impact fees is the "single family equivalent" (SFE), which is based on the size of the water meter. An SFE is the water or wastewater demand or flow associated with the smallest water meter used in the system (5/8"x3/4"), which is the meter typically used by a single-family residence. The ratio of each larger meter's capacity to the capacity of the base meter determines the SFE multiplier applied to each larger meter size. The current SFE equivalency factors are shown in **Table 3.4**.

Table 3.4. Meter Capacity Ratios

Meter Size	SFEs/ 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

(1) Data Sources:
- City of Denton Code of Ordinances, Chapter 26, Article VI, Exhibit F

Multiplying the number of existing connections for each meter size by the SFEs per meter yields the total SFEs for that meter size. Summing for all meter sizes yields the total number of wastewater SFEs connected to the City's wastewater system as shown in **Table 3.5**. The current population in the wastewater service area is divided by the total number of SFEs yielding a Persons per SFE number.

Table 3.5. Capita per Single Family Equivalent (SFE)

Meter Size	Existing Connections[1]	SFEs/ Meter	Single Family Equivalents
5/8"x3/4"	30,143	1	30,143
1"	995	2.5	2,488
1-1/2"	633	5	3,165
2"	868	8	6,944
3"	106	22.5	2,385
4"	51	50	2,550
6"	17	100	1,700
8"	15	200	3,000
10"	2	325	650
Total Existing Connections:	32,830	Total SFEs:	53,025
		Total Served Population:	130,170
		Persons per SFE:	**2.46**

(1) Data Sources:
- City of Denton

The City of Denton defines a single family equivalent (SFE) based on historical wastewater discharge over the past 10 years as compared to the estimated residential units. The residential unit is the development type that predominately uses a 5/8x3/4-inch meter. The measure of consumption per SFE is based on a 5/8x3/4-inch meter and the data shown in **Table 3.6.**

Table 3.6. Single-Family Equivalent Consumption Calculation

Year	Population[1]	Residential Units (2.46 capita/SFE)	Wastewater Average Day Flow (MGD)[1]	Flow per SFE (GPD)
2008	112,487	45,726	15.3	335
2009	114,610	46,589	13.6	292
2010	116,218	47,243	16.1	341
2011	117,383	47,717	13.5	283
2012	118,705	48,254	13.8	286
2013	120,868	49,133	13.7	279
2014	123841	50,342	13.6	270
2015	126,280	51,333	16.1	314
2016	129,130	52,492	16.8	320
2017	131,364	53,400	14.2	266
Average Historical Flow per SFE				**299**

(1) Data Sources:
- City of Denton

Based on the City's 10-year growth projections and the resulting wastewater flow projections, wastewater service will be required for an additional **12,041** single family equivalents. The calculation is as follows:

- A single family equivalent (SFE), which is a unit of development that discharges approximately **299** gallons per day (GPD), is a typical residential connection that uses a 5/8x3/4-inch meter.

Table 3.7. 10-year Additional Single-Family Equivalent Calculation

Year	Average Day Flow (MGD)[1]	SFE Demand (GPD)	Projected SFEs
2018	15.6	299	52,174
2028	19.2	299	64,215
10-year Additional SFEs			**12,041**

(1) Data Sources:
- City of Denton

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 the 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. Newgen Strategies and Solutions, LLC. has detailed the credit calculation in the Wastewater Appendix.

A breakdown of the 10-year recoverable costs and the associated impact fee per SFE is as follows:

Table 3.8. 10-year Recoverable Cost Breakdown[1]

Recoverable Impact Fee CIP Costs	$49,714,840
Financing Costs	$ 21,231,253
Existing Fund Balance	$ (2,194,686)
Interest Earnings	$ (8,627,092)
Pre Credit Recoverable Cost for Impact Fee	$ 60,124,315
Credit for Utility Revenues	$ (3,337,470)
Maximum Recoverable Cost for Impact Fee	**$ 56,786,844**

(1) Per Newgen Strategies and Solutions, LLC financial analysis, see Wastewater Appendix – Summary of Wastewater Impact Fee Determination

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

$$\text{10-year recoverable costs} = \$56{,}786{,}844$$

$$\text{Impact fee per SFE} = \frac{\$56{,}786{,}844}{12{,}041}$$

$$\text{Impact fee per SFE} = \$4{,}716$$

Therefore, the maximum assessable impact fee per SFE is **$4,716.**

For a development that requires a different size meter, a single-family equivalent is established at a multiplier based on its capacity with respect to the 5/8-inch meter. The maximum impact fee that could be assessed for other meter sizes is based on the Equivalency Table (**Table 3.9**).

Table 3.9. Maximum Assessable Wastewater Impact Fee by Meter Size

Meter Size	Single Family Equivalent[1]	Maximum Assessible Impact Fee
5/8x3/4"	1	$4,716
1"	2.5	$11,790
1-1/2"	5	$23,580
2"	8	$37,728
3"	22.5	$106,110
4"	50	$235,800
6"	100	$471,600
8"	200	$943,200
10"	325	$1,532,700

(1) Data Sources:
- City of Denton Code of Ordinances, Chapter 26, Article VI, Exhibit F

WASTEWATER APPENDICES

City of Denton - 2018 Wastewater Impact Fee Update
Capital Improvement Plan for Impact Fees
Impact Fee Calculation Assumptions
Wastewater Service Area

0	Existing Fund Balance	$ 2,194,686
1	Existing Number of Service Units	52,174
2	Total Number of Services Units for Planning Period	64,215
3	Additional Service Units Added During Planning Period (Line 2 - Line 1)	12,041
4	Total Cost of the Wastewater Impact Fee CIP	$ 156,586,808
5	Recoverable Cost for Impact Fee Planning Period	$ 49,714,840
6	Percent Recoverable for Wastewater Impact Fee Planning Period (Line 5 / Line 4)	31.75%
7	Financing Costs (From Financial Analysis)	$ 21,231,253
8	Interest Earnings (From Financial Analysis)	$ (8,627,092)
9	Recoverable Cost of Wastewater Impact Fee and Financing Costs Less Balance (Line 5 + Line 7 + Line 8 - Line 0)	$ 60,124,315
10	Pre-Credit Maximum Fee (Line 9 / Line 3)	$ 4,993
11	Credit for Utility Revenues (From Financial Analysis)	$ (3,337,470)
12	Recoverable Cost of Wastewater Impact Fee and Financing (Line 9 + Line 11)	$ 56,786,844
13	Maximum Assessable Fee (Line 12 / Line 3)	$ 4,716

SUMMARY OF WASTEWATER IMPACT FEE DETERMINATION

Wastewater Service Area

Recoverable Impact Fee CIP Costs	$	49,714,840	Table 3.3
Financing Cost		21,231,253	See Detail Below
Existing Fund Balance		(2,194,686)	Wastewater Appendices - page 1
Interest Earnings		(8,627,092)	Wastewater Appendices - page 3
Pre Credit Recoverable Cost for Impact Fee	$	60,124,315	Sum of Above
Credit for Utility Revenues		(3,337,470)	Wastewater Appendices - page 6
Maximum Recoverable Cost for Impact Fee	**$**	**56,786,844**	

Recoverable Impact Fee CIP Costs:

Represents the portion of capital improvement costs that are eligible for funding through impact fees.
Reference is Table 3.3 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	$	31,493,383	Wastewater Appendices - page 2
Existing Annual Debt Service		39,380,935	Wastewater Appendices - page 2
Principal Component (New and Existing Debt)		(49,643,065)	Wastewater Appendices - page 1
Financing Costs	$	21,231,253	

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 - 2018 Wastewater Impact Fee Update

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

I. General Assumptions

Annual Interest Rate on Deposits[1]	1.89%
Annual Service Unit Growth[2]	1,204
Existing Fund Balance[3]	$ 2,194,686

Portion of Projects Funded by Existing Debt[4]	$ 30,169,296
Non-debt Funded Project Cost[5]	71,775
New Project Cost Funded Through New Debt[6]	19,473,769
Total Recoverable Project Cost[7]	$ 49,714,840

II. New Debt Issues Assumptions

Year	Principal[8]	Interest[9]	Term
1	$ 1,947,377	4.65%	20
2	1,947,377	5.00%	20
3	1,947,377	5.00%	20
4	1,947,377	5.00%	20
5	1,947,377	5.00%	20
6	1,947,377	5.25%	20
7	1,947,377	5.25%	20
8	1,947,377	5.25%	20
9	1,947,377	5.25%	20
10	1,947,377	5.25%	20
Total	$ 19,473,769		

III. Capital Expenditure Assumptions

Year	Annual Capital Expenditures[10]
1	$ 980,866
2	1,954,554
3	1,954,554
4	1,954,554
5	1,954,554
6	1,954,554
7	1,954,554
8	1,954,554
9	1,954,554
10	2,928,243
Total	$ 19,545,544

(1) Investment Portfolio Yield as of 08/05/2018
(2) Derived from Table 3.1 10-year Additional Single-Family Equivalent Calculation
(3) Balance from 09/30/2017 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 3.3 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 from City's Financial Advisor April 26, 2018
(10) Assumes new debt proceeds expended over a 2-year timeframe.
Non-debt funded capital expenditures allocated in equal annual amounts

City of Denton - 2018 Wastewater Impact Fee Update

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

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	$ 151,659	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 151,659
2	151,659	156,263	-	-	-	-	-	-	-	-	307,922
3	151,659	156,263	156,263	-	-	-	-	-	-	-	464,184
4	151,659	156,263	156,263	156,263	-	-	-	-	-	-	620,447
5	151,659	156,263	156,263	156,263	156,263	-	-	-	-	-	776,709
6	151,659	156,263	156,263	156,263	156,263	159,592	-	-	-	-	936,301
7	151,659	156,263	156,263	156,263	156,263	159,592	159,592	-	-	-	1,095,893
8	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	-	-	1,255,485
9	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	-	1,415,077
10	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,574,669
11	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,574,669
12	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,574,669
13	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,574,669
14	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,574,669
15	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,574,669
16	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,574,669
17	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,574,669
18	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,574,669
19	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,574,669
20	151,659	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,574,669
21	-	156,263	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,423,010
22	-	-	156,263	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,266,748
23	-	-	-	156,263	156,263	159,592	159,592	159,592	159,592	159,592	1,110,485
24	-	-	-	-	156,263	159,592	159,592	159,592	159,592	159,592	954,222
25	-	-	-	-	-	159,592	159,592	159,592	159,592	159,592	797,960
26	-	-	-	-	-	-	159,592	159,592	159,592	159,592	638,368
27	-	-	-	-	-	-	-	159,592	159,592	159,592	478,776
28	-	-	-	-	-	-	-	-	159,592	159,592	319,184
29	-	-	-	-	-	-	-	-	-	159,592	159,592
	$ 3,033,179	$ 3,125,251	$ 3,125,251	$ 3,125,251	$ 3,125,251	$ 3,191,840	$ 3,191,840	$ 3,191,840	$ 3,191,840	$ 3,191,840	$ 31,493,383

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	$ 151,659	$ 980,866	$ (1,947,377)	$ 1,969,047	$ (47,839)	$ 1,106,356
2	307,922	1,954,554	(1,947,377)	1,969,047	(100,461)	2,183,685
3	464,184	1,954,554	(1,947,377)	1,969,047	(157,558)	2,282,851
4	620,447	1,954,554	(1,947,377)	1,969,047	(218,845)	2,377,826
5	776,709	1,954,554	(1,947,377)	1,969,047	(284,062)	2,468,872
6	936,301	1,954,554	(1,947,377)	1,969,047	(353,375)	2,559,151
7	1,095,893	1,954,554	(1,947,377)	1,969,047	(426,276)	2,645,842
8	1,255,485	1,954,554	(1,947,377)	1,969,047	(502,554)	2,729,155
9	1,415,077	1,954,554	(1,947,377)	1,969,047	(582,017)	2,809,284
10	1,574,669	2,928,243	(1,947,377)	1,969,047	(664,485)	3,860,097
11	1,574,669	-	-	1,969,047	-	3,543,716
12	1,574,669	-	-	1,969,047	-	3,543,716
13	1,574,669	-	-	1,969,047	-	3,543,716
14	1,574,669	-	-	1,969,047	-	3,543,716
15	1,574,669	-	-	1,969,047	-	3,543,716
16	1,574,669	-	-	1,969,047	-	3,543,716
17	1,574,669	-	-	1,969,047	-	3,543,716
18	1,574,669	-	-	1,969,047	-	3,543,716
19	1,574,669	-	-	1,969,047	-	3,543,716
20	1,574,669	-	-	1,969,047	-	3,543,716
21	1,423,010	-	-	-	-	1,423,010
22	1,266,748	-	-	-	-	1,266,748
23	1,110,485	-	-	-	-	1,110,485
24	954,222	-	-	-	-	954,222
25	797,960	-	-	-	-	797,960
26	638,368	-	-	-	-	638,368
27	478,776	-	-	-	-	478,776
28	319,184	-	-	-	-	319,184
29	159,592	-	-	-	-	159,592
	$ 31,493,383	$ 19,545,544	$ (19,473,769)	$ 39,380,935	$ (3,337,470)	$ 67,608,623

(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 - 2018 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Revenue Test

Wastewater Service Area

Year	Impact Fee	Service Units	Impact Fee Revenue	Annual Expenses	Sub-Total	Accumulated Interest	Estimated Fund Balance
Initial							$ 2,194,686
1	$ 4,716	1,204	$ 5,678,684	$ 1,106,356	$ 4,572,328	$ 84,657	6,851,671
2	4,716	1,204	5,678,684	2,183,685	3,495,000	162,464	10,509,135
3	4,716	1,204	5,678,684	2,282,851	3,395,834	230,628	14,135,597
4	4,716	1,204	5,678,684	2,377,826	3,300,858	298,245	17,734,700
5	4,716	1,204	5,678,684	2,468,872	3,209,813	365,383	21,309,896
6	4,716	1,204	5,678,684	2,559,151	3,119,534	432,077	24,861,507
7	4,716	1,204	5,678,684	2,645,842	3,032,843	498,358	28,392,708
8	4,716	1,204	5,678,684	2,729,155	2,949,529	564,286	31,906,523
9	4,716	1,204	5,678,684	2,809,284	2,869,400	629,916	35,405,839
10	4,716	1,204	5,678,684	3,860,097	1,818,587	686,102	37,910,528
11	-	-	-	3,543,716	(3,543,716)	682,768	35,049,580
12	-	-	-	3,543,716	(3,543,716)	628,716	32,134,580
13	-	-	-	3,543,716	(3,543,716)	573,643	29,164,507
14	-	-	-	3,543,716	(3,543,716)	517,529	26,138,320
15	-	-	-	3,543,716	(3,543,716)	460,356	23,054,960
16	-	-	-	3,543,716	(3,543,716)	402,102	19,913,346
17	-	-	-	3,543,716	(3,543,716)	342,747	16,712,377
18	-	-	-	3,543,716	(3,543,716)	282,271	13,450,933
19	-	-	-	3,543,716	(3,543,716)	220,653	10,127,869
20	-	-	-	3,543,716	(3,543,716)	157,870	6,742,024
21	-	-	-	1,423,010	(1,423,010)	113,935	5,432,948
22	-	-	-	1,266,748	(1,266,748)	90,678	4,256,879
23	-	-	-	1,110,485	(1,110,485)	69,935	3,216,329
24	-	-	-	954,222	(954,222)	51,752	2,313,858
25	-	-	-	797,960	(797,960)	36,178	1,552,076
26	-	-	-	638,368	(638,368)	23,293	937,001
27	-	-	-	478,776	(478,776)	13,180	471,405
28	-	-	-	319,184	(319,184)	5,891	158,112
29	-	-	-	159,592	(159,592)	1,480	-
			56,786,845	67,608,623		8,627,092	

City of Denton - 2018 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Calculation

Wastewater Service Area

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	1.7048	1.0000	1,204	2,053	$ 1,106,356	$ 1,886,159
2	28	1.6732	1.0000	1,204	2,015	2,183,685	3,653,800
3	27	1.6422	1.0000	1,204	1,977	2,282,851	3,748,900
4	26	1.6118	1.0000	1,204	1,941	2,377,826	3,832,462
5	25	1.5819	1.0000	1,204	1,905	2,468,872	3,905,420
6	24	1.5525	1.0000	1,204	1,869	2,559,151	3,973,164
7	23	1.5237	1.0000	1,204	1,835	2,645,842	4,031,586
8	22	1.4955	1.0000	1,204	1,801	2,729,155	4,081,424
9	21	1.4678	1.0000	1,204	1,767	2,809,284	4,123,354
10	20	1.4405	1.0000	1,204	1,735	3,860,097	5,560,637
11	19	1.4138	1.0000	-	-	3,543,716	5,010,218
12	18	1.3876	1.0000	-	-	3,543,716	4,917,315
13	17	1.3619	1.0000	-	-	3,543,716	4,826,135
14	16	1.3366	1.0000	-	-	3,543,716	4,736,645
15	15	1.3118	1.0000	-	-	3,543,716	4,648,815
16	14	1.2875	1.0000	-	-	3,543,716	4,562,614
17	13	1.2636	1.0000	-	-	3,543,716	4,478,011
18	12	1.2402	1.0000	-	-	3,543,716	4,394,977
19	11	1.2172	1.0000	-	-	3,543,716	4,313,482
20	10	1.1946	1.0000	-	-	3,543,716	4,233,498
21	9	1.1725	1.0000	-	-	1,423,010	1,668,476
22	8	1.1508	1.0000	-	-	1,266,748	1,457,718
23	7	1.1294	1.0000	-	-	1,110,485	1,254,202
24	6	1.1085	1.0000	-	-	954,222	1,057,733
25	5	1.0879	1.0000	-	-	797,960	868,118
26	4	1.0677	1.0000	-	-	638,368	681,617
27	3	1.0479	1.0000	-	-	478,776	501,733
28	2	1.0285	1.0000	-	-	319,184	328,286
29	1	1.0094	1.0000	-	-	159,592	161,100
					18,897		$ 92,897,599

Annual Interest Rate:		1.89%
Present Value of Initial Impact Fee Fund Balance	$	2,194,686
Total Escalated Expense for Entire Period	$	92,897,599
Less Future Value of Initial Impact Fee Fund Balance		3,776,602
Sub-Total	$	89,120,997
Total Escalated Service Units		18,897
Impact Fee for Wastewater Service Area	**$**	**4,716**

City of Denton - 2018 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees

Impact Fee Project Funding

Wastewater Service Area

Impact Fee Project Name[1]	Cost In Service Area [1]	Note	Impact Fee Recoverable Cost[1]	Debt Funded[2] Existing	Debt Funded[2] Proposed	Non-Debt Funded[2]	Impact Fee Recoverable Cost
South Wet Weather Lift Station & Detention Pond	$ 1,552,898	A	$ 217,406	$ 217,406	$ -	$ -	$ 217,406
Cooper Creek Interceptor III	1,277,970	B	24,282	24,282	-	-	24,282
Cooper Creek Outfall (Loop 288)	3,898,807	A	296,310	296,310	-	-	296,310
Eagle Drive Sewer	902,329	B	11,731	11,731	-	-	11,731
Krum Sewer Line	398,450	A	164,560	164,560	-	-	164,560
Graveyard Branch Interceptor	5,004,952	A	575,570	575,570	-	-	575,570
Hickory Creek Outfall	1,111,495	B	45,572	45,572	-	-	45,572
Leatherwood Interceptor	156,592	B	2,349	2,349	-	-	2,349
Parvin Sewer Line	326,474	B	42,116	42,116	-	-	42,116
Pecan Creek Interceptor (Ph 1 & 2)	3,363,189	A	134,528	134,528	-	-	134,528
Pecan Creek Interceptor I	1,975,672	A	266,716	266,716	-	-	266,716
Pecan Creek Interceptor II	1,862,175	B	100,558	100,558	-	-	100,558
Pecan Creek Interceptor III	3,079,149	B	150,879	150,879	-	-	150,879
Pecan Creek Interceptor IV	978,285	B	54,784	54,784	-	-	54,784
Pecan WRP (15MGD)	39,528,174	A	5,929,227	5,929,227	-	-	5,929,227
Pecan WRP Expansion (6MGD)	30,005,125	A	21,003,588	21,003,588	-	-	21,003,588
Roark Branch Interceptor	854,774	A	517,994	517,994	-	-	517,994
State School Interceptor I	1,660,869	A	152,800	152,800	-	-	152,800
State School Interceptor II	3,326,406	B	362,579	362,579	-	-	362,579
US 380 Utility Relocations	2,823,082	B	115,747	115,747	-	-	115,747
Woodhaven Interceptor	965,735	B	26,075	-	-	26,075	26,075
Audra Interceptor	278,530	C	16,990	-	16,990	-	16,990
Ave G Interceptor	433,078	C	30,749	-	30,749	-	30,749
Bonnie Brae Connector	191,746	C	152,247	-	152,247	-	152,247
Bonnie Brae Relocation	1,886,106	C	1,101,486	-	1,101,486	-	1,101,486
Carroll Ave Interceptor	438,623	C	14,036	-	14,036	-	14,036
Clear Creek Interceptor	15,000,000	C	2,400,000	-	2,400,000	-	2,400,000
Cooper Creek Interceptor I	2,632,000	C	231,616	-	231,616	-	231,616
Cooper Creek Interceptor II	1,128,000	C	41,736	-	41,736	-	41,736
Dry Fork Hickory Creek Tributary 1 Interceptor	1,144,159	C	41,190	-	41,190	-	41,190
Elm Street Sewer Replacements	677,674	C	25,752	-	25,752	-	25,752
Hickory Creek Interceptor I	1,447,500	C	324,240	-	324,240	-	324,240
Hickory Creek Interceptor II	8,102,500	C	3,281,513	-	3,281,513	-	3,281,513
Hickory Creek Interceptor III	2,875,433	C	1,184,678	-	1,184,678	-	1,184,678
Hickory Creek Interceptor IV	1,267,658	C	117,892	-	117,892	-	117,892
Hickory Creek Lift Station Detention Facility	9,900,000	C	9,533,700	-	9,533,700	-	9,533,700
Mulberry Interceptor	125,820	C	7,927	-	7,927	-	7,927
Ranch View Interceptor (Oversize)	159,680	C	90,219	-	90,219	-	90,219
West Peak Flow Detention Lift Station and Pond	3,800,000	C	877,800	-	877,800	-	877,800
Wastewater Impact Fee Report Preparation	45,700	C	45,700	-	-	45,700	45,700
Total	$ 156,586,808		$ 49,714,840	$ 30,169,296	$ 19,473,769	$ 71,775	$ 49,714,840

(1) Table 3.3 Wastewater Impact Fee Capital Improvements Project Cost and 10-Year Recoverable Cost

(2) Per discussions with City staff and City files

Project Note A: Project costs from 2013 study

Project Note B: Costs of projects completed since 2013 per City Staff

Project Note C: Proposed projects in 2018 dollars

City of Denton - 2018 Wastewater Impact Fee Update

Capital Improvement Plan for Impact Fees
Credit Determination
Wastewater Service Area

2018 Service Units[1]	52,174
Ten Year Growth in Service Units[1]	12,041
	10 years
Annual Growth in Service Units	1,204

	1	2	3	4	5	6	7	8	9	10	Total
Debt Service for Debt Funded Projects Eligible for Impact Fees[2]	$2,120,706	$2,276,968	$2,433,231	$2,589,493	$2,745,756	$2,905,348	$3,064,940	$3,224,532	$3,384,124	$3,543,716	$ 28,288,814
Net Impact Fee Eligible Debt Service Funded by Other Sources	$2,120,706	$2,276,968	$2,433,231	$2,589,493	$2,745,756	$2,905,348	$3,064,940	$3,224,532	$3,384,124	$3,543,716	$ 28,288,814
Current Service Units	53,378	54,582	55,786	56,990	58,195	59,399	60,603	61,807	63,011	64,215	
Total Net Impact Fee Eligible Debt Service Funded by Other Sources per Service Unit	$ 39.73	$ 41.72	$ 43.62	$ 45.44	$ 47.18	$ 48.91	$ 50.57	$ 52.17	$ 53.71	$ 55.19	
Annual Growth in Service Units (Cumulative)	1,204	2,408	3,612	4,816	6,021	7,225	8,429	9,633	10,837	12,041	
Annual Wastewater Rate Revenue Generated by Service Unit for Net Impact Fee Eligible Debt Service Funded by Other Sources	$ 47,839	$ 100,461	$ 157,558	$ 218,845	$ 284,062	$ 353,375	$ 426,276	$ 502,554	$ 582,017	$ 664,485	$ 3,337,470

Credit Amount **$ 3,337,470**

(1) Derived from Table 3.1 10-year Additional Single-Family Equivalent Calculation
(2) Wastewater Appendices - page 2 Section II

EXHIBIT B

Exhibit B.

Water Equivalency Table

Meter Size	Single Family Equivalent[1]	Zone 1A Maximum Assessable Impact Fee	Zone 1B Maximum Assessable Impact Fee	Zone 2 Maximum Assessable Impact Fee
5/8 x ¾"	1	$3,569	$5,352	$7,638
1"	2.5	$8,923	$13,380	$19,095
1-1/2"	5	$17,845	$26,760	$38,190
2"	8	$28,552	$42,816	$61,104
3"	22.5	$80,303	$120,420	$171,855
4"	50	$178,450	$267,600	$381,900
6"	100	$356,900	$535,200	$763,800
8"	200	$713,800	$1,070,400	$1,527,600
10"	325	$1,159,925	$1,739,400	$2,482,350

Wastewater Equivalency Table

Meter Size	Single Family Equivalent[1]	Maximum Assessable Impact Fee
5/8x3/4"	1	$4,716
1"	2.5	$11,790
1 – ½"	5	$23,580
2"	8	$37,728
3"	22.5	$106,110
4"	50	$235,800
6"	100	$471,600
8"	200	$943,200
10"	325	$1,532,700