Innovative approaches
Practical results
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Water, Wastewater & Roadway CIP and Impact Fee Update

April 2014

Prepared for:

City of Terrell

FNI Project No. TER13148

Prepared by:

FREESE AND NICHOLS, INC.
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FREESE AND NICHOLS

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Water, Wastewater & Roadway

CIP and Impact Fee Update

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EXECUTIVE SUMMARY

The purpose of this report is to summarize the methodology used in the development and calculation of water, wastewater, and roadway impact fees for the City of Terrell. The methodology used herein satisfies the requirements of the Texas Local Government Code Section 395 for the establishment of impact fees. Texas Local Government Code Section 395 requires an impact fee analysis before impact fees are set. Section 395 requires that land use assumptions and capital improvement plans be updated at least every five years, and the City of Terrell last performed an impact fee analysis in 2009.

Maximum Allowable Water Impact Fee

The cost of water capital improvements to serve development projected to occur between 2013 and 2023 is $5,917,888. A 3.0% interest rate compounded annually was used to calculate financing costs. The increase in the number of service units due to growth over the next ten years is projected as 1,618 service units. The maximum allowable water impact fee with the credit is $2,458 per service unit. The maximum allowable water impact fee calculation is summarized as follows:

Total Capital Improvement Costs	$5,917,888
Financing Costs	$2,035,259
Total Eligible Costs	$7,953,147
Growth in Service Units	1,618

Maximum Water Impact Fee = Total Eligible Costs/Growth in Service Units
= $7,953,147/1,618
= $4,915 per Service Unit

Maximum Allowable Water Impact Fee = Maximum Impact Fee – Credit (50%)
= $4,915 - $2,458
= **$2,458 per Service Unit**

Maximum Allowable Wastewater Impact Fee

The cost of wastewater system capital improvements to serve development projected to occur between 2013 and 2023 is $5,389,831. A 3.0% interest rate compounded annually was used to

calculate financing costs. The increase in the number of service units due to growth over the next ten years is projected as 1,618 service units. The maximum allowable wastewater impact fee with the credit is $2,239 per service unit. The maximum allowable wastewater impact fee calculation is summarized as follows:

Total Capital Improvement Costs	$5,389,831
Financing Costs	$1,853,651
Total Eligible Costs	$7,243,482
Growth in Service Units	1,618

Maximum Wastewater Impact Fee = Total Eligible Costs/Growth in Service Units
= $7,243,482/1,618
= $4,477 per Service Unit

Maximum Allowable Wastewater Impact Fee = Maximum Impact Fee – Credit (50%)
= $4,477 - $2,239
= **$2,239 per Service Unit**

Maximum Allowable Roadway Impact Fee

The total cost of roadway capital improvements to serve the development projected to occur between 2013 and 2023 is $52,683,090 for the west service area and $12,337,957 for the east service area and is inclusive of the cost for study updates. With the state mandate of 50% credit to the CIP, cost of the program is $26,341,545 and $6,168,979 for the West and East service areas, respectively. The costs that are eligible for cost recovery are $23,235,062 for the west service area and $5,596,248 for the east service area. The increase in the number of service units due to growth over the next ten year period is 8,972 vehicle-miles for the west service area and 5,355 vehicle-miles for the east service area. With the 50% state mandated credit to the CIP, the maximum allowable west service area roadway impact is $1,986 per service unit. The maximum allowable east service area roadway impact fee is $1,031 per service unit.

West Service Area

Proposed Capital Improvement Costs	$39,659,318
Financing Costs	$12,975,522
CIP Study and Updates	$48,250
Total Costs	$52,683,090
Total Costs (with 50% credit)	**$26,341,545**
Cost Attributable to New Development	**$23,235,062**
Total 10-year Projected Growth in Service Units (veh-mi)	**8,972**
Base Maximum Calculated Roadway Impact Fee Per Service Unit with 50% Credit	**$1,986**

East Service Area

Proposed Capital Improvement Costs	$10,337,727
Financing Costs	$1,978,480
CIP Study and Updates	$21,750
Total Costs	$12,337,957
Total Eligible Costs (with 50% credit)	**$6,168,979**
Cost Attributable to New Development	**$5,596,248**
Total 10-year Projected Growth in Service Units (veh-mi)	**5,355**
Base Maximum Calculated Roadway Impact Fee Per Service Unit with 50% Credit	**$1,031**

1.0 BACKGROUND

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

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

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

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

In July 2013, the City of Terrell authorized Freese and Nichols, Inc. (FNI) to perform an impact fee analysis on the City's roadway, water, and wastewater systems. This report's purpose is to summarize the

methodology used in the development and calculation of water, wastewater, and roadway impact fees for the City of Terrell. The methodology used herein satisfies the requirements of the Texas Local Government Code Section 395 for the establishment of water, wastewater, and roadway impact fees.

As part of the impact fee update, FNI conducted three workshops with the city's appointed Capital Improvements Advisory Committee (CIAC). The CIAC's role includes recommending a growth rate for impact fee calculations, reviewing and recommending land use assumptions and Impact Fee Capital Improvements Plans (CIP), and recommending an impact fee rate to the City Council.

Table 1-1 provides a list of abbreviations used in this report.

Table 1-1 Abbreviations

Abbreviation	Full Nomenclature
AWWA	American Water Works Association
CIAC	Capital Improvements Advisory Committee
CIP	Capital Improvements Plan
DA	Divided Arterial
DC	Divided Collector
DU	Dwelling Unit
ETJ	Extra-territorial Jurisdiction
GIS	Geographic Information Systems
gpcd	Gallons Per Capita Per Day
gped	Gallons Per Employee Per Day
gpm	Gallons per Minute
FNI	Freese and Nichols, Inc.
LOS	Level-of-Service
MG	Million Gallons
MGD	Million Gallons per Day
NCTCOG	North Central Texas Council of Government
NTMWD	North Texas Municipal Water District
SCADA	Supervisory Control and Data Acquisition
TCEQ	Texas Commission on Environmental Equality
TSZ	Traffic Survey Zone
TxDOT	Texas Department of Transportation
UA	Undivided Arterial
UC	Undivided Collector
WWTP	Wastewater Treatment Plant

2.0 LAND USE ASSUMPTIONS

Population and land use are important elements in the analysis of water, wastewater, and roadway systems. Water demands and wastewater flows depend on the residential population and commercial development served by the systems and determines the sizing and location of system infrastructure. Residential population and commercial development projections are also required to size roadway facilities in terms of number of dwelling units (DU) and employment. Land use assumptions for the purpose of roadway impact fees can be found in Chapter 4. A thorough analysis of historical and projected populations, along with land use, provides the basis for projecting future water demands and wastewater flows.

2.1 Service Area

The impact fee service area for the City of Terrell's water, wastewater, and roadway systems is defined as the City limits, and **Figures 2-1** and **2-2** illustrate the water and wastewater impact fee service area, respectively. The City of Terrell will provide water and wastewater service to the proposed Las Lomas, Whitt Ranch, Rio, and Fairfield developments in addition to other development within the extra-territorial jurisdiction (ETJ); however development in the ETJ will not be charged impact fees and growth in these areas was not included in the impact fee calculations. For the purpose of calculating roadway impact fees, the City of Terrell was divided into two service areas. **Figure 4-1** illustrates the two roadway service areas.

2.2 Historical Population

Table 2-1 presents the historical populations for the City of Terrell. The data indicated an average growth rate of 1.5% annual growth over the last 13 years.

Table 2-1 Historical Population

Year	Population[1]	Population Growth	Growth Rate
2000	13,606	-	-
2001	13,750	144	1.1%
2002	13,950	200	1.5%
2003	14,300	350	2.5%
2004	14,950	650	4.5%
2005	15,500	550	3.7%
2006	15,550	50	0.3%
2007	15,750	200	1.3%
2008	15,500	-250	-1.6%
2009	15,500	0	0.0%
2010	15,816	316	2.0%
2011	16,015	199	1.3%
2012	16,214	199	1.2%
Average	-	**217**	**1.5%**

[1]Historical populations for 2000 through 2010 are based on Census and NCTCOG data. The 2011 and 2012 populations were interpolated based on 2010 population and 2013 population provided by the City of Terrell.

2.3 Projected Population and Employment

Water and sewer service populations were developed based on recent City growth patterns, developer phasing projections and input from City staff. The City of Terrell total population in 2013 is estimated as 16,413, and the population within the city limits in 2023 is projected as 18,974. The 10-year population growth within the city limits is projected to be 2,561. Projected populations for the water and wastewater systems are displayed in **Tables 2-2 and 2-3**, respectively. Population is separated into population inside existing Terrell City limits and population in Terrell extraterritorial jurisdiction (ETJ). Other identified large developments are planned in the Terrell ETJ and will be utilizing service from facilities and lines in the impact fee update but will be cost participating via a different funding mechanism and are not eligible for impact fees.

In order to capture growth related to commercial, retail, office, institutional, and industrial development, employment for each planning period was developed. **Table 2-4** shows the projected number of employees with water and wastewater service. Land use assumptions were developed based on existing NCTCOG population and employment by Traffic Survey Zone (TSZ) with growth occurring in expected areas based on discussions with City staff. To further assist in the analysis of the water and sewer systems, the populations and employment assumptions were distributed into approximately 20 planning areas as shown on **Figure 2-1** and **Figure 2-2**, respectively. Planning areas were developed by FNI since NCTCOG

TSZs were too large to provide an accurate level of detail. These population and employment numbers were used to establish water demands and wastewater flows, which in turn determined sizing of proposed water and sewer system improvements.

Table 2-2 Water Service Population Projections

Year	Terrell City Limits[1] Population	Terrell ETJ[2] Population	Total Water Service Population
2013	16,413	0	16,413
2023	18,974	9,901	28,875
2035	21,773	35,142	56,915

[1] A portion of the Whitt Ranch development falls inside the City limits.
[2] ETJ is comprised of four major developments: Whitt Ranch, Rio, Las Lomas, and Fairfields.

Table 2-3 Wastewater Service Population Projections

Year	Terrell City Limits[1] Population	Terrell ETJ[2] Population	Total Wastewater Service Population
2013	16,413	0	16,413
2023	18,974	12,676	31,650
2035	21,773	40,917	62,690

[1] A portion of the Whitt Ranch development falls inside the City limits
[2] ETJ is comprised of four major developments: Whitt Ranch, Rio, Las Lomas, and Fairfields.

Table 2-4 Employment Projections

Year	Number of Employees	Average Annual Employee Growth	Average Annual Growth Rate
2013	13,068	-	-
2023	16,068	300	2%
2035	18,023	163	1%

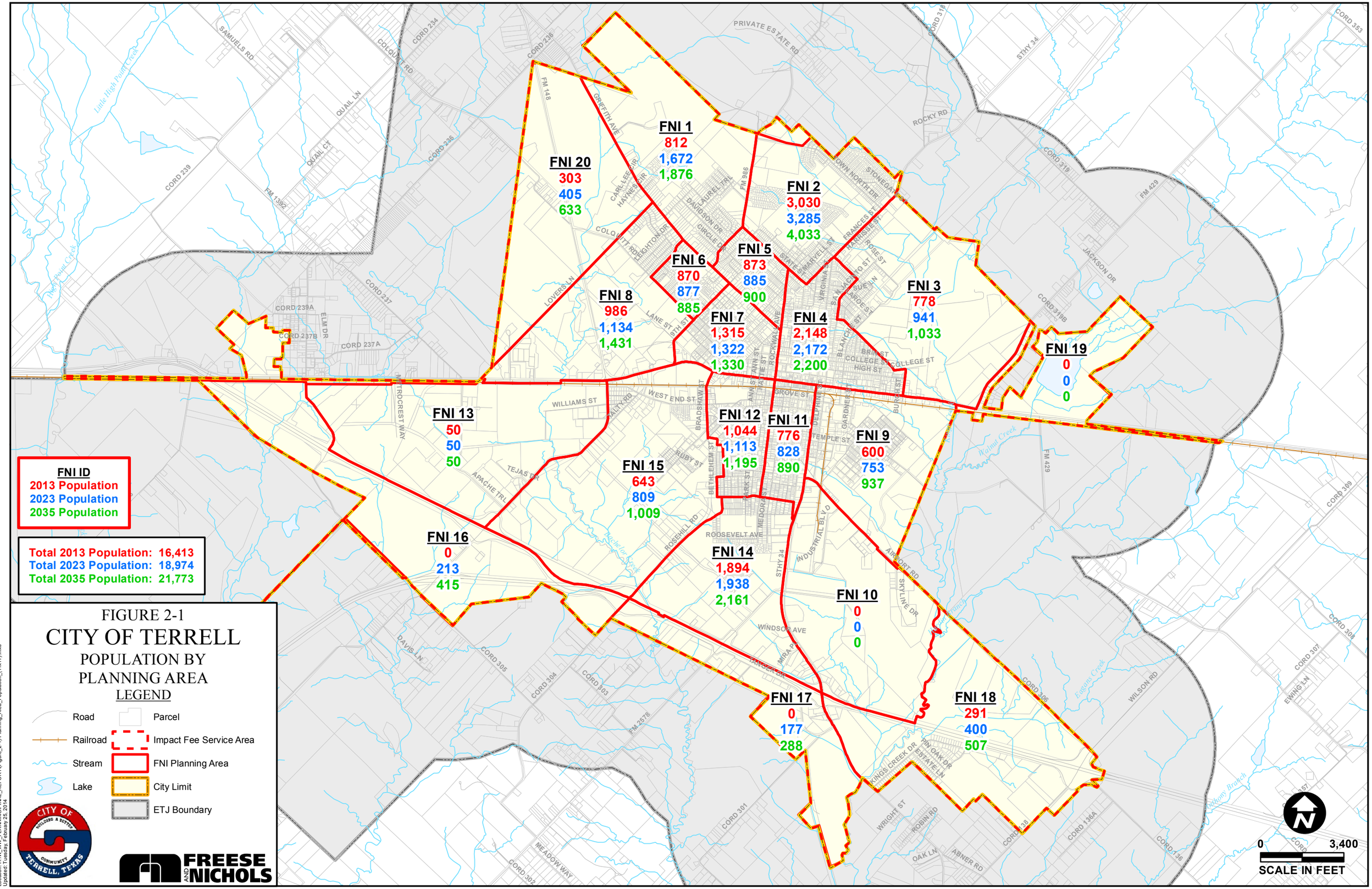

FIGURE 2-1

CITY OF TERRELL

POPULATION BY PLANNING AREA

LEGEND

- Road
- Railroad
- Stream
- Lake
- Parcel
- Impact Fee Service Area
- FNI Planning Area
- City Limit
- ETJ Boundary

CITY OF TERRELL, TEXAS — BUILDING A BETTER COMMUNITY

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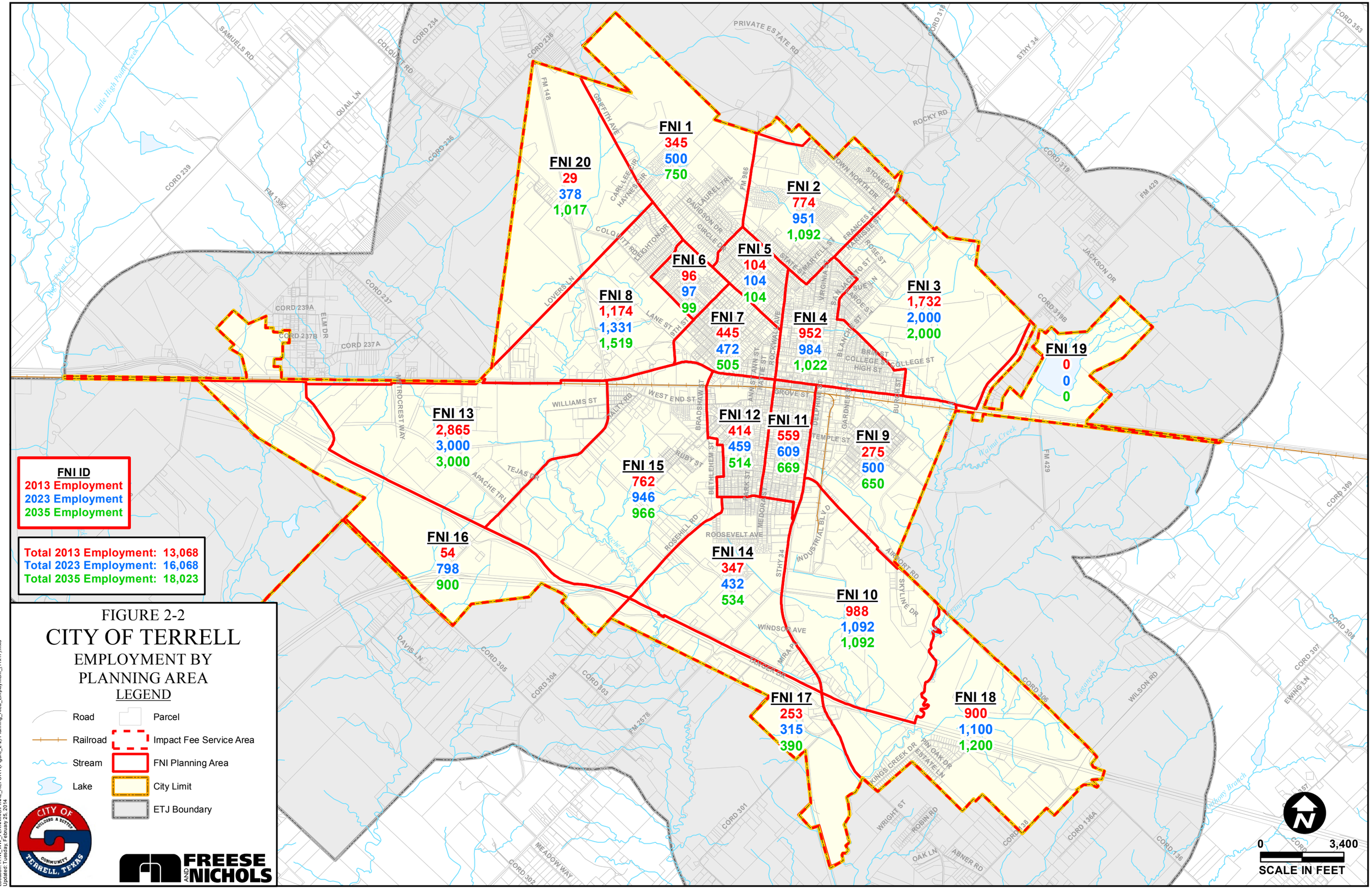
Updated: Tuesday, February 25, 2014


FNI ID
2013 Employment
2023 Employment
2035 Employment
Total 2013 Employment: 13,068
Total 2023 Employment: 16,068
Total 2035 Employment: 18,023
FIGURE 2-2
CITY OF TERRELL
EMPLOYMENT BY
PLANNING AREA
LEGEND
Road
Railroad
Stream
Lake
Parcel
Impact Fee Service Area
FNI Planning Area
City Limit
ETJ Boundary
FNI 1
345
500
750
FNI 2
774
951
1,092
FNI 3
1,732
2,000
2,000
FNI 4
952
984
1,022
FNI 5
104
104
104
FNI 6
96
97
99
FNI 7
445
472
505
FNI 8
1,174
1,331
1,519
FNI 9
275
500
650
FNI 10
988
1,092
1,092
FNI 11
559
609
669
FNI 12
414
459
514
FNI 13
2,865
3,000
3,000
FNI 14
347
432
534
FNI 15
762
946
966
FNI 16
54
798
900
FNI 17
253
315
390
FNI 18
900
1,100
1,200
FNI 19
0
0
0
FNI 20
29
378
1,017
0
3,400
SCALE IN FEET
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Updated: Tuesday, February 25, 2014

3.0 WATER AND WASTEWATER ANALYSIS

A capital improvements plan (CIP) was developed for the City of Terrell to promote residential and commercial development through access to quality water and wastewater systems . The recommended improvements will provide the required capacity and reliability to meet projected water demands and wastewater flows through 2035. The water and wastewater projects required to meet growth in the 10-year period were used in the impact fee analysis.

3.1 Existing Water and Wastewater Systems

The existing water distribution system currently consists of a network of lines ranging in size from 1-inch to 30-inch, a pump station, ground storage tank, and two elevated storage tanks. The City receives water from the North Texas Municipal Water District (NTMWD) delivery point at the pumping station. The City of Terrell operates the distribution system on one pressure plane.

The existing wastewater system has 6 major basins, 4 lift stations, and a network of lines ranging from 4-inch to 36-inch in diameter. Due to existing topography, the wastewater collection system generally flows from north to south with the terminal point being the King's Creek Wastewater Treatment Plant (WWTP). A 36-inch interceptor flows along Bachelor Creek on the City's west boundary before being pumped to a 36-inch interceptor following King's Creek on the east side of the City.

3.2 Water and Wastewater Model Update and Validation

The water system hydraulic model developed for the *2007 Impact Fee Analysis,* performed by FNI, was updated to include recently constructed water lines and changes in system operations. Recent improvements added to the model include the South Elevated Storage tank (constructed in 2012) and the addition of a 20-inch waterline in the downtown area. Existing water demands were reallocated to the model using customer billing records for each individual account for 2012 that were geocoded and matched spatially using the Geographic Information Systems (GIS) parcel and street centerline shapefiles. Of the 6,144 active water accounts, 99.6% of the billing records were matched. The model's demand allocator module in H2OMap Water was used to assign each meter location to a model node based on Thiessen polygons. **Appendix A** includes a map with the geocoded billing meters color coded by usage.

A model validation was performed in order to verify that the hydraulic model is an accurate representation of the actual distribution system. FNI conducted field pressure testing at six locations throughout the distribution system in late October 2013 through early November 2013. The City provided Supervisory Control and Data Acquisition (SCADA) readings for tank levels and pump status on an hourly basis during this time and FNI used the readings to create diurnal demand curves. In order to create the curves, a mass balance of the system demand was calculated using the sum of water pumped into the distribution system from the NTMWD delivery point and adding or subtracting the demand or supply provided by the elevated storage tanks.

The model validation time was chosen by analyzing the diurnal demand curves and finding an hour on a weekday with no irregularities. The hour of 6:00 PM on October 29, 2013 was chosen based on these criteria. Operational data was used to determine system inputs such as tank levels and pump status. Since the model results closely matched the field pressure testing data, FNI concluded that the model is an accurate representation of field conditions. Field pressure testing data, the diurnal demand curve, and a map showing the validation results can be found in **Appendix A.**

The wastewater model was updated as part of the *2012 Wastewater Infrastructure Prioritization Phase I* analysis, performed by FNI. A detailed description of the wastewater model update is included in that report.

3.3 Water and Wastewater Load Projections

The population and land use data was used to develop future water demands and wastewater flows based on a projected average day per capita use and peaking factors. The design criteria used to project water demands and wastewater flows were developed based on recent historical data. In the future, it is anticipated that per capita and employment usage will increase based on the large number of irrigation systems being installed with new development and the type of commercial and industrial developments being proposed, but the large increase in residential irrigation systems is expected to offset conservation measures in place for the future. Therefore, for planning purposes, the residential and employment per capita used for projections is assumed to be constant in the future.

Historical water demands from 2003 through 2012 were provided to FNI by the City for the development of projected water usage rates and peaking factors. **Tables 3-1 and 3-2** illustrate the average and maximum day water demands for these years, respectively. The projected residential per capita usage

rate is 150 gallons per capita per day (gpcd), and the projected non-residential usage rate is 50 gallons per employee per day (gped). The projected retail maximum day to average day peaking factor is 2.0 and projected retail peak hour to maximum day peaking factor is 1.8 for all planning scenarios. The projected wholesale maximum day to average day peaking factor is 1.8 and projected wholesale peak hour to maximum day peaking factor is 1.25 for all planning scenarios. **Table 3-3** presents the design criteria used to develop the projected water demands. **Table 3-4** provides projected water demands strictly within the city limits of Terrell that were used for impact fee calculations. **Table 3-5** displays the projected water demands for the City including the ETJ and wholesale customers. Detailed demand and flow projections are available in **Appendix B.**

Table 3-1 Historical Average Day Water Usage

Year	Population	Average Day Demand (MGD)	Wholesale Average Day Demand (MGD)	Overall Average Day Per Capita Consumption (gpcd)	Retail Average Day Per Capita Consumption (gpcd)
2003	14,300	3.63	1.00	254	184
2004	14,950	3.90	1.00	261	194
2005	15,500	4.27	1.00	275	211
2006	15,550	4.27	1.00	275	210
2007	15,750	3.07	0.92	195	131
2008	15,500	3.30	0.90	213	155
2009	15,500	3.48	0.93	224	164
2010	15,816	3.64	0.90	230	173
2011	16,015	3.85	1.03	240	176
2012	16,214	3.44	1.06	212	147

Table 3-2 Historical Maximum Day Water Usage

Year	Maximum Day Demand (MGD)	Maximum Day/Average Day Peaking Factor
2003	7.74	2.13
2004	6.15	1.58
2005	7.41	1.74
2006	7.75	1.81
2007	5.62	1.83
2008	-	-
2009	-	-
2010	-	-
2011	7.41	1.92
2012	6.39	1.86

Table 3-3 Water Demand Projections Design Criteria

Average Day Residential Per Capita Usage (gpcd)	Average Day Employment Per Capita Usage (gped)	Retail Maximum Day to Average Day Peaking Factor	Wholesale Maximum Day to Average Day Peaking Factor	Retail Peak Hour to Maximum Day Peaking Factor	Wholesale Peak Hour to Maximum Day Peaking Factor
150	50	2.00	1.80	1.80	1.25

Table 3-4 Projected Water Demands within Terrell City Limits

Year	Population	Employment	Average Day Demand (MGD)(1)	Maximum Day Demand (MGD)(2)	Peak Hour Demand (MGD)(3)
2013	16,413	13,068	3.12	6.24	11.23
2018	17,422	14,488	3.34	6.68	12.02
2023	18,492	16,068	3.58	7.16	12.89
2035	21,338	18,023	4.10	8.20	14.76

(1)Average day demands are based on a residential per capita of 150 gpcd and employment per capita of 50 gped.
(2)Maximum day demands are based on a maximum day to average day peaking factor of 2.0 for retail demands.
(3)Retail peak hour demands are based on a peak hour to maximum day peaking factor of 1.8.

Table 3-5 Projected Water Demands

Year	Population	Employment	Retail Average Day Demand (MGD) (1)	Wholesale Average Day Demand (MGD) (2)	Total Average Day Demand (MGD)	Maximum Day Demand (MGD) (3)	Peak Hour Demand (MGD) (4)
2013	16,413	13,068	3.12	1.07	4.19	8.16	13.62
2018	19,051	14,488	3.58	1.12	4.71	9.19	15.43
2023	28,875	16,068	5.13	1.18	6.32	12.40	21.14
2035	56,915	18,023	9.44	1.33	10.77	21.27	36.98

(1)Average day demands are based on a residential per capita of 150 gpcd and employment per capita of 50 gped.
(2)Wholesale demands are based on approximately 1% growth per year.
(3)Maximum day demands are based on a maximum day to average day peaking factor of 1.8 for wholesale demands and 2.0 for retail demands.
(4)Retail peak hour demands are based on a peak hour to maximum day peaking factor of 1.8. Wholesale peak hour demands are based on a peak hour to maximum day peaking factor of 1.25

The projected wastewater residential per capita production rate is 125 gpcd for all planning periods, and the projected wastewater non-residential production rate is 40 gped for all planning periods. These wastewater production rates represent a percentage of the water demand that is captured by the wastewater collection system for each planning period. Historical wastewater flow data was used in the development of the wastewater residential and non-residential production rates. The peak wet weather peaking factor for all planning periods is 4.0. The average day flows for all the planning scenarios was multiplied by this factor to calculate the peak wet weather flows. **Table 3-6** presents the projected wastewater flows for the City of Terrell.

Table 3-6 Projected Wastewater Flows

	Terrell City Limits		Terrell ETJ		Total	
Year	Average Dry Weather Flow (MGD)	Peak Wet Weather Flow (MGD)	Average Dry Weather Flow (MGD)	Peak Wet Weather Flow (MGD)	Average Dry Weather Flow (MGD)	Peak Wet Weather Flow (MGD)
2013	2.57	10.30	0.00	0.00	2.57	10.30
2023	2.95	11.82	1.64	6.58	4.60	18.40
2035	3.39	13.55	5.17	20.68	8.56	34.23

3.4 TCEQ Requirements

The City is required to meet all rules and regulations for public water systems established by the Texas Commission on Environmental Quality (TCEQ) in Title 30 Texas Administrative Code (30 TAC), Chapter 290. These requirements are based on number of connections in each pressure plane. The City operates its water distribution system on one pressure plane presently and will continue to do so in the future. There are currently 5,494 existing meters in the distribution system, and the estimated number of existing connections is 5,990 based on Census data of 2.74 persons per dwelling unit.

3.4.1 Elevated Storage

The City is required to meet the TCEQ elevated storage capacity requirement of 100 gallons per connection. The City's distribution system currently has 2.5 MG of elevated storage and can serve a total of 25,000 connections. Based on the number of existing connections in the system, the existing elevated storage can serve approximately 19,000 additional connections.

3.4.2 Total Storage

The City is required to meet the TCEQ total storage capacity requirement of 200 gallons per connection. The City currently has 3.0 MG of ground storage in addition to the aforementioned 2.5 MG of elevated storage and can serve a total of 27,500 connections or approximately 21,500 additional connections.

3.4.3 Pumping

The City is required to meet the TCEQ service pumping capacity requirements established in 30 TAC §290.45(b)(2)(F) and summarized in **Table 3-7. Table 3-8** summarizes the existing pumping facilities. Since the city currently has 417 gallons/connection of elevated storage, two pumps with 0.6 gallons per minute (gpm) per connection is required. The city exceeds the required pumping capacity per connection and can add up to 6,510 connections and maintain 200 gallons of elevated storage per connection. **Table 3-9** presents a summary of the TCEQ minimum requirements for the existing system.

Table 3-7 Service Pumping Capacity Requirements

Elevated Storage Capacity	Service Pumping Capacity Requirement[1]
> 200 gallons per connection	Two service pumps with a minimum combined capacity of 0.6 gpm per connection
< 200 gallons per connection	The lesser of (a) or (b):
	(a) Total pumping capacity of 2.0 gpm per connection
	(b) Total pumping capacity of at least 1,000 gpm and the ability to meet peak hourly demands with the largest pump out of service

[1] **According to 30TAC §290.45(b)(2)(F)**

Table 3-8 Pumping Facilities Summary

Pump No.	Rated Capacity (gpm)	Rated Capacity (MGD)	Rated Head (feet)
1	2,800	4.03	241
2	2,800	4.03	241
3	2,800	4.03	241
4	2,800	4.03	241
Total	**11,200**	**16.12**	-

Table 3-9 TCEQ Checklist

	Requirement	Actual	Meets TCEQ?
Elevated Storage	100 gallons per connection	334 gallons per connection	Yes
Total Storage	200 gallons per connection	834 gallons per connection	Yes
Pump Station	Two Pumps with 0.6 gpm per connection	1.9 gpm per connection	Yes

3.5 Design Criteria

Freese and Nichols, Inc. worked with the City of Terrell to establish design criteria for future water and wastewater facilities. Criteria were developed for sizing water transmission lines, elevated storage tanks, ground storage tanks and pump stations for the water system. Design criteria for the wastewater system were established in the *2013 Wastewater Infrastructure Prioritization Phase I Report*.

Hydraulic analysis was performed for the existing and future water systems for four operating conditions: average day, maximum day, peak hour, and maximum day with fire flow. The TCEQ required minimum pressure within a distribution system is 35 psi under normal operating conditions. Headloss and velocity in the pipelines are additional criteria used to analyze the water system. Typically, headloss in water lines should not exceed 4 feet/1000 feet, and velocities should not exceed 7 feet/second.

FNI developed criteria for sizing of storage and pumping capacity for the City. These criteria are typically more stringent than TCEQ requirements and take into consideration many additional factors including operational flexibility, fire protection, emergency reserve, and energy efficiency.

3.5.1 Storage

The design criteria recommended to size ground storage tank capacity is to provide adequate storage volume to meet 8 hours of maximum day demand. **Figure 3-1** summarizes the recommended ground storage capacity and associated improvements based on the design criteria. The design criteria recommended for elevated storage capacity is based on the greater of twice the peaking volume or the peaking volume plus fire volume of 3,500 gpm for 3 hour duration. The peaking volume is defined as 35% of peak hour demands for a 3 hour duration. **Figure 3-2** displays the recommended elevated storage capacity and related improvements based on the design criteria.

Figure 3-1 Recommended Ground Storage Capacity

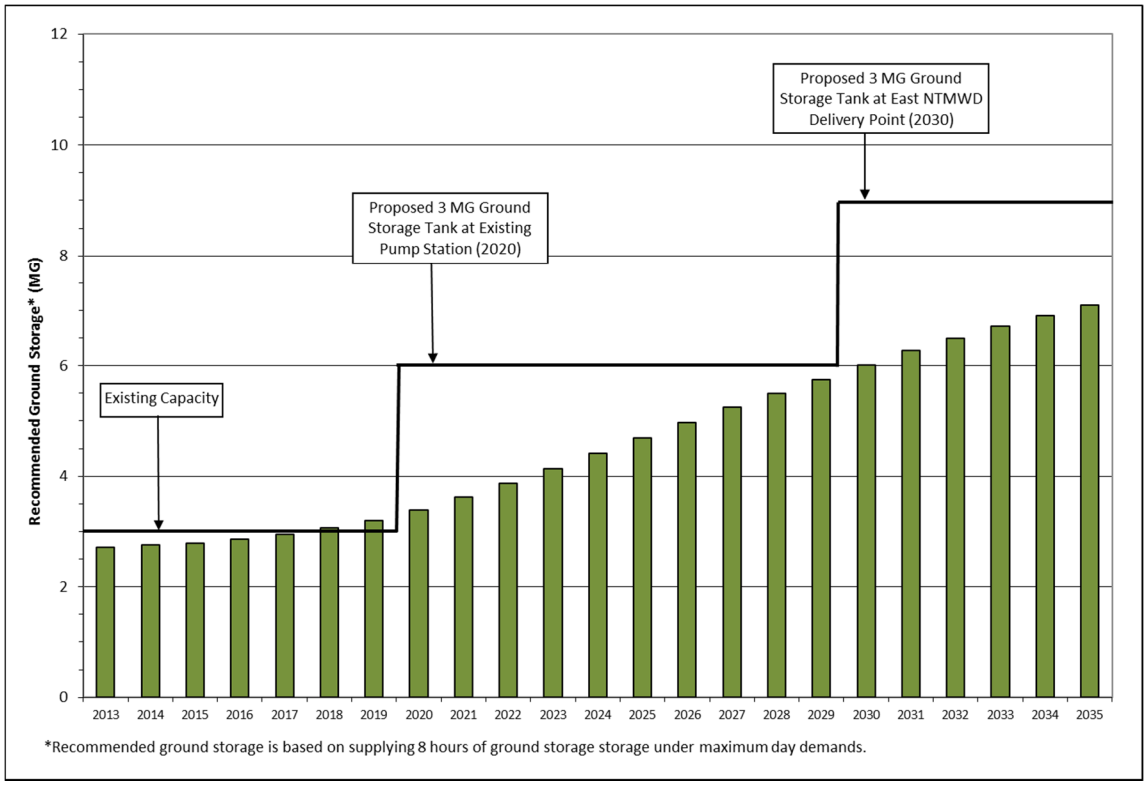
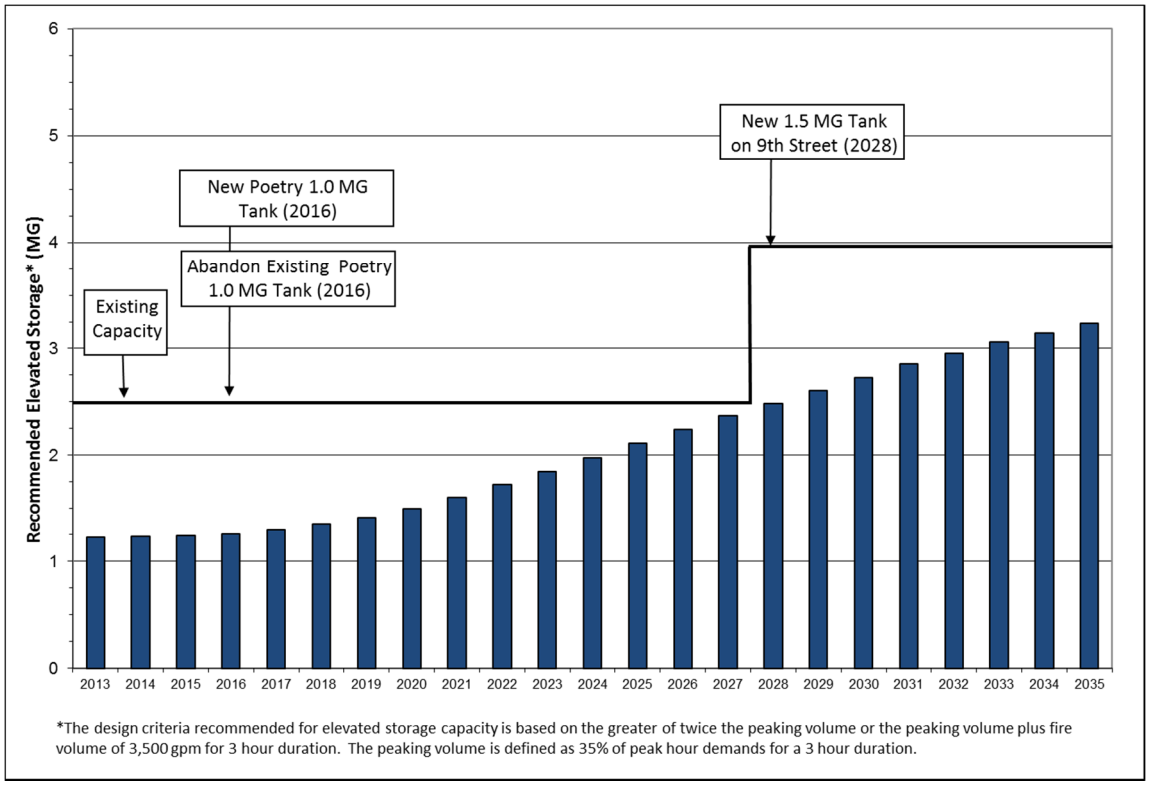


Figure 3-2 Recommended Elevated Storage Capacity

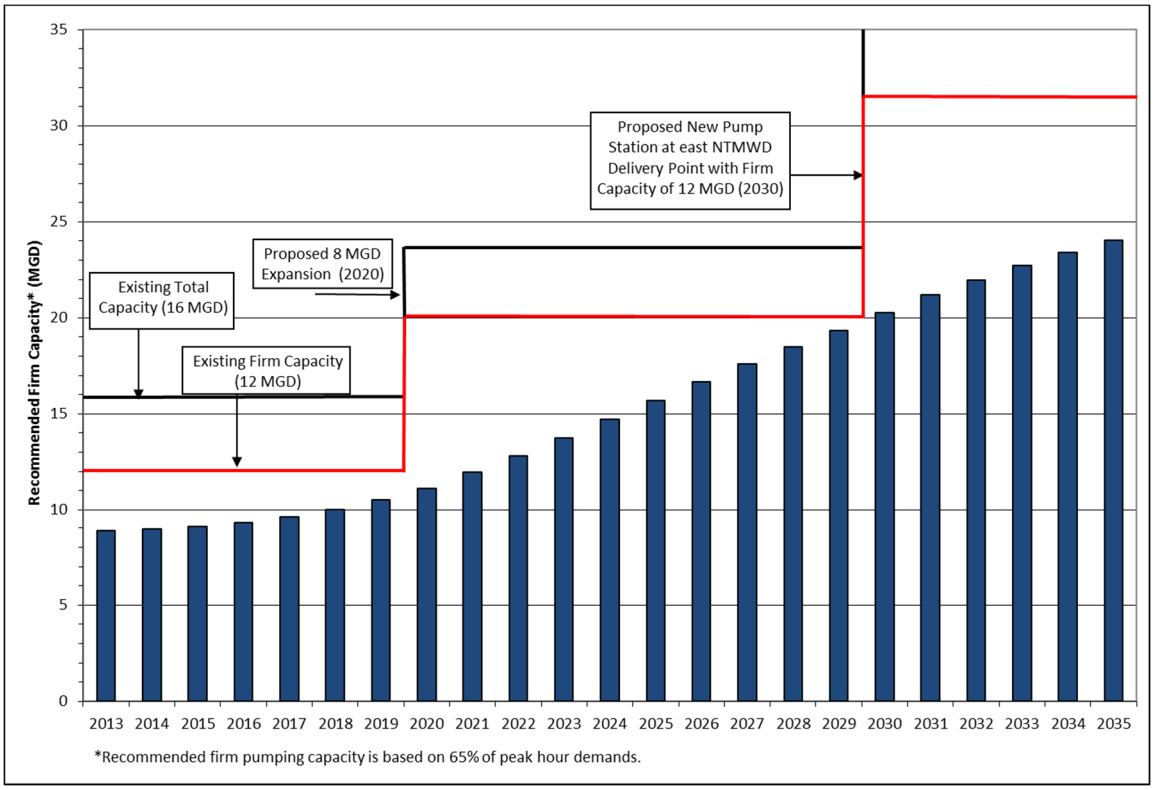


3.5.2 Pumping

There are four existing pumps at the City of Terrell pump station supplied by North Texas Municipal Water District (NTMWD). Each pump is rated at 4 Million Gallons per Day (MGD) at 240 feet of head, and two existing pumps were installed with variable frequency drives. Therefore, the existing firm capacity of the pump station is 12 MGD, and the total capacity is 16 MGD. Two empty pump slots are available for the next expansion, which will bring the total capacity of the pump station to 24 MGD with a firm pumping capacity of 20 MGD by adding two additional 4 MGD pumps.

The design criteria recommended for pump station capacity is providing a firm pumping capacity to meet 65% of the peak hour demand. The firm pumping capacity is defined as the total available pumping capacity with the largest pump out of service, and **Figure 3-3** displays the recommended firm pumping capacity. Based on the demand projections, the expansion to 20 MGD of firm pumping capacity at the existing pump station is recommended to be in service by May of 2020 when the recommended capacity exceeds the existing firm capacity of 12 MGD. Therefore, design of this expansion is recommended to start by fall of 2018. The second NTMWD delivery point for Terrell is recommended to be in service in May of 2030 when the recommended pumping capacity exceeds the firm pumping capacity of 20 MGD.

Figure 3-3 Recommended Firm Pumping Capacity



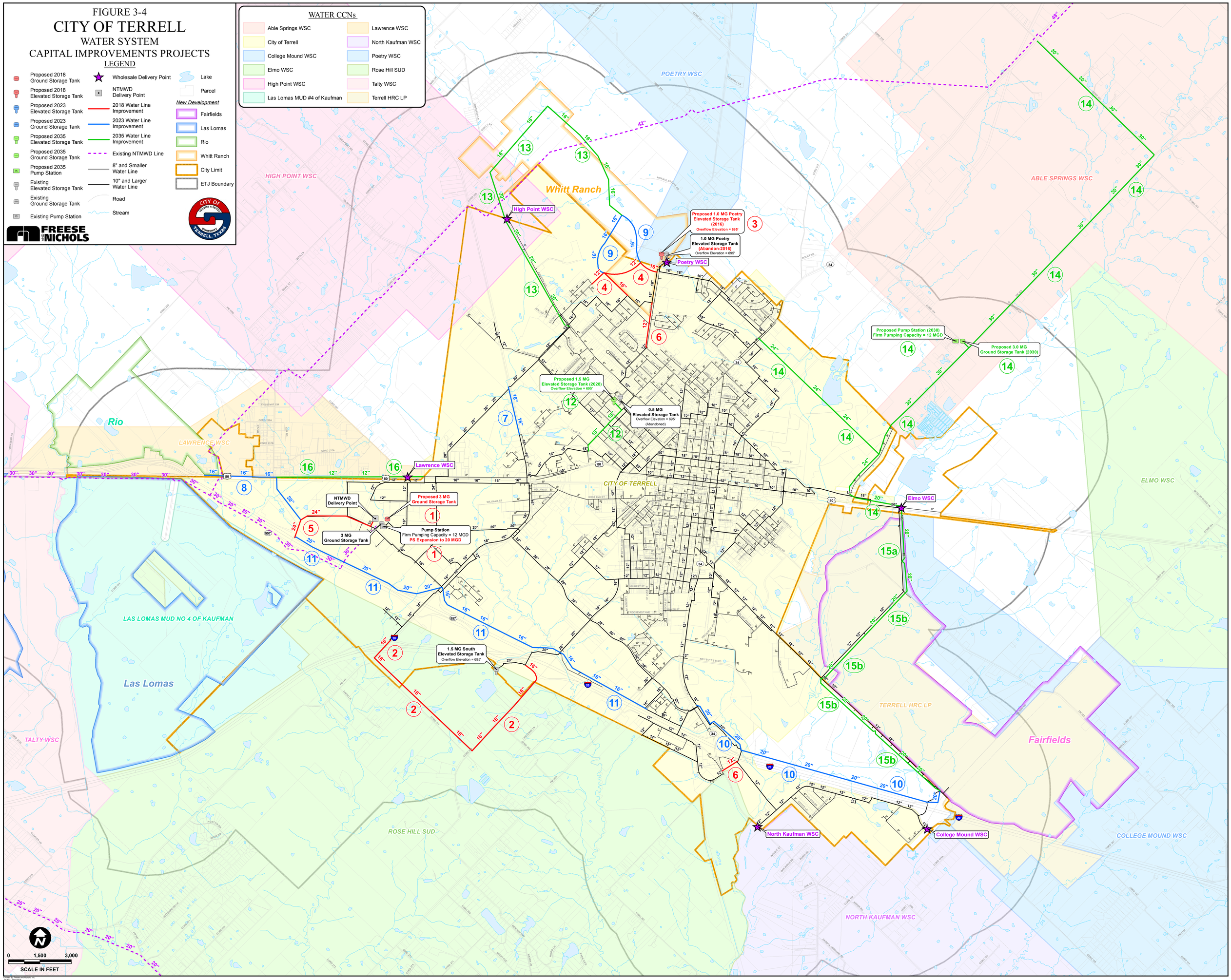
3.6 Water and Wastewater System Improvements

Proposed water and wastewater system projects to serve the system through 2035 were developed as part of this project based on load projections and design criteria. The proposed water system improvements recommended to serve the City through 2035 water system are shown on **Figure 3-4**. A figure displaying proposed wastewater system improvements to serve the City through 2023 is included in the *2013 Wastewater Infrastructure Prioritization Phase I Report*. Detailed cost estimates for the proposed water system projects are included in **Appendix C**. Detailed cost estimates for the proposed wastewater system projects were prepared as part of the *2013 Wastewater Infrastructure Prioritization Phase I* report and are available therein.

FIGURE 3-4

CITY OF TERRELL

WATER SYSTEM
CAPITAL IMPROVEMENTS PROJECTS



3.7 Water and Wastewater Impact Fee Analysis

The impact fee analysis involves determining the utilization of existing and proposed projects required as defined by the capital improvement plan to serve new development over the next 10-year time period. For existing or proposed projects, the impact fee is calculated as a percentage of the project cost, based upon the percentage of the project's capacity required to serve development projected to occur between 2013 and 2023. Capacity serving existing development and development projected for more than 10 years in the future cannot be charged to impact fees.

3.7.1 Eligible CIP Costs

A summary of the costs for each of the projects required for the 10-year growth period used in the impact fee analysis for both the water and wastewater systems is shown in **Table 3-10** and **Table 3-11**. Costs listed for the existing projects are based on actual design and construction costs provided by the City. **Table 3-10** and **Table 3-11** show 2013 percent utilization as the portion of a project's capacity required to serve existing development. It is not included in the impact fee analysis. The 2023 percent utilization is the portion of the project's capacity that will be required to serve the City of Terrell in 2023. The 2013-2023 percent utilization is the portion of the project's capacity required to serve development from 2013 to 2023. The water and wastewater hydraulic models were used to assist in the calculation of project utilization percentages. The portion of a project's total cost that is used to serve development projected to occur from 2013 through 2023 is calculated as the total actual cost multiplied by the 2013-2023 percent utilization. Only this portion of the cost is used in the impact fee analysis. The proposed 10-year water system impact fee CIP is shown on **Figure 3-5**. Proposed 10-year wastewater impact fee CIP is shown on **Figure 3-6**.

Table 3-10 Water System Impact Fee Eligible Project Summary

No.	Description of Project	Percent Utilization			Costs Based on 2013 Dollars	
		2013[1]	2023[2]	2013-2023[2]	Capital Cost	10-Year (2013-2023)
EXISTING						
A	Pump Station and 3.0 MG GST	90%	100%	10%	$4,900,000	$490,000
B	20”/16” Water Lines between Pump Station and Poetry EST	90%	100%	10%	$2,300,000	$230,000
C	20” Water Line Southeast of the Pump Station and North of IH-20	60%	100%	40%	$2,800,000	$1,120,000
D	20” Water Line in Downtown Area	84%	100%	16%	$575,000	$92,000
E	20” Water Line and 1.5 MG EST	15%	21%	6%	$4,500,000	$270,000
F	Impact Fee Update (2013-2014)	0%	100%	100%	$70,000	$70,000
Existing Project Sub-total					**$15,145,000**	**$2,272,000**
PROPOSED						
1	3 MG GST Construction and Expansion of Existing 12 MGD Pump Station to 20 MGD	0%	5%	5%	$3,588,000	$179,400
2	16” Water Pipeline Construction	0%	25%	25%	$3,845,900	$961,475
4	12” / 16” Water Pipeline Construction	0%	20%	20%	$765,100	$153,020
5	24” Water Pipeline Construction	0%	20%	20%	$1,348,200	$269,640
6	12” Water Pipeline Construction	10%	20%	10%	$545,930	$54,593
7	16” Water Pipeline Construction	0%	25%	25%	$726,300	$181,575
10	20” Water Pipeline Construction	0%	15%	15%	$4,979,100	$746,865
11	16” / 20” Water Pipeline Construction	0%	20%	20%	$5,496,600	$1,099,320
Proposed Project Sub-total					**$21,295,130**	**$3,645,888**
Total Capital Improvements Cost					**$36,440,130**	**$5,917,888**

[1]Utilization in 2013 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.

[2]Percent Utilization for 2023 is based on development within the city limits only.

Table 3-11 Wastewater System Impact Fee Eligible Project Summary

No.	Description of Project	Percent Utilization			Costs Based on 2013 Dollars	
		2013[1]	2023[2]	2013-2023[2]	Capital Cost	10-Year (2013-2023)
EXISTING						
A	Rose Hill Lift Station Expansion, 10" Force Main	77%	100%	23%	$750,000	$172,500
B	36" Gravity Main	16%	19%	3%	$2,200,000	$66,000
C	Wastewater CIP Study (2012-2013)	0%	100%	100%	$127,300	$127,300
D	Impact Fee Update (2013-2014)	0%	100%	100%	$50,000	$50,000
Existing Project Sub-total					**$3,127,300**	**$415,800**
PROPOSED						
-	30" Wastewater Gravity Main (CDBG Project)	16%	21%	5%	$1,000,000	$50,000
1	30" Wastewater Main Replacement	16%	19%	3%	$1,035,000	$31,050
2	10"/12"/15" Wastewater Main Replacement	62%	100%	38%	$1,720,200	$653,676
3	10"/12" Wastewater Main Replacement	62%	100%	38%	$1,473,100	$559,778
4	10"/12" Wastewater Main Replacement	62%	100%	38%	$1,158,200	$440,116
5	New 16 MGD Lift Station, 36" Wastewater Gravity Main and 20" Wastewater Force Main Construction	57%	66%	9%	$10,990,800	$989,172
6A	30" Force Main	43%	49%	6%	$10,576,600	$634,596
6B	36" Force Main	28%	33%	5%	$17,380,100	$869,005
6C	New 7 MGD Lift Station	70%	85%	15%	$3,450,000	$517,500
7	18"/21" Wastewater Main Construction and 24"/30" Wastewater Main Replacement	9%	16%	7%	$3,273,400	$229,138
Proposed Project Sub-total					**$52,057,400**	**$4,974,031**
Total Capital Improvements Cost					**$55,184,700**	**$5,389,831**

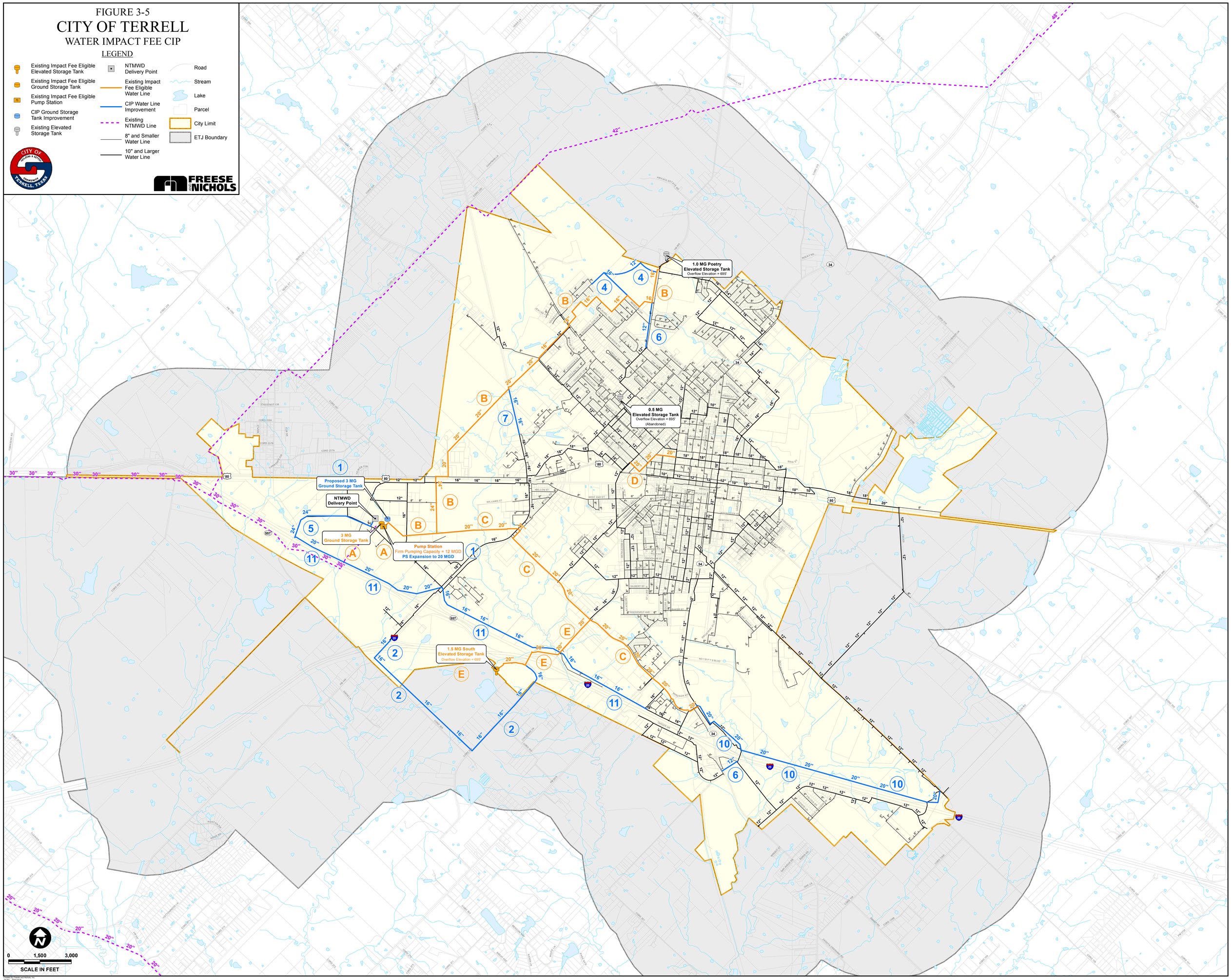
[1]Utilization in 2013 on Proposed Projects Indicates a portion of the project that will be used to address deficiencies within the existing system, and therefore are not eligible for impact fee cost recovery for future growth.

[2]Percent utilization for 2023 is based on development within the city limits only.

FIGURE 3-5

CITY OF TERRELL

WATER IMPACT FEE CIP



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Updated: Tuesday, February 25, 2014

FIGURE 3-6

CITY OF TERRELL

WASTEWATER IMPACT FEE CIP

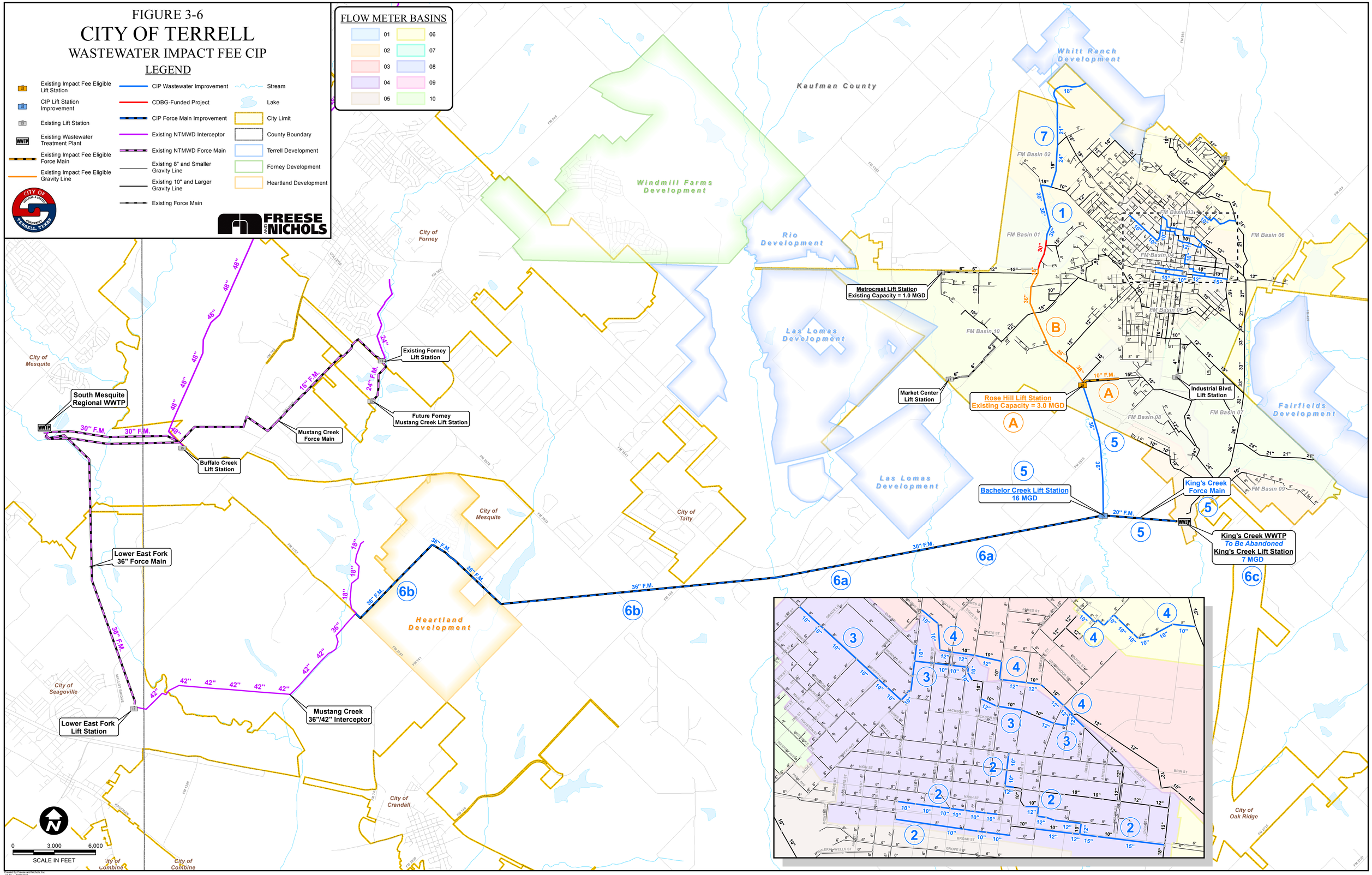
LEGEND

- Existing Impact Fee Eligible Lift Station
- CIP Lift Station Improvement
- Existing Lift Station
- Existing Wastewater Treatment Plant
- Existing Impact Fee Eligible Force Main
- Existing Impact Fee Eligible Gravity Line
- CIP Wastewater Improvement
- CDBG-Funded Project
- CIP Force Main Improvement
- Existing NTMWD Interceptor
- Existing NTMWD Force Main
- Existing 8" and Smaller Gravity Line
- Existing 10" and Larger Gravity Line
- Existing Force Main
- Stream
- Lake
- City Limit
- County Boundary
- Terrell Development
- Forney Development
- Heartland Development

FREESE AND NICHOLS

FLOW METER BASINS

01 02 03 04 05 06 07 08 09 10



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Updated: Thursday, November 21, 2013

3.7.2 Service Units

The maximum impact fee may not exceed the amount determined by dividing the cost of capital improvements required by the total number of service units attributed to new development during the impact fee eligibility period. A water service unit is defined as the service equivalent to a water connection for a single-family residence. The City of Terrell does not directly meter wastewater flows and bills for wastewater services based on the customer's water consumption. Therefore, a wastewater service unit is defined as the wastewater service provided to a customer with a water connection for a single-family residence.

The service associated with public, commercial, and industrial connections is converted into service units based upon the capacity of the meter used to provide service. The number of service units required to represent each meter size is based on the safe maximum operating capacity of the appropriate meter type. American Water Works Association (AWWA) standards C708 (Cold Water Meters – Multi-jet Type), C701 (Cold Water Meters – Class I Turbine Type), and C702 (Cold Water Meters – Compound Type) were used to determine the safe maximum operating capacity. The service unit equivalent for each meter size used by the City is listed in **Table 3-12**.

Typically, in Terrell, single-family residences are served with 3/4-inch water meter. Larger meters represent multi-family, public, commercial, and industrial water use. The City provided data that included the meter size of each active water meter as of December 2013. **Table 3-13** shows the water and wastewater service units for 2013 and the projected service units for 2023.

Table 3-12 Service Unit Equivalencies

Meter Size	Meter Type	Safe Maximum Operating Capacity (gpm)	Service Unit Equivalent
3/4"	Multi-Jet	25	1.0
1"	Multi-Jet	35	1.4
1-1/2"	Multi-Jet	70	2.8
2"	Compound	160	6.4
3"	Compound	320	12.8
4"	Compound	500	20.0
6"	Compound	1,000	40.0
8"	Compound	1,600	64.0
10"	Compound	2,300	92.0
10"	Turbine	2,900	116.0
12"	Turbine	4,300	172.0

Table 3-13 Water and Wastewater Service Units

Meter Size	2013 Meters	2013 Service Units	2023 Meters	2023 Service Units	Growth in Service Units
3/4"	4,784	4,784	5,719	5,719	935
1"	320	448	393	550	102
1-1/2"	152	426	186	521	95
2"	190	1,216	233	1,491	275
3"	19	243	23	294	51
4"	19	380	23	460	80
6"	8	320	10	400	80
8"	2	128	2	128	0
Total	**5,494**	**7,945**	**6,589**	**9,563**	**1,618**

3.7.3 Maximum Impact Fee Calculations

Texas Government Code Section 395 outlines the procedures and requirements for calculating maximum allowable impact fees to recover costs associated with capital improvement projects needed due to growth over a 10-year period. Section 395 also requires a plan that addresses possible duplication of payments for capital improvements. This plan can either provide a credit for the portion of revenues generated by new development that is used for the payment of eligible improvements, including payment of debt, or reduce the total eligible project costs by 50 percent. The City of Terrell has selected to utilize the reduction of the total eligible project costs by 50 percent to determine the maximum allowable impact fees.

Chapter 395 of the Texas Local Government Code states that the maximum impact fee may not exceed the amount determined by dividing the cost of capital improvements required by the total number of service units attributed to new development during the impact fee eligibility period less the credit to account for water and wastewater revenues used to finance capital improvement plans.

The total projected costs include the projected capital improvement costs to serve 10-year development, the projected finance cost for the capital improvements, and the consultant cost for preparing and updating the Capital Improvements Plan. A 3.0% interest rate was used to calculate financing costs. **Table 3-14** displays the maximum allowable impact fee for water and wastewater by meter size.

Water Impact Fee:

Total Capital Improvement Costs	$5,917,888
Financing Costs	$2,035,259
Total Eligible Costs	$7,953,147
Growth in Service Units	1,618

Maximum Water Impact Fee = Total Eligible Costs/Growth in Service Units
= $7,953,147/1,618
= $4,915 per Service Unit

Maximum Allowable Water Impact Fee = Maximum Impact Fee – Credit (50%)
= $4,915 - $2,458
= **$2,458 per Service Unit**

Wastewater Impact Fee:

Total Capital Improvement Costs	$5,389,831
Financing Costs	$1,853,651
Total Eligible Costs	$7,243,482
Growth in Service Units	1,618

Maximum Wastewater Impact Fee = Total Eligible Costs/Growth in Service Units
= $7,243,482/1,618
= $4,477 per Service Unit

Maximum Allowable Wastewater Impact Fee = Maximum Impact Fee – Credit (50%)
= $4,477 - $2,239
= **$2,239 per Service Unit**

Table 3-14 Maximum Allowable Impact Fees by Meter Size

Meter Size	Meter Type	Service Unit Equivalent	Water Impact Fee[1]	Wastewater Impact Fee[1]	Total Impact Fee[1]
3/4"	Multi-Jet	1.0	$2,458	$2,239	$4,697
1"	Multi-Jet	1.4	$3,441	$3,135	$6,576
1-1/2"	Multi-Jet	2.8	$6,882	$6,269	$13,151
2"	Compound	6.4	$15,731	$14,330	$30,061
3"	Compound	12.8	$31,462	$28,659	$60,121
4"	Compound	20.0	$49,160	$44,780	$93,940
6"	Compound	40.0	$98,320	$89,560	$187,880
8"	Compound	64.0	$157,312	$143,296	$300,608
10"	Compound	92.0	$226,136	$205,988	$432,124
10"	Turbine	116.0	$285,128	$259,724	$544,852
12"	Turbine	172.0	$422,776	$385,108	$807,884

[1] Based on maximum allowable water and wastewater impact fees.

4.0 ROADWAY IMPACT FEE ANALYSIS

4.1 Methodology

Chapter 395 of the Texas Local Government code prescribes the technical requirements for the update of roadway impact fees. To meet this mandate, the following work tasks were undertaken and described below.

- Roadway service areas were updated to address annexations that had occurred by the City since the 2009 update.

- Land use assumptions detailing population and employment growth by service area were used as a basis to derive projected growth over the ten-year planning period 2013-2023.

- The vehicle-mile of travel during the PM peak hour was retained as the appropriate service unit for measuring capacity and system utilization for the impact fee calculation. Capacity was based on values developed by the North Central Texas Council of Governments (NCTCOG) for level of service "C" operations.

- A roadway conditions inventory of major roadways within Terrell was conducted to update lane geometrics and segment lengths. New collector and/or arterial streets not previously classified were added to the program database. The existing roadway network was evaluated by service area based on updated traffic volume count information, collected in September 2013, to determine roadway capacity, current utilization, and deficiencies, if present. Traffic count data (PM peak hour directional volume) was collected at twenty locations throughout the city as part of this update.

- New vehicle-miles of demand (over a 10-year planning period) was calculated for each service area based on net growth of population and employment (service area) supplemented with service unit generation data from the land use equivalency table.

- A capital improvements plan was prepared based on projected growth needs, traffic patterns and input from the Capital Improvements Advisory Committee (CIAC) and City staff. The impact fee capital improvements plan identifies specific projects, associated limits, roadway

sizing and functional class per the official City Thoroughfare Plan, and associated cost for facility implementation. Project costs include construction, engineering, right-of-way acquisition and debt service. Updated costs were prepared for all projects based on recent historic unit costs provided by the City and Freese and Nichols. For recoupment projects, data of actual costs were provided by the City. Costs for study updates are eligible for impact fee recovery and were included in the total project cost. The capital improvements plan identifies service units of capacity provided, capacity utilized (based on current traffic volume counts) and excess capacity by project and service area.

As a prelude to program update process, the capacity provided by the impact fee CIP was evaluated to ensure excess capacity remained in the system for consideration for impact fees. The evaluation revealed all previously identified projects to currently contain sufficient excess capacity and were therefore retained.

- The cost of capacity supplied, cost attributable to new development, and the maximum cost per service unit were calculated for each service area. Per Chapter 395, a credit of 50% was applied to the overall cost of the capital improvements program for use in the cost per service unit calculation.

- Examples for calculating impact fees were prepared based upon specific uses and the land use vehicle-mile equivalency table.

4.2 Roadway Impact Fee Service Areas

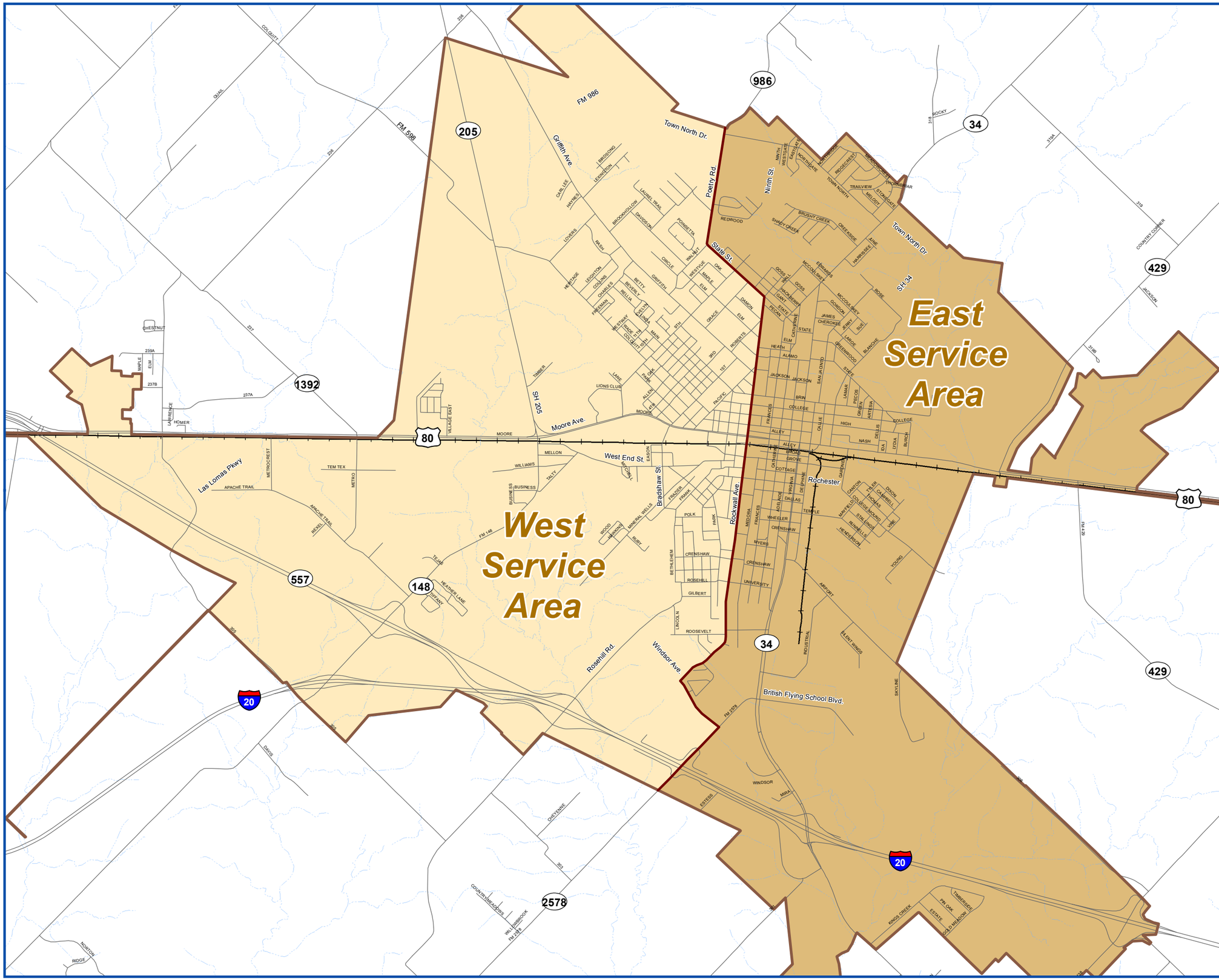
Service areas are required by State Law to define the area served by the Roadway Capital Improvements. Chapter 395 requires that service areas be defined for impact fees to ensure that facility improvements are located in proximity to the area that is generating the need. Legislation requires that roadway service areas be limited to a six-mile maximum and must be located within the current city limits. Roadway service areas can be different from other impact fee service areas, which can include a water or sewer CCN's (Certificate of Convenience and Necessity) or the Extra-Territorial Jurisdiction (ETJ). This difference is primarily due to roadway systems being "open" to both local and regional use as opposed to a defined limit of service that is provided with water and wastewater systems. The result is that new development can only be assessed an impact fee based on the cost of necessary capital improvements within that service area.

The service area structure was amended to include recent annexations by the city. All portions of the revised service area structure fall within the six-mile requirements. **Figure 4-1** illustrates the roadway service areas for the City of Terrell.

4.3 Roadway Impact Fees Land Use Assumptions

Chapter 395 requires that land use assumptions and capital improvements plan be updated at least every five (5) years. Land use assumptions provide the basis and structure for determining impact fees attributed to future growth and development. For the system update, service unit generation was based on population and employment growth over the planning period. Population data presented earlier (refer to section 2.2) identified a 10-year growth of 2,561 persons between 2013 and 2023 and represents an average annual growth rate of about one and one-half percent. Based on Census data of 2.74 persons per dwelling unit, this rate represents an increase of 935 dwelling units over the planning period. With the city divided into two services areas, population data was allocated to each service area based on census data and anticipated areas of development. **Table 4-1** details the breakout of population data by service area.

Employment data was obtained from estimates prepared by NCTCOG and the Census Bureau. Data by work type – basic, service and retail – was used to estimate service unit generation of non-residential growth within the City. The estimated employment for the city in 2013 and 2023 is 13,068 and 16,068 persons, respectively and represents an average annual growth rate of about 2% per year. **Table 4-2** details the breakout of employment data by work component and total for service areas.



Roadway Impact Fee Update

Legend

Roadway Service Areas

- East Service Area
- West Service Area
- City Limits

0 1,500 3,000 6,000 Feet

1 inch = 3,000 feet

FREESE AND NICHOLS

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Figure 4-1 Roadway Impact Fee Service Areas

Table 4-1 Ten Year Population Projections by Service Area

Year	Population	Service Area Population	
		West	East
2013	16,413	7,921	8,492
2023	18,974	9,566	9,408
Total Added	**2,561**	**1,645**	**916**
Dwelling Units Added	**935**	**600**	**335**

Note: Data depicted as persons.

Table 4-2 Ten Year Employment Projections by Service Area

Year	Total Employment	East Service Area Employment				West Service Area Employment			
		Basic	Service	Retail	Total	Basic	Service	Retail	Total
2013	13,068	2,171	3,162	1,208	**6,541**	2,317	2,673	1,537	**6,527**
2023	16,068	2,717	3,583	1,258	**7,558**	2,884	3,937	1,689	**8,510**
Total Added	**3,000**	**546**	**421**	**50**	**1,017**	**567**	**1,264**	**152**	**1,983**

Note: Data depicted as Persons

4.4 Roadway Capital Improvement Plan

Chapter 395 of the Texas Local Government Code specifies the requirements necessary to prepare an impact fee capital improvements plan. These requirements include:

- A description of the existing capital improvements within the service area and the cost to upgrade, update, improve, expand or replace the improvements to meet existing needs and usage.
- An analysis of the total capacity, the level of current usage, and commitments for usage of capacity of the existing capital improvements.
- A description of all or the parts of the capital improvements and their costs necessitated by and attributable to new development in the service area based on approved land use assumptions.
- A definitive table establishing the specific level or quantity of use, consumption, generation, or discharge of service unit for each category of capital improvements and an equivalency table establishing the ratio of the service unit to various types of land uses, including residential, commercial, and industrial.
- 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

- The projected demand for capital improvements required by the new service units projected over a reasonable period of time.

- A plan for awarding a credit for the portion of the ad valorem tax generated by new service units during the program period used for the payment of improvements or a credit equal to 50 percent of the total projected cost of implementing the capital improvements plan.

The plan must contain two distinct components: analysis of existing conditions and analysis of projected conditions. To analyze these components, two measures of performance have been established and include both level-of-service and service units.

4.5 Roadway Level-of-Service

Level-of-Service (LOS) is a traffic engineering term that describes operational conditions and performance of the roadway system. Roadway level-of-service is the basic design criterion used in thoroughfare planning. The design level-of-service determines the capacity for which the roadway is intended. Level-of-service is rated from "A" to "F". The higher level of service (A-B) provides better driving conditions, but requires higher construction cost. Level of Service "E" is generally considered to be the capacity limit of urban roadways. Level of Service "C" is the design level-of-service selected for the Impact Fee Analysis, which corresponds to the design level of the Thoroughfare Plan as presented in the 2002 Comprehensive Plan for the City of Terrell. **Table 4-3** lists the maximum service volumes for level-of-service "C" as a function of facility type.

Table 4-3 Roadway Facility Vehicle-Mile Capacities

Roadway Facility	Roadway Type	Capacity "LOS C" Vehicles per hour per lane-mile of Roadway Facility
Divided Arterials	DA (AA, A, B)	470
Undivided Arterials	UA (A, B)	425
Divided Collector	DC (C)	375
Undivided Collectors	UC (D)	340

*Hourly capacity for LOS "C" obtained from NCTCOG DFW Regional Travel Model
Designations in ( ) are roadway classifications listed in the City of Terrell's Thoroughfare Plan
DA = Divided Arterial, DC = Divided Collector, UA = Undivided Arterial, UC = Undivided Collector

4.6 Roadway Impact Fee Service Units

An accurate service unit is required to calculate and assess impact fees for new developments. As defined in Chapter 395, "Service unit means a standardized measure of consumption, use, generation, or

discharge attributed to an individual unit of development calculated in accordance with generally accepted engineering or planning standards 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 is, essentially, a measure of supply and demand.

The service unit must accurately reflect the supply provided by the roadway system. Transportation facilities are designed to accommodate peak hour traffic volumes because the heaviest demand for the roadway capacity occurs during the peak hour. These peak hours typically occur during the morning (AM peak) and evening (PM peak) rush hours as motorist travel to and from work. The impact fee system for the City of Terrell is based on the PM peak hour. The unit of measurement for supply is the service volume provided by a lane-mile (lane-miles) of roadway facility. This number is also the capacity of the roadway based on an acceptable level-of-service, in this case LOS "C".

The service unit must also reflect the demand that a particular development will place on the transportation system. The impact of the development to the street system is directly related to the trips generated by development, land-use for which the development is intended, and the average length of each trip on the transportation system.

Service units create a link between supply (roadway projects) and demand (new development). Both supply and demand can be expressed as a combination of the number of vehicles traveling during the peak hour and the distance traveled by these vehicles in miles. Thus, the service unit for roadway impact fees is the vehicle-mile.

4.7 Roadway Existing Conditions Analysis

An inventory of major roadway facilities was conducted to determine existing conditions throughout Terrell. This analysis determines the capacity provided by the existing roadway system, the demand currently placed on the system, and the existence of any deficiencies on the system. Data for the inventory was obtained from field reconnaissance, traffic volume counts, the City Thoroughfare Plan and City Staff.

4.7.1 Existing Traffic Volumes

Existing directional PM peak hour volumes were obtained from automated traffic counts conducted by the City of Terrell's Public Works Department and Freese and Nichols, Inc. during September, 2013.

Automated traffic counts at 20 separate locations were collected on major roadways (as identified in the Thoroughfare Plan as arterial or collector status) throughout the city. For segments not counted, estimates were developed based on peaking characteristics of area roadways or data from adjoining roadway counts. Data was compiled for roadway segments throughout the city and entered into the database for use in calculations. A summary of volumes by roadway segment is included in **Appendix E** as part of the existing capital improvements database.

4.7.2 Vehicle-Miles of Existing Capacity (Supply)

An analysis of the total capacity for each service area was performed. For each roadway segment, the existing vehicle-miles of capacity supplied were calculated using the following equation:

Vehicle-Miles of Capacity = Link capacity per peak hour per lane x No. of Lanes x Length of segment (miles)

For example: a 4-lane divided roadway that is 3 miles in length and has a capacity of 470 vehicles per hour per lane:

Vehicle–Miles of Capacity = 470 vehicles per hour x 4 lanes x 3 miles = 5,640 veh-miles per hour.

A summary of existing capacity for the two service areas is illustrated in **Table 4-4**. It is important to note that the roadway capacity depicted in **Table 4-4** is system-wide for most major roadways and not restricted to those roadways proposed in the impact fee capital improvements plan. For a detailed listing of vehicle-miles of capacity by roadway segment, refer to **Appendix F**.

4.7.3 Vehicle-Miles of Existing Demand

The vehicle-miles of existing demand or the current usage of the facilities for each roadway segment was obtained using the equation below:

Vehicle–Miles of Demand = PM peak hour volume x Length of Roadway (miles)

For example: a 3-mile long roadway that carries a PM peak hour volume of 500 vehicles per hour:

Vehicle–Miles of Demand = 500 vehicles per hour x 3 miles = 1,500 vehicle-miles per hour.

A summary of the existing demand for the service areas is illustrated in **Table 4-4**. A complete detailed listing by roadway segment and service area is provided in **Appendix E**.

Table 4-4 Existing Capacity and Demand

Service Area	Capacity (Supply) (Veh-Miles per Hour)	Demand (Veh-Miles per Hour)
West	18,246	10,188
East	20,197	9,390
Total	38,443	19,578

4.7.4 Vehicle-Miles of Existing Excess Capacity or Deficiencies

For each roadway segment, the existing vehicle-miles of excess capacity and/or deficiencies were calculated. Each direction was evaluated to determine if vehicle demands exceeded the available capacity. If demand exceeded capacity in one or both directions, the deficiency is deducted from the supply associated with the impact fee capital improvement plan. A summary of existing excess capacity and/or deficiencies for each service area is illustrated in **Table 4-5**. A complete detailed listing by roadway segment and service area is provided in **Appendix E**.

Table 4-5 Excess Capacity and Deficiencies

Service Area	Excess Capacity (Veh-Miles per Hour)	Deficiencies (Veh-Miles per Hour)
West	9,099	1,041
East	10,882	75
Total	19,980	1,116

4.8 Projected Conditions Analysis

Chapter 395 of the Texas Local Government Code requires a description of all capital improvements and their cost attributable to new development within the service area. To determine the cost attributable to new development the following information needs to be calculated or supplied: future land use assumptions, vehicle-miles of new demand, a capital improvement plan, vehicle-miles of new capacity supplied by the capital improvements plan and the costs for the roadway improvements.

The recommended service unit for assessing impact fees of new development on roadway facilities is a combination of the trips generated (vehicles) by the new development during the peak hour and the average trip length (miles) of each trip. The following section describes the methodology used in developing service units for new developments.

4.8.1 Trip Generation

Trip generation rates are used to determine the number of vehicles added to the roadway system as a result of new development. The trip generation rates were developed for the PM peak weekday period. The trip generation rates were established using the *Institute of Transportation Engineers Trip Generation Manual, 7th ed.* and the North Central Texas Council of Governments (NCTCOG) travel demand model rates.

Adjustments to the trip generation rates are necessary to reflect the differences between driveway volumes and the total amount of traffic added to the roadway system. The actual "traffic impact" of the new development is based only on the traffic added to the adjacent roadways. The actual traffic added to the adjacent roadways is determined by adjusting the driveway volumes to account for pass-by trips, diverted trips, and internal trips.

- Pass-by trips – trips attracted to a development from traffic that would otherwise pass-by the site on an adjacent roadway. For example, a stop at a convenience store on the way from the office to home is a pass-by trip for the convenience store. The trip does not create an additional burden on the street system and therefore should not be double-counted. The burden of this type should be assigned to the office and/or residence.

- Diverted trips – trips that are already on the roadway system and are diverted to the roadway system serving the new development. For example, a trip from home to work along Rose Hill Road would be a diverted trip if the travel path was changed to State Highway 34 for the purpose of stopping at the cleaners. On a system-wide basis, this trip also does not add a significant additional burden to the street system and, therefore, is not considered in assessing impact fees.

- Internal trips – trips that would typically be made in a mixed-use development between two uses within the development, not utilizing a thoroughfare outside the development for that trip. For example, a trip between an office building and a restaurant contained within the same site would be considered and internal trip and does not create any additional burden on the roadway system.

4.8.2 Trip Length

Trip lengths in miles will be used in conjunction with site trip generation to establish the vehicle-miles of travel (the service unit to be used for assessing impact fees). As with trip generation, trip lengths are used in the development of travel forecasting models for use in assessing roadway needs, as well as for assessing impact fees. As previously stated, Chapter 395 of the Texas Local Government Code limits the average trip length to six miles. Each trip has an origin and destination, half of the trip length will be assigned to the origin and half of the trip length will be assigned to the destination. Therefore, the average trip length for a development is half the total trip length, allowing the maximum total trip length under state law to be six miles. The trip length data used in this report was based on information generated in the 1994 NCTCOG Workplace Survey.

4.8.3 Projected Growth and Vehicle-Miles of New Demand

Projected vehicle-miles of demand were calculated based on the growth expected to occur during the 10-year planning period and the service unit generation for each of the population and employment data components (basic, service and retail). Separate calculations were performed for each data component and were then aggregated for the service area. Vehicle-miles of demand for population growth were based on dwelling units and vehicle-miles of demand for employment were based on the number of employees and estimates of square footage per employee.

A summary of the vehicle-miles of new demand for each service area is illustrated in **Table 4-6**. A complete detailed listing by service area is provided in **Appendix F**.

Table 4-6 Projected Vehicle-Miles of New Demand

Service Area	Projected Vehicle-Miles of New Demand
West	8,972
East	5,355
Total	14,327

4.8.4 Capital Improvements Plan (CIP)

The capital improvements plan includes roadway improvements by service area that are needed to accommodate growth based on the adopted land use assumptions and vehicle-miles of travel for various types of land uses. The impact fee CIP can only contain roadways included on the City's Thoroughfare Plan and classified as arterial or collector status facilities.

At the outset of the update process, capacity provided by the CIP was evaluated to ensure sufficient excess capacity remained in the system for consideration for impact fees. Based on updated traffic volume data collected in Fall 2013, all existing projects were found to have sufficient remaining capacity and therefore could be retained in the impact fee system.

Projects in the impact fee CIP include both "new" and "recoupment" projects. "Recoupment" projects are those projects recently constructed and still containing excess capacity. Updated cost estimates were prepared for projects in the impact fee program. Updated unit costs were based on historical costs of projects within the City as well data from other recently constructed projects. A review of TxDOT twelve-month averages was also conducted as a verification of updated data. The following costs were included in the preparation of the 10-year CIP program; construction, surveying and engineering (12.5% of construction), right-of-way acquisition ($.50-$2.50 per square foot), debt service (3% compounded annually over 10-years) and study update costs (two 5-year updates at $35,000 each). Cost data for recoupment projects was provided by the city. Project recoupment considers only costs incurred by the City. Cost contributions from other sources were excluded from consideration.

Table 4-7 lists the roadway impact fee capital improvement projects and associated raw costs and **Figure 4-2** illustrates these projects. The cost of the updated impact fee program is $65.0M. Of this total, $59.0M is associated with new projects and $6.0M is associated with recoupment projects. When considering the state mandated credit (50%), the cost of the CIP totals $32.5M. A detailed Engineer's Opinion of Probable Construction Cost for each roadway is provided in **Appendix G**.

Table 4-7 2013 Roadway Impact Fee Capital Improvements Plan

Service Area	Roadway	From	To	Project Status	Length (mi)	No. of Lanes	Type Rdwy	Roadway Project Costs: *Engineering**	*ROW*	*Construction*	*Finance**	Total Project Cost
West	Windsor Avenue	Rosehill Road	Rockwall Street	New	0.41	4	DC	$196,300	$171,840	$1,569,200	$658,696	$2,596,036
West	Windsor Avenue	Rockwall Street	FM 2578	New	0.37	2	DC	$103,400	$78,880	$825,500	$342,645	$1,350,425
West	Rosehill Road	City Limits	Lincoln Lane	New	1.38	6	DA	$864,000	$437,940	$6,910,800	$2,792,332	$11,005,072
West	Moore Ave./SH 205 Intersection Improvements			New	0.87	2	DA	$0	$0	$750,000	$255,000	$1,005,000
West	West End Street	FM 148	Bradshaw Street	New	0.76	2	UC	$302,900	$236,000	$2,329,500	$975,256	$3,843,656
West	West End Street	Bradshaw Street	Ann Street	New	0.45	2	UC	$165,400	$142,400	$1,270,200	$536,520	$2,114,520
West	Bradshaw Street	West End Street	Moore Avenue	New	0.26	6	DA	$165,400	$142,400	$1,270,200	$536,520	$2,114,520
West	Griffith Avenue	City Limits	Lovers Lane	New	1.13	4	DC	$503,400	$0	$3,871,000	$1,487,296	$5,861,696
West	Future FM 986	Griffith Avenue	City Limits	New	0.70	6	DA	$776,600	$786,480	$5,972,100	$2,561,961	$10,097,141
West	Las Lomas Parkway	Southern City Limits	Spur 557	New	0.18	6	DA	$120,200	$112,320	$923,600	$393,081	$1,549,201
West	Las Lomas Parkway	Spur 557	Apache Trail	New	0.25	2	DA	$100,500	$78,720	$771,400	$323,211	$1,273,831
West	Las Lomas Parkway	Spur 557	Apache Trail	Recoup	0.25	2	DA	$70,500	$147,346	$1,278,172	$0	$1,496,018
West	Las Lomas Parkway	Apache Trail	US 80	New	0.36	6	DA	$262,300	$231,120	$3,288,800	$1,285,955	$5,068,175
West	Town Drive North	Future FM 986	Existing FM 986	New	0.63	2	UC	$257,200	$198,000	$1,977,300	$827,050	$3,259,550
Sub-total SA West					**8.01**			**$3,888,100**	**$2,763,446**	**$33,007,772**	**$12,975,522**	**$52,634,840**
East	Windsor Avenue	Home Depot	SH 34	Recoup	0.23	4	DC	$0	$0	$980,099	$0	$980,099
East	Ninth Street	Eulalia Drive	Town North Drive	New	0.79	2	UC	$318,300	$251,160	$2,447,200	$1,025,664	$4,042,324
East	Town North Drive	N. Francis Street (SH 34)	Future SH 34	New	0.42	2	UC	$173,400	$132,000	$1,332,300	$556,818	$2,194,518
East	SH 34[+]	S. Virginia St. (SH 34)	US 80	Recoup	0.76	4	DA	$500,000	$120,000	$880,000	$0	$1,500,000
East	SH 34[+]	US 80	City Limits	Recoup	1.48	4	DA	$75,000	$0	$675,000	$0	$750,000
East	No. 1 British Flying School Blvd.	SH 34	Airport	Recoup	0.42	2	DA	$85,000	$0	$1,203,568	$0	$1,288,568
East	Rochester Street	S. Virginia St. (SH 34)	Gardner Street	New	0.30	2	UC	$134,200	$0	$1,030,500	$395,998	$1,560,698
Sub-total SA East					**4.40**			**$1,285,900**	**$503,160**	**$8,548,667**	**$1,978,480**	**$12,316,207**
Totals:					**12.41**			**$5,174,000**	**$3,266,606**	**$41,556,439**	**$14,954,002**	**$64,951,047**

Engineering Cost	$5,174,000
Right-of-Way Cost	$3,266,606
Construction Cost	$41,556,439
Finance Cost	$14,954,002
TOTAL NET COST	**$64,951,047**
Future Impact Fee Update Cost **	$70,000
TOTAL IMPLEMENTATION COST	**$65,021,047**

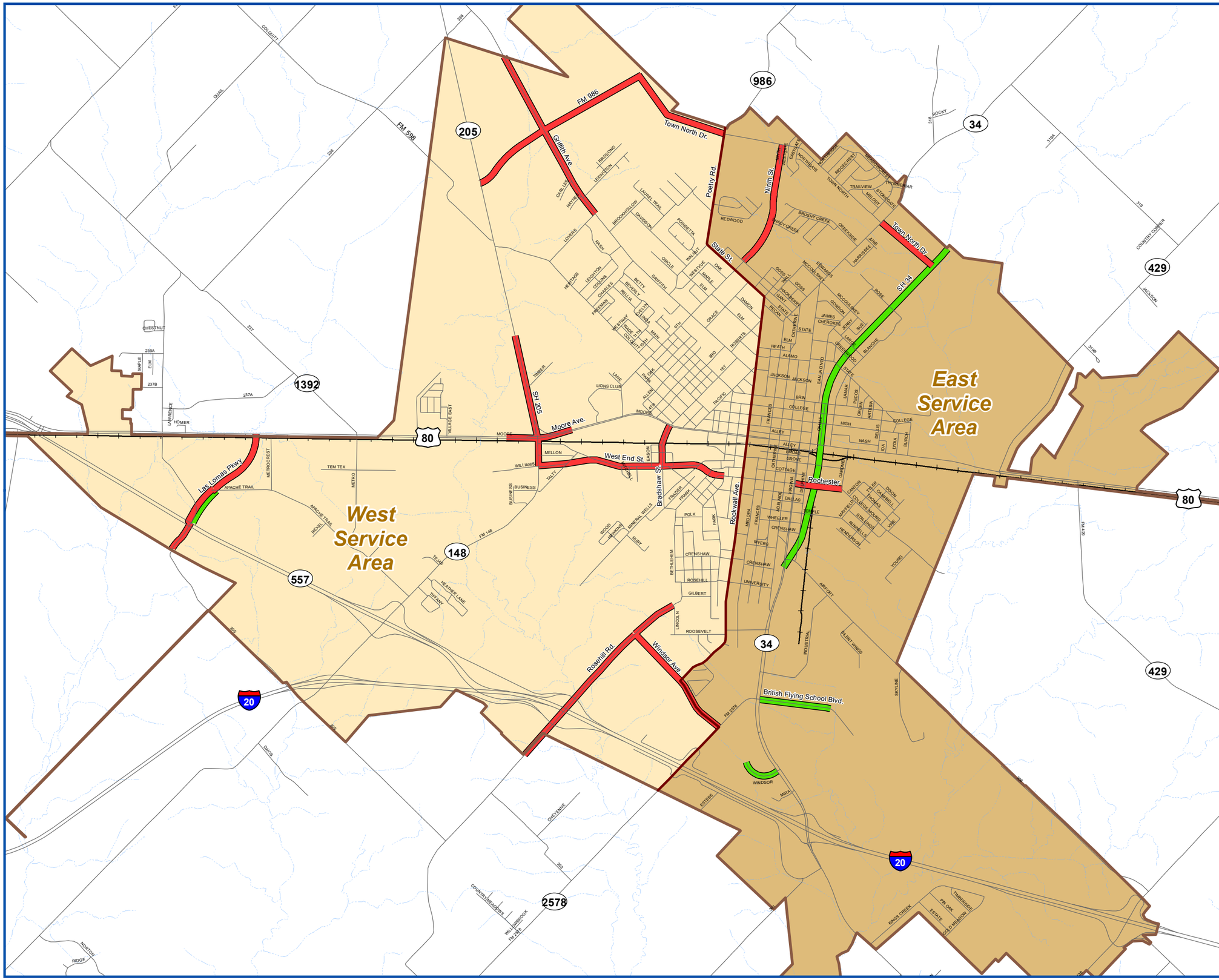
Notes:

* Assumes engineering cost as 12.5% construction; interest for debt service @ 3% over 10 years.

** Assumes two 5-year updates at $35,000 each; cost spread over service areas.

DA- Divided arterial facility
DC- Divided collector facility
UC- Undivided collector facility

Recoup - Recoupment project
New - New Project
[+] TXDOT Project with City participation



Roadway Impact Fee Update

Legend

Impact Fee CIP

- New Projects
- Recoupment Projects

Roadway Service Areas

- East Service Area
- West Service Area
- City Limits

Figure 4-2 Roadway Impact Fee Capital Improvement Plan

0 1,500 3,000 6,000 Feet

1 inch = 3,000 feet

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4.8.5 Projected Vehicle-Miles of New Capacity (Supply)

The vehicle-miles of new capacity supplied for each service area is provided in **Table 4-8**. A complete detailed listing by roadway segment and service area is provided in **Appendix F**.

Table 4-8 Projected Vehicle-Miles of New Capacity (Supply)

Service Area	Projected Vehicle-Miles of New Capacity (Supply)
West	13,262
East	5,978
Total	19,240

4.8.6 Vehicle-Miles of Existing Demand on CIP Roadways

The vehicle-miles of existing demand on CIP roadways is provided in **Table 4-9**. A complete detailed listing by roadway segment and service area is provided in **Appendix E.**

Table 4-9 Vehicle-Miles of Existing Demand on CIP Roadways

Service Area	Vehicle-Miles Of Existing Demand
West	523
East	480
Total	1,003

4.8.7 Maximum Cost per Service Unit

The calculation of the cost per service unit involves the calculation of the total cost of the net capacity supplied and the net capacity supplied by the CIP after existing demand and deficiencies are removed.

Where net capacity supplied is greater than the new demand, the cost per service unit is simply the cost of the net capacity divided by the number of service units provided. In this case, only the portion of the CIP necessitated by new development is used in the calculation. If the net capacity supplied is less than projected new demand, then the cost per service unit is calculated by dividing the total cost of net supply by the portion of new demand attributable and necessary by development. The cost of the CIP that is being provided is essentially distributed over the vehicle-miles of demand generated in the 10-year window.

Table 4-10 lists the results of the cost per service unit calculation by service area. The actual cost per service unit was calculated to be $3,972.00 and $2,062.00 for West and East service areas, respectively and was based on the total cost of net capacity supplied by the CIP and the demand attributable to new development over the 10-year planning period. State legislation requires that a credit for the portion of ad valorem tax revenues generated by improvements over the program period, or a credit equal to 50% of the total projected cost of implementing a roadway impact fee capital improvements program be given. Based on a 50% credit, the maximum allowable cost per service is $1,986.00 and $1,031.00 for West and East service areas, respectively.

Table 4-10 Calculation of Maximum Impact Fees (with State Mandate of 50% Credit)

Line #		West Service Area	East Service Area
1	Total Veh-Miles of Capacity Added by the CIP	13,262	5,978
	(From Projected Veh-Miles of New Capacity - **Table 4-8**)		
2	Total Veh-Miles of Existing Demand on CIP Roads	523	480
	(Fome Veh-Miles of Existing Demand on CIP Roadways - **Table 4-9**)		
3	Total Veh-Mile of Existing Deficiencies on Existing Roads	1,041	75
	(From Excess Capacity and Deficiencies - **Table 4-5**)		
4	Net Amount of Veh-Mile Capacity Added	11,698	5,423
	(Line #1-Line #2-Line #3)		
5	Total Cost of CIP (with 50% credit)	$26,341,545	$6,168,979
	(From Engineer's Opinion of Probable Construction Costs – **Appendix G**)		
6	Cost of Net Capacity Supplied	$23,235,062	$5,596,248
	(Net of Capacity Added/Total of Capacity Added)*CIP Cost - (Line #4/Line #1)*(Line #5)		
7	Cost to Meet Existing Needs and Usage	$3,106,483	$572,731
	(Total Cost of CIP-Cost of Net Capacity Supplied) - Line #5-Line #6		
8	Total Veh-Mile of New Demand Over 10 Years	8,972	5,355
	(From Projected Vehicle-Miles of New Demand - **Table 4-6**)		
9	% of Capacity Added Attributed to New Growth	76.7%	98.7%
	(Total of New Demand/Net Amount of Capacity Added) - Line #8/Line #4**		
10	Cost of Capacity Added Attributed to New Growth	$17,820,565	$5,526,076
	(Cost of Net Capacity Supplied * Cost Attributed to New Growth) - Line #6*Line#9		
11	Maximum Fee per Service Unit	$1,986	$1,031
	(Cost of Net Capacity Attributed to New Growth/Total Veh-Mile of New Demand) Line #10/Line #8		

** If Line 8>Line 4 then reduce Line 9 to 100%

4.8.8 Land Use / Vehicle-Mile Equivalency Table

A land use/vehicle-mile equivalency table establishes the service unit rate for various land uses. This table is a result of combining PM peak hour trip generation rates with average trip length information for various land uses. These rates are based on an appropriate development unit for each land use. For example; office, retail, industrial, and institutional are based on development of 1,000 square feet of gross floor area, while single-family and multi-family residential is based on dwelling units. The City of Terrell's Land-Use Vehicle Mile Equivalency Table is made up of six land uses. These land uses are: Residential-Single Family, Residential-Multi Family, Office, Retail/Commercial, Industrial, and Institutional. **Table 4-11** lists the total service units generated for the various land uses. No changes have been made to the equivalency table established in 2009.

Table 4-11 Land-Use Vehicle-Mile Equivalency Table

Land Use	Development Unit	Total Service Units (Veh-mi/Dev Unit)
Residential-Single Family	Dwelling Unit (D.U.)	2.88
Multi- Family	Dwelling Unit (D.U.)	1.77
Office	1,000 GFA	5.15
Retail/Commercial	1,000 GFA	5.54
Industrial	1,000 GFA	3.70
Institutional	1,000 GFA	2.02

4.9 Roadway Impact Fee Calculation

The calculation of the actual fee charged to development is a two-part process. These parts are:

Part 1: Determine number of service units (vehicle-miles) generated by the development using the land-use vehicle-mile equivalency table.

No. of Development x Vehicle-miles (Total Service Units) per development unit
= Development's Vehicle-miles

Part 2: Calculate the impact due by new development. This fee based on the cost per service unit for the service area where the development is located.

Development's Vehicle-miles (from part 1) x Cost per vehicle-mile (from CIP calculation)
= Impact Fee due from development

Examples: The following fee would be assessed to new developments located in the East Service, which has a credited fee per service unit of $1,031.

Single-Family Dwelling

1 dwelling unit x (2.88 vehicle-miles/1 dwelling unit) = 2.88 vehicle-miles
2.88 Vehicle-miles x $1, 031/ vehicle-mile = $2,969

50,000 square foot (s.f.) Office Building

50,000 s.f x (5.15 vehicles-miles/1000 s.f. units) = 257.5 vehicle-miles
257.5 vehicle-miles x $1, 031/vehicle-mile = $265,482

100,000 s.f. Retail Center

100,000 s.f. x (5.54 vehicle-miles/1,000 s.f. units = 554 vehicle-miles
554 vehicle-miles x $1, 031/vehicle-mile = $571,174

300,000 s.f. Industrial Development

300,000 s.f. x (3.70 vehicle-miles/1,000 s.f. units = 1,110 vehicle-miles
1,110 vehicle-miles x $1, 031/ vehicle-mile = $1,144,410

Appendix A
Water Model Update and Validation

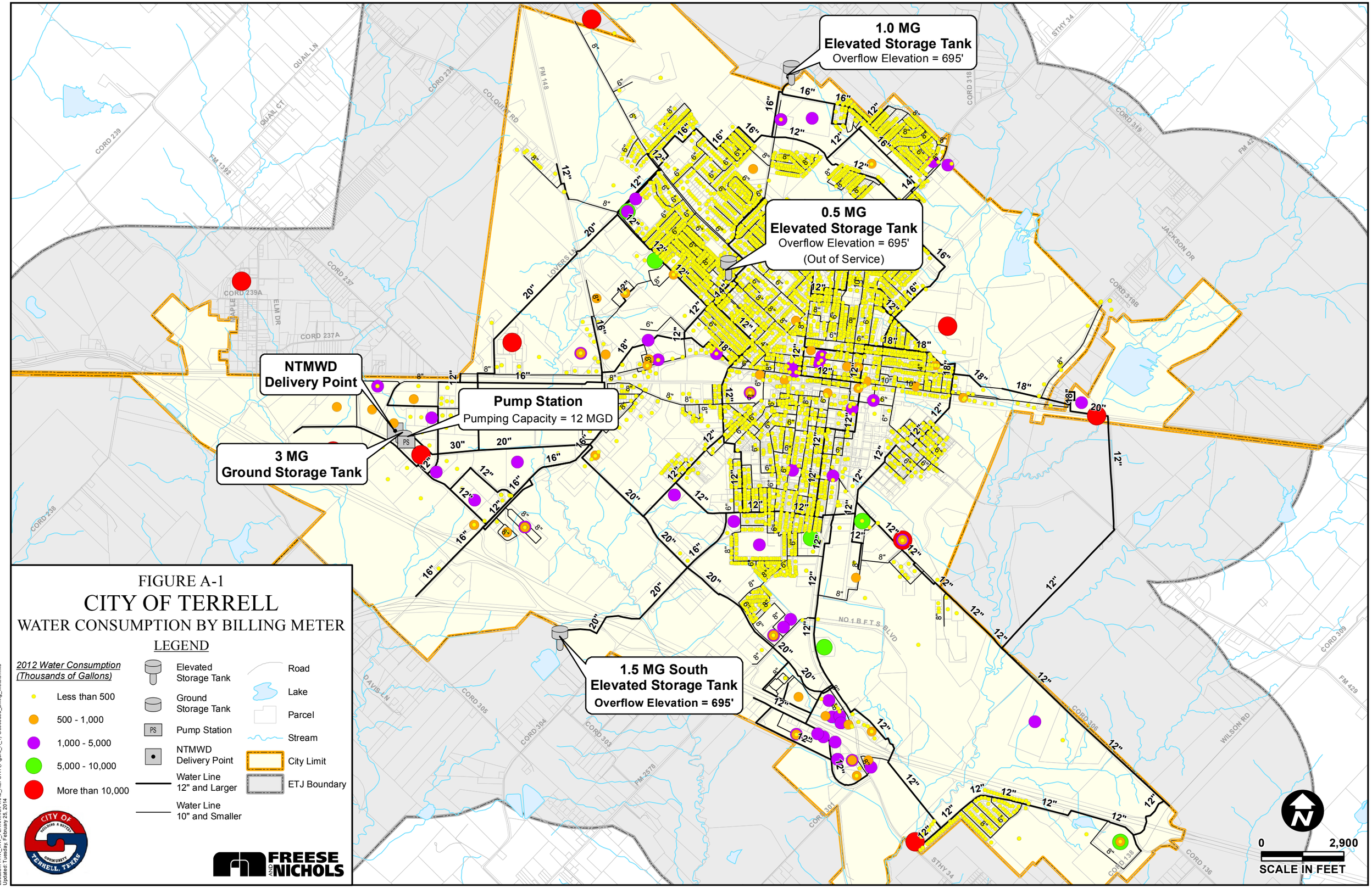

1.0 MG
Elevated Storage Tank
Overflow Elevation = 695'
0.5 MG
Elevated Storage Tank
Overflow Elevation = 695'
(Out of Service)
NTMWD
Delivery Point
Pump Station
Pumping Capacity = 12 MGD
3 MG
Ground Storage Tank
1.5 MG South
Elevated Storage Tank
Overflow Elevation = 695'
FIGURE A-1
CITY OF TERRELL
WATER CONSUMPTION BY BILLING METER
LEGEND
2012 Water Consumption
(Thousands of Gallons)
Less than 500
500 - 1,000
1,000 - 5,000
5,000 - 10,000
More than 10,000
Elevated Storage Tank
Ground Storage Tank
Pump Station
NTMWD Delivery Point
Water Line 12" and Larger
Water Line 10" and Smaller
Road
Lake
Parcel
Stream
City Limit
ETJ Boundary
CITY OF TERRELL, TEXAS
FREESE AND NICHOLS
0
2,900
SCALE IN FEET
Created By: Freese and Nichols, Inc.
Job No.: TEW10000
Location: W:\TEW10000_PLANNING\FINAL_REPORT\Figure_A_1-Geocoded_Billing_Meters.mxd
Updated: Tuesday, February 25, 2014

Figure A-2 - Pressure Recording Results

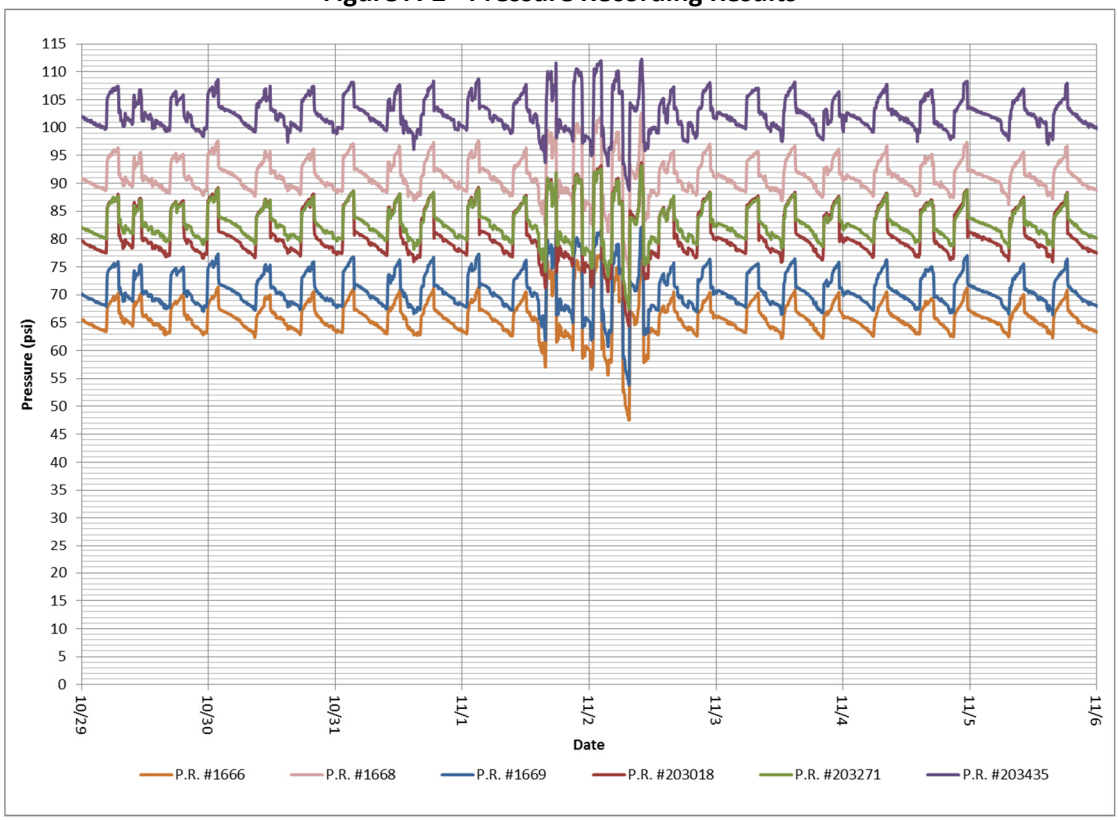
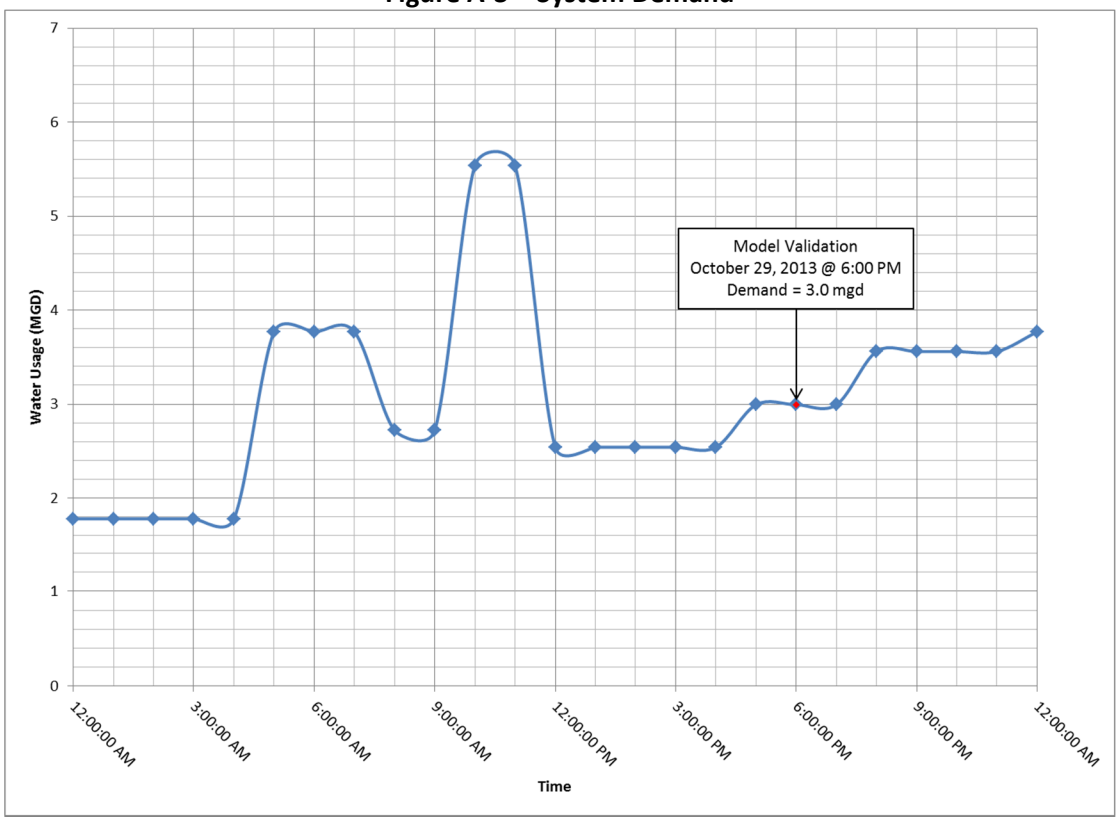
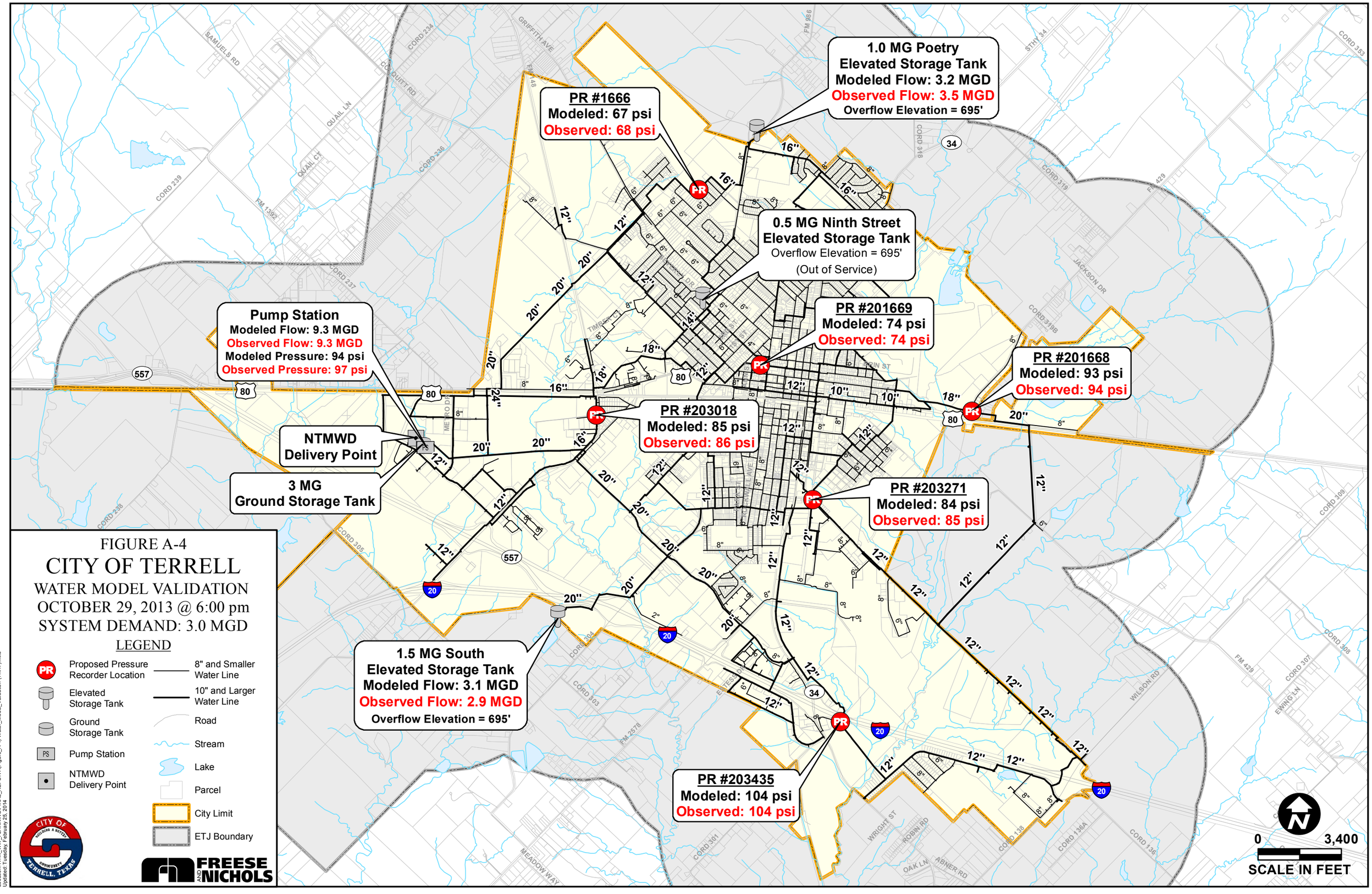


Figure A-3 – System Demand




1.0 MG Poetry
Elevated Storage Tank
Modeled Flow: 3.2 MGD
Observed Flow: 3.5 MGD
Overflow Elevation = 695'
PR #1666
Modeled: 67 psi
Observed: 68 psi
0.5 MG Ninth Street
Elevated Storage Tank
Overflow Elevation = 695'
(Out of Service)
PR #201669
Modeled: 74 psi
Observed: 74 psi
PR #201668
Modeled: 93 psi
Observed: 94 psi
Pump Station
Modeled Flow: 9.3 MGD
Observed Flow: 9.3 MGD
Modeled Pressure: 94 psi
Observed Pressure: 97 psi
PR #203018
Modeled: 85 psi
Observed: 86 psi
NTMWD
Delivery Point
3 MG
Ground Storage Tank
PR #203271
Modeled: 84 psi
Observed: 85 psi
1.5 MG South
Elevated Storage Tank
Modeled Flow: 3.1 MGD
Observed Flow: 2.9 MGD
Overflow Elevation = 695'
PR #203435
Modeled: 104 psi
Observed: 104 psi
FIGURE A-4
CITY OF TERRELL
WATER MODEL VALIDATION
OCTOBER 29, 2013 @ 6:00 pm
SYSTEM DEMAND: 3.0 MGD
LEGEND
Proposed Pressure Recorder Location
Elevated Storage Tank
Ground Storage Tank
Pump Station
NTMWD Delivery Point
8" and Smaller Water Line
10" and Larger Water Line
Road
Stream
Lake
Parcel
City Limit
ETJ Boundary
CITY OF TERRELL, TEXAS
FREESE AND NICHOLS
0
3,400
SCALE IN FEET
Created By Freese and Nichols, Inc.
Job No.: TER07335
User Name: Tony.Wright
Updated: Tuesday, February 25, 2014

Appendix B
Detailed Demand and Flow Projections

Table B-1
Projected Water Service Populations

Projected Water Service Populations							
Year	Fairfield[1]	Whitt Ranch[1]	Las Lomas[1]	RIO[1]	Terrell[2]	Total	Employment
2013	-	-	-	-	16,413	**16,413**	**13,068**
2014	-	-	-	-	16,610	**16,610**	**13,340**
2015	-	-	-	-	16,809	**16,809**	**13,618**
2016	-	318	-	-	17,011	**17,329**	**13,902**
2017	-	636	225	-	17,215	**18,076**	**14,192**
2018	-	954	675	-	17,422	**19,051**	**14,488**
2019	-	1,275	1,350	-	17,631	**20,256**	**14,790**
2020	300	1,275	2,025	462	17,842	**21,904**	**15,098**
2021	750	1,569	2,775	924	18,056	**24,074**	**15,413**
2022	1,350	1,863	3,525	1,386	18,273	**26,397**	**15,734**
2023	2,100	2,160	4,275	1,848	18,492	**28,875**	**16,068**
2024	3,000	2,484	5,025	2,310	18,714	**31,533**	**16,223**
2025	3,900	2,808	5,775	2,772	18,939	**34,194**	**16,379**
2026	4,800	3,132	6,525	3,234	19,166	**36,857**	**16,537**
2027	5,700	3,456	7,233	3,696	19,396	**39,481**	**16,696**
2028	6,600	3,780	7,683	4,158	19,629	**41,850**	**16,857**
2029	7,500	4,104	8,133	4,620	19,864	**44,221**	**17,019**
2030	8,400	4,428	8,733	5,082	20,103	**46,746**	**17,183**
2031	9,300	4,752	9,333	5,544	20,344	**49,273**	**17,348**
2032	10,200	5,076	9,933	5,544	20,588	**51,341**	**17,515**
2033	11,100	5,400	10,533	5,544	20,835	**53,412**	**17,684**
2034	12,000	5,400	11,133	5,544	21,085	**55,162**	**17,854**
2035	12,900	5,400	11,733	5,544	21,338	**56,915**	**18,023**

[1]Populations are based on information received from Fairfield, Las Lomas and Whitt Ranch in 2013 and assumptions made in 2010 for Rio. Projected water service populations assume that the City of Terrell is providing water service to all developments except the portion of Las Lomas south of IH-20. A small portion of Whitt Ranch is inside the city limits and is included in Planning Area 1.

[2]Populations for 2014-2035 are based on 1.2% growth rate.

Projected Water Demands							
Year	Population	Employment	Retail Average Day Demand (MGD)[1]	Wholesale Average Day Demand (MGD)[2]	Total Average Day Demand (MGD)	Total Maximum Day Demand (MGD)[3]	Peak Hour Demand (MGD)[4]
2013	16,413	13,068	3.12	1.07	4.19	8.16	13.62
2018	19,051	14,488	3.58	1.12	4.71	9.19	15.43
2023	28,875	16,068	5.13	1.18	6.32	12.40	21.14
2035	56,915	18,023	9.44	1.33	10.77	21.27	36.98

[1]Average day demands are based on a residential per capita of 150 gpcd and employment per capita of 50 gped.

[2]Wholesale demands are based on approximately 1% growth per year.

[3]Maximum day demands are based on a maximum day to average day peaking factor of 1.8 for wholesale demands and 2.0 for retail demands.

[4]Retail peak hour demands are based on a peak hour to maximum day peaking factor of 1.8. Wholesale peak hour demands are based on a peak hour to maximum day peaking factor of 1.25.

Table B-2
Projected Wastewater Service Population and Flows

Projected Wastewater Service Population							
Year	Fairfield[1]	Whitt Ranch[1]	Las Lomas[1, 3]	RIO[1]	Terrell[2]	Total	Employment
2013	-	-	-	-	16,413	**16,413**	**13,068**
2014	-	-	-	-	16,610	**16,610**	**13,340**
2015	-	-	-	-	16,809	**16,809**	**13,618**
2016	-	318	-	-	17,011	**17,329**	**13,902**
2017	-	636	-	-	17,215	**17,851**	**14,192**
2018	-	954	-	-	17,422	**18,376**	**14,488**
2019	-	1,275	-	-	17,631	**18,906**	**14,790**
2020	300	1,275	-	462	17,842	**19,879**	**15,098**
2021	750	1,569	-	924	18,056	**21,299**	**15,413**
2022	1,350	1,863	6,150	1,386	18,273	**29,022**	**15,734**
2023	2,100	2,160	7,050	1,848	18,492	**31,650**	**16,068**
2024	3,000	2,484	7,950	2,310	18,714	**34,458**	**16,223**
2025	3,900	2,808	8,808	2,772	18,939	**37,227**	**16,379**
2026	4,800	3,132	9,558	3,234	19,166	**39,890**	**16,537**
2027	5,700	3,456	10,308	3,696	19,396	**42,556**	**16,696**
2028	6,600	3,780	11,208	4,158	19,629	**45,375**	**16,857**
2029	7,500	4,104	12,108	4,620	19,864	**48,196**	**17,019**
2030	8,400	4,428	13,008	5,082	20,103	**51,021**	**17,183**
2031	9,300	4,752	13,908	5,544	20,344	**53,848**	**17,348**
2032	10,200	5,076	14,808	5,544	20,588	**56,216**	**17,515**
2033	11,100	5,400	15,708	5,544	20,835	**58,587**	**17,684**
2034	12,000	5,400	16,608	5,544	21,085	**60,637**	**17,854**
2035	12,900	5,400	17,508	5,544	21,338	**62,690**	**18,023**

[1]Populations are based on information received from Fairfield, Las Lomas, and Whitt Ranch in 2013 and assumptions madein 2010 for Rio. A small portion of Whitt Ranch is inside the city limits and is included in Planning Area 1.

[2]Populations for 2014-2035 are based on 1.2% growth rate.

[3]Assumes wastewater flows are served by interim WWTP from 2015-2021.

Projected Wastewater Flows							
Average Annual Daily Flow (MGD)[1]							
Year	Fairfield	Whitt Ranch	Las Lomas	RIO	Terrell	Employment	Total
2013	0.00	0.00	0.00	0.00	2.05	0.52	2.57
2018	0.00	0.12	0.00	0.00	2.18	0.58	2.88
2023	0.26	0.27	0.88	0.23	2.31	0.64	4.60
2035	1.61	0.68	2.19	0.69	2.67	0.72	8.56

[1]Based on a residential per capita of 125 gpcd and employment per capita of 40 gped.

Peak Wet Weather Flow (MGD)[1]							
Year	Fairfield	Whitt Ranch	Las Lomas	RIO	Terrell	Employment	Total
2013	0.00	0.00	0.00	0.00	8.21	2.09	10.30
2018	0.00	0.48	0.00	0.00	8.71	2.32	11.51
2023	1.05	1.08	3.53	0.92	9.25	2.57	18.40
2035	6.45	2.70	8.75	2.77	10.67	2.88	34.23

[1]Peak wet weather flows are based on a wet weather peaking factor of 4.

Appendix C
Water System Project Cost Estimates

City of Terrell

2013 - 2018 CIP

FREESE AND NICHOLS

OPINION OF PROBABLE COST — **November 19, 2013**

Construction Project Number 1

Project Description

3 MG GST Construction and Expansion of Existing 12 MGD Pump Station to 20 MGD

Detailed Description

3 MG Ground Storage Tank and Pump Station Expansion to accommodate growing system demand by adding two 4 MGD pumps

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	NEW 3 MG GST	1	LS	$2,100,000	$2,100,000
2	Pump Station Expansion to 20 MGD	1	LS	$500,000	$500,000
		SUBTOTAL:			$2,600,000
		CONTINGENCY		20%	$520,000
		SUBTOTAL:			$3,120,000
		ENG/SURVEY		15%	$468,000
		SUBTOTAL:			$3,588,000

PROJECT TOTAL **$3,588,000**

Construction Project Number 2

Project Description

16" Water Pipeline Construction

Detailed Description

16" waterline to complete looping from the South Elevated Storage Tank to the existing 16" Waterline at FM 148

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	16" Pipe	14,400	LF	$112	$1,612,800
2	Pavement Repair	5,500	LF	$50	$275,000
3	30" Boring and Casing	1,500	LF	$525	$787,500
		SUBTOTAL:			$2,675,300
		CONTINGENCY		25%	$668,900
		SUBTOTAL:			$3,344,200
		ENG/SURVEY		15%	$501,700
		SUBTOTAL:			$3,845,900

PROJECT TOTAL **$3,845,900**

City of Terrell

2013 - 2018 CIP

FREESE AND NICHOLS

OPINION OF PROBABLE COST — **November 19, 2013**

Construction Project Number 3

Project Description

New 1.0 MG Elevated Storage Tank

Detailed Description

New 1.0 MG Elevated Storage Tank to replace existing 1.0 MG Poetry Elevated Storage Tank

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	NEW 1.0 MG EST	1	LS	$2,200,000	$2,200,000
		SUBTOTAL:			$2,200,000
		CONTINGENCY		20%	$440,000
		SUBTOTAL:			$2,640,000
		ENG/SURVEY		15%	$396,000
		SUBTOTAL:			$3,036,000

PROJECT TOTAL **$3,036,000**

Construction Project Number 4

Project Description

12" / 16" Water Pipeline Construction

Detailed Description

12" and 16" waterlines to complete looping in the northern area of the system and provide connections to the proposed Whitt Ranch Development

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	12" Pipe	3,000	LF	$84	$252,000
2	16" Pipe	2,700	LF	$112	$302,400
		SUBTOTAL:			$554,400
		CONTINGENCY		20%	$110,900
		SUBTOTAL:			$665,300
		ENG/SURVEY		15%	$99,800
		SUBTOTAL:			$765,100

PROJECT TOTAL **$765,100**

City of Terrell

2013 - 2018 CIP

FREESE AND NICHOLS

OPINION OF PROBABLE COST — **November 19, 2013**

Construction Project Number 5

Project Description

24" Water Pipeline Construction

Detailed Description

24" waterline to provide additional transmission capacity from the pump station and service to the proposed Las Lomas and Rio developments

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	24" Pipe	5,300	LF	$168	$890,400
2	Pavement Repair	400	LF	$50	$20,000
3	38" Boring and Casing	100	LF	$665	$66,500
		SUBTOTAL:			$976,900
		CONTINGENCY		20%	$195,400
		SUBTOTAL:			$1,172,300
		ENG/SURVEY		15%	$175,900
		SUBTOTAL:			$1,348,200

PROJECT TOTAL **$1,348,200**

Construction Project Number 6

Project Description

12" Water Pipeline Construction

Detailed Description

12" waterline to complete looping in the southern area of the system south of Interstate Highway 20 and 12" Water Pipeline along FM 986 in the northern area of the system to connect the existing 12" waterline with the existing 16" waterline.

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	12" Pipe	3,400	LF	$84	$285,600
2	Pavement Repair	2,200	LF	$50	$110,000
		SUBTOTAL:			$395,600
		CONTINGENCY		20%	$79,120
		SUBTOTAL:			$474,720
		ENG/SURVEY		15%	$71,210
		SUBTOTAL:			$545,930

PROJECT TOTAL **$545,930**

5-YEAR CIP TOTAL **$13,129,130**

City of Terrell

2019 - 2023 CIP

FREESE AND NICHOLS

OPINION OF PROBABLE COST — **November 19, 2013**

Construction Project Number 7

Project Description

16" Water Pipeline Construction

Detailed Description

16" waterline Along State Highway 205 to connect the existing 16" waterline to the existing 20" waterline

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	16" Pipe	2,600	LF	$112	$291,200
2	Pavement Repair	2,600	LF	$50	$130,000
3	30" Boring and Casing	200	LF	$525.00	105,000
		SUBTOTAL:			$526,200
		CONTINGENCY		20%	$105,300
		SUBTOTAL:			$631,500
		ENG/SURVEY		15%	$94,800
		SUBTOTAL:			$726,300
PROJECT TOTAL					**$726,300**

Construction Project Number 8

Project Description

16" / 20" Water Pipeline Construction

Detailed Description

16" waterline along United States Highway 80 to serve the Rio development and 20" waterline to connect to the 24" waterline in project 4 to provide service to the Rio Development

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	16" Pipe	3,800	LF	$112	$425,600
2	Pavement Repair	3,800	LF	$50	$190,000
3	20" Pipe	2,700	LF	$140	$378,000
4	30" Boring and Casing	200	LF	$525	$105,000
		SUBTOTAL:			$1,098,600
		CONTINGENCY		20%	$219,800
		SUBTOTAL:			$1,318,400
		ENG/SURVEY		15%	$197,800
		SUBTOTAL:			$1,516,200
PROJECT TOTAL					**$1,516,200**

City of Terrell

2019 - 2023 CIP

FREESE AND NICHOLS

OPINION OF PROBABLE COST — **November 19, 2013**

Construction Project Number 9

Project Description

16" Water Pipeline Construction

Detailed Description

16" waterline to extend looping to the Whitt Ranch development from Project 3

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	16" Pipe	6,400	LF	$112	$716,800
2	Pavement Repair	400	LF	$50	$20,000
		SUBTOTAL:			$736,800
		CONTINGENCY		20%	$147,400
		SUBTOTAL:			$884,200
		ENG/SURVEY		15%	$132,700
		SUBTOTAL:			$1,016,900

PROJECT TOTAL **$1,016,900**

Construction Project Number 10

Project Description

20" Water Pipeline Construction

Detailed Description

20" waterline to complete looping along Interstate Highway 20 and extend additional service to the Fairfields development

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	20" Pipe	15,000	LF	$140	$2,100,000
2	Pavement Repair	1,600	LF	$50	$80,000
3	34" Boring and Casing	2,400	LF	$595	$1,428,000
		SUBTOTAL:			$3,608,000
		CONTINGENCY		20%	$721,600
		SUBTOTAL:			$4,329,600
		ENG/SURVEY		15%	$649,500
		SUBTOTAL:			$4,979,100

PROJECT TOTAL **$4,979,100**

City of Terrell

2019 - 2023 CIP

OPINION OF PROBABLE COST — **November 19, 2013**

Construction Project Number 11

Project Description

16" / 20" Water Pipeline Construction

Detailed Description

16" and 20" waterlines along Interstate Highway 20 to complete looping in the southern area of the system

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	16" Pipe	13,000	LF	$112	$1,456,000
2	Pavement Repair	7,000	LF	$50	$350,000
3	30" Boring and Casing	1,200	LF	$525	$630,000
4	20" Pipe	8,500	LF	$140	$1,190,000
5	34" Boring and Casing	600	LF	$595	$357,000
		SUBTOTAL:			$3,983,000
		CONTINGENCY		20%	$796,600
		SUBTOTAL:			$4,779,600
		ENG/SURVEY		15%	$717,000
		SUBTOTAL:			$5,496,600

PROJECT TOTAL **$5,496,600**

10-YEAR CIP TOTAL **$13,735,100**

City of Terrell

2024 - 2035 CIP

FREESE AND NICHOLS

OPINION OF PROBABLE COST — **November 19, 2013**

Construction Project Number 12

Project Description

1.5MG Elevated Storage Tank and 18" Water Pipeline Construction

Detailed Description

1.5 MG Elevated Storage Tank to replace the decommissioned Ninth Street Elevated Storage Tank and provide service to the downtown area and an 18" waterline to accommodate the new 1.5 MG Elevated Storage Tank

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	NEW 1.5 MG EST	1	LS	$3,300,000	$3,300,000
2	18" Pipe	3,400	LF	$126	$428,400
3	Pavement Repair	2,900	LF	$50	$145,000
		SUBTOTAL:			$3,873,400
		CONTINGENCY		20%	$774,700
		SUBTOTAL:			$4,648,100
		ENG/SURVEY		15%	$697,300
		SUBTOTAL:			$5,345,400
PROJECT TOTAL					**$5,345,400**

Construction Project Number 13

Project Description

16" / 20" Waterline Construction

Detailed Description

16" and 20" waterlines to complete looping to the Whitt Ranch development

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	16" Pipe	11,900	LF	$112	$1,332,800
2	30" Boring and Casing	800	LF	$525	$420,000
3	20" Pipe	9,400	LF	$140	$1,316,000
4	34" Boring and Casing	400	LF	$595	$238,000
		SUBTOTAL:			$3,306,800
		CONTINGENCY		20%	$661,400
		SUBTOTAL:			$3,968,200
		ENG/SURVEY		15%	$595,300
		SUBTOTAL:			$4,563,500
PROJECT TOTAL					**$4,563,500**

City of Terrell

2024 - 2035 CIP

FREESE AND NICHOLS

OPINION OF PROBABLE COST — **November 19, 2013**

Construction Project Number 14

Project Description

Construction of 30", 24", and 20" Water Pipelines, a 12 MGD Pump Station, and a 3 MG Ground Storage Tank

Detailed Description

30" waterline to provide service from a future North Texas Municipal Water District connection North of the City and service to the eastern area of the city from the new pump station and ground storage tank, 24" waterlines to connect the 30" waterline to the existing system east of downtown and east of the city, a 20" waterline to connect to the pipeline in 15a to serve the Fairfields development, and a new 12 MGD Pump Station and 3 MG Ground Storage Tank to provide service from the new NTMWD service point

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	30" Pipe	30,600	LF	$210	$6,426,000
2	48" Boring and Casing	3,300	LF	$840	$2,772,000
3	24" Pipe	11,500	LF	$168	$1,932,000
4	38" Boring and Casing	1,000	LF	$665	$665,000
5	NEW 3 MG GST	1	LS	$2,100,000	$2,100,000
6	NEW 12 MGD Pump Station	1	LS	$4,000,000	$4,000,000
		SUBTOTAL:			$17,895,000
		CONTINGENCY		20%	$3,579,000
		SUBTOTAL:			$21,474,000
		ENG/SURVEY		15%	$3,221,100
		SUBTOTAL:			$24,695,100
PROJECT TOTAL					**$24,695,100**

Construction Project Number 15A

Project Description

20" Water Pipeline Construction

Detailed Description

20" waterline to extend service to the Fairfields development south of United States Highway 80 from project 14

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	20" Pipe	4,600	LF	$140	$644,000
2	34" Boring and Casing	700	LF	$595	$416,500
		SUBTOTAL:			$1,060,500
		CONTINGENCY		20%	$212,100
		SUBTOTAL:			$1,272,600
		ENG/SURVEY		15%	$190,900
		SUBTOTAL:			$1,463,500
PROJECT TOTAL					**$1,463,500**

City of Terrell

2024 - 2035 CIP

FREESE AND NICHOLS

OPINION OF PROBABLE COST — **November 19, 2013**

Construction Project Number 15B

Project Description

20" Water Pipeline Construction

Detailed Description

20" waterline to extend service to the Fairfields development south of United States Highway 80 from project 15A, completing looping at Interstate Highway 20

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	20" Pipe	15,300	LF	$140	$2,142,000
2	34" Boring and Casing	1,600	LF	$595	$952,000
		SUBTOTAL:			$3,094,000
		CONTINGENCY		20%	$618,800
		SUBTOTAL:			$3,712,800
		ENG/SURVEY		15%	$557,000
		SUBTOTAL:			$4,269,800

PROJECT TOTAL **$4,269,800**

Construction Project Number 16

Project Description

12" Water Pipeline Construction

Detailed Description

12" waterline to complete looping along United States Highway 80 from project 8 to the existing 12" line

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	12" Pipe	7,700	LF	$84	$646,800
2	Pavement Repair	7,000	LF	$50	$350,000
3	20" Boring and Casing	700	LF	$350.00	245,000
		SUBTOTAL:			$1,241,800
		CONTINGENCY		20%	$248,360
		SUBTOTAL:			$1,490,160
		ENG/SURVEY		12%	$178,820
		SUBTOTAL:			$1,668,980

PROJECT TOTAL **$1,668,980**

2035 CIP TOTAL **$42,006,280**

Appendix D
Roadway Impact Fee Definitions

Average Trip Length - the average actual travel distance between two points. The average trip length by specific land use varies.

Diverted Trip - similar to pass-by trip, but a diversion is made from the regular route to make an interim stop.

Impact Fee - a charge or assessment imposed by a city against new development to generate revenue for funding or recouping roadway improvements necessitated and attributable to new development.

Maximum Fee Per Service Unit - the highest impact fee that may be collected by the city per vehicle-mile of supply. Calculated by dividing the costs of the capital improvements by the total number of vehicle-miles of demand expected in the 10-year planning period.

Pass-by Trip - a trip made as an intermediate stop on the way from an origin to a primary trip destination. For example, a stop at a convenience store on the way to office from home.

PM Peak Hour - the hour when the highest volume of traffic typically occurs. Data collection (September 2001) revealed the peak hour of travel to be between 5:00 and 6:00 pm for Forney.

PM Peak Hour Traffic Counts - the number of vehicles passing a certain point during the peak hour of travel. Traffic counts are conducted during the PM peak hour because the greatest demand for roadway capacity occurs during this hour.

Primary Trip - a trip made for the specific purpose of reaching a destination; for example, from home to office.

Roadway Demand - the demand placed on the roadway network as a result of development. Determined by multiplying the trip generation of a specific land use by the average trip length.

Roadway Supply (Capacity) - the number of service units provided by a segment of roadway over a period of time. Determined by multiplying the lane capacity by the roadway length.

Service Area - the area within the city boundaries to be served by capital improvements. Criteria for developing the service area structure include: 1) restricted to six-mile limit by Chapter 395 of the Texas Local Government Codes to ensure proximity of roadway improvements to development, 2) conforms to census or forecast model boundaries, 3) projects in CIP as boundaries, 4) effort to match roadway supply with projected demand, or 5) city limit boundaries.

Service Unit - a measure of use or generation attributable to new development for roadway improvements. Also used to measure supply provided by existing and proposed roadway improvements.

Trip - a single, one-direction vehicle movement from an origin to a destination.
Trip Generation - the total trip ends for a land use over a given period of time or the total of all trips entering and exiting a site during that designated time. Used in the development of 10-year

traffic demand projections and the equivalency table for Terrell. Based primarily on data prepared by the Institute of Transportation Engineers (ITE).

Vehicle - for impact fee purposes, any motorized appurtenance that carries passengers and/or goods on the roadway system during peak periods of travel.

Vehicle-mile - a unit used to express both supply and demand provided by, and placed on, the roadway system. A combination of a number of vehicles traveling during a given time period and the distance in which these vehicles travel in miles.

Appendix E
Existing Roadway Capital Improvements Analysis

Appendix E
Existing Capital Improvements Analysis

Definitions

LANES	The total number of lanes available for travel in both directions.
TYPE	The type of roadway (used in determining capacity): DA = divided arterial UA = undivided arterial DC = divided collector UC = undivided collector
% IN SERVICE AREA	If the roadway is located on the boundary of the service area (with the city limits running along the centerline of the roadway), then half of the roadway is inventoried in the service area and the other half is not. This value is either 50% or 100%.
PK-HR VOLUME	The existing volume of cars on the roadway segment traveling during the afternoon (P.M.) peak hour of travel. A and B indicate the two directions of travel. Direction A is a northbound or eastbound and direction B is southbound or westbound. If only one half of the roadway is located within the service area (see % in service area), the opposing direction will have no volume in the service area.
VEH-MI SUPPLY TOTAL	The number of total service units (vehicle-miles) supplied within the service area, based on the length and established capacity of the roadway type.
VEH-MI TOTAL DEMAND PK-HR	The total service unit (vehicle-mile) demand created by existing traffic on the roadway segment in the afternoon peak hour.
EXCESS CAPACITY PK-HR VEH-MI	The number of service units supplied but unused by existing traffic in the afternoon peak hour.
EXISTING DEFICIENCIES PK-HR VEH-MI	The number of service units of demand in excess of the service units supplied.

NOTE: Figures presented represent segment totals. Each direction is calculated separately and totaled. It is possible to have excess capacity in one direction and an existing deficiency in the other.

2013 Terrell Roadway Impact Fee Study Update
Existing Capital Improvements Analysis

Serv Area	Shared Svc Area	Roadway	From	To	Length (mi)	No. of Lanes	Lane Type	Lane Capacity	Pct. in Serv. Area	Peak Hour Volume A	B	Total	VMT Supply Pk Hr Total	VMT Demand Pk Hr Total	Total VMT Excess Capacity	Total VMT Deficiency
West		Metro Drive	US 80	Apache Trail	0.64	4	UC	340	100%	63	95	158	870	101	769	0
West		Rosehill Road	City Limits	Lincoln Lane	0.84	2	UC	340	100%	30	29	59	571	50	521	0
West		Apache Trail	FM 148	Metrocrest Way	1.07	4	UC	340	100%	128	105	233	1455	249	1206	0
West		Metrocrest Way	US 80	Apache Trail	0.72	4	UC	340	100%	228	342	569	985	412	573	0
West		FM 148	Talty Road	US 80	0.36	4	DA	470	100%	474	717	1191	677	429	248	0
West		FM 148	IH-20 WB Frontage Rd.	Talty Road	1.11	4	DA	470	100%	495	516	1011	2087	1122	965	0
West		SH 205	US 80	Colquitt Road	1.19	2	UA	425	100%	582	498	1080	1012	1285	0	274
West		SH 205	Colquitt Road	City Limits	1.32	2	UA	425	100%	316	326	643	1122	848	274	0
West		Lovers Lane	Griffith Avenue	Colquitt Road	0.39	2	UC	340	100%	79	66	145	267	57	210	0
West		Colquitt Road	SH 205	Lovers Lane	0.35	2	UC	340	100%	116	161	277	235	95	139	0
West		Colquitt Road	Lovers Lane	Charles Road	0.39	2	UC	340	100%	88	90	178	266	69	196	0
West		Colquitt Road	Charles Road	9th Street	0.47	2	UC	340	100%	164	170	334	320	157	163	0
West		Griffith Avenue	City Limits	Lovers Lane	1.13	2	UC	340	100%	111	90	201	768	227	541	0
West		Griffith Avenue	Lovers Lane	9th Street	0.86	2	UC	340	100%	144	177	321	585	276	309	0
West		Griffith Avenue	9th Street	N. Rockwall Rd.	0.53	2	UC	340	100%	94	115	209	360	111	249	0
West	East	FM 986	State Street	Town Drive North	0.69	2	UA	425	50%	0	215	215	293	148	145	0
West	East	State Street	FM 986	N. Rockwall Rd.	0.47	2	UA	425	50%	0	238	238	200	112	88	0
West		US 80	SH 205	N. Rockwall Rd.	1.32	4	DA	470	100%	1344	1110	2454	2482	3239	0	758
West		9th Street	Colquitt Road	Griffith Ave	0.39	2	UC	340	100%	202	283	485	268	191	77	0
West		9th Street	US 80	Colquitt Road	0.41	2	UC	340	100%	302	363	665	279	273	15	9
West		Bradshaw	Mineral Wells	US 80	0.87	2	UA	425	100%	68	85	153	740	133	606	0
West		West End Street	FM 148	Mineral Wells Street	1.03	2	UC	340	100%	73	69	142	700	146	554	0
West		Ann Street	US 80	Emily Street	0.22	2	UC	340	100%	11	19	30	150	7	143	0
West	East	FM 2578	IH-20 WB Frontage Rd.	Windsor Avenue	0.18	2	UA	425	50%	0	133	133	77	24	53	0
West	East	Windsor Avenue	S. Rockwall Road	FM 2578	0.37	2	UC	340	50%	0	145	145	126	54	72	0
West	East	S. Rockwall Road	Rosehill Road	US 80	0.91	4	UC	340	50%	0	177	177	618	161	457	0
West	East	N. Rockwall Rd (FM 987)	US 80	State Street	0.87	4	UA	425	50%	0	244	244	735	211	524	0
Sub-Total					*19.10*								*18,246*	*10,188*	*9,099*	*1,041*
East	West	FM 2578	IH-20 WB Frontage Rd.	Windsor Avenue	0.18	2	UA	425	50%	84	0	84	77	15	61	0
East		FM 2578	Windsor Avenue	SH 34	0.31	2	UA	425	100%	151	125	275	264	85	178	0
East		No 1 British Flying Trainin	SH 34	Parking Lot	0.42	2	UC	340	100%	0	1	1	143	0	142	0
East		SH 34	IH-20 WB Frontage Rd.	Airport Road	1.66	4	DA	470	100%	476	728	1204	3121	1999	1122	0
East		Virginia Street	Airport Road	US 80	0.72	4	UA	425	100%	731	515	1246	1227	900	328	0
East		Virginia Street	US 80	Frances Street	0.98	2	UA	425	100%	30	259	289	833	283	550	0
East		Frances Street	Virginia Street	City Limits	0.68	2	UA	425	100%	236	162	398	578	271	307	0
East		SH 34	Airport Road	City Limits	2.23	4	DA	470	100%	186	99	285	4192	636	3557	0
East	West	S. Rockwall Road	Rosehill Road	US 80	0.91	4	UC	340	50%	173	0	173	618	158	460	0
East	West	N. Rockwall Rd (FM 987)	US 80	State Street	0.87	4	UA	425	50%	319	0	319	735	276	460	0
East	West	State Street	N, Rockwall Road	FM 986	0.47	2	UA	425	50%	289	0	289	200	136	64	0
East	West	FM 986	State Street	Town North Drive	0.69	2	UA	425	50%	284	0	284	293	196	97	0
East		Airport Road	SH 34	Industrial Blvd.	0.34	4	UC	340	100%	292	106	398	462	135	327	0
East		Rochester Street	Virginia Street	Gardner Street	0.30	2	UC	340	100%	24	20	44	204	13	191	0
East		College Mound Road	Gardner Street	Vine Street	0.38	2	UC	340	100%	37	55	92	256	35	221	0
East		FM 429	US 80	City Limits	0.77	2	UA	425	100%	218	116	334	658	259	399	0
East		US 80	N, Rockwall Road	Virginia Street	0.33	4	DA	470	100%	765	1105	1870	613	610	57	54
East		US 80	Virginia Street	City Limits	2.11	4	UA	425	100%	860	551	1411	3587	2977	631	21
East		Dellis Street	US 80	Brin Street	0.25	4	UC	340	100%	98	147	244	340	61	279	0
East		Town North Drive	FM 986	Brookwood Drive	0.81	4	UC	340	100%	88	111	200	1102	162	940	0
East		Town North Drive	Brookwood Drive	SH 34	0.33	2	UC	340	100%	122	183	304	222	100	123	0
East	West	Windsor Avenue	S. Rockwall Road	FM 2578	0.37	2	UC	340	50%	143	0	143	126	53	73	0
East		Windsor Avenue	Home Depot	SH 34	0.23	4	DC	375	100%	77	64	141	347	33	314	0
Sub-Total					*16.33*								*20,197*	*9,390*	*10,882*	*75*
Total					**35.43**								**38,443**	**19,578**	**19,980**	**1,116**

DA- Divided arterial
UA- Undivided arterial
SA- Special arterial with dual-left turn lane
DC- Divided collector
UC- Undivided collector

Appendix F
Projected Vehicle-Miles of New Demand

2013 Terrell Impact Fee Study
Vehicle-Mile Trip Generation by Service Area
Based on Land Use Assumptions by FNI; November 11, 2013

Estimated Residential Growth Vehicle-Mile Trip Generation

Service Area	Added Dwelling Units	Vehicle-Miles per DU	Total Vehicle-Miles
West	600	2.88	1728
East	335	2.88	964

SU Equivalency	
SF Res	2.88
Basic Employ	3.70
Service Employ	5.15
Retail Employ	5.54

Estimated Basic Employment Growth Vehicle-Mile Generation

Service Area	Added Employees	Square Feet per emp.	Total Square Feet	Vehicle-Miles Per 1000/SF	Total Vehicle-Miles
West	567	1500	851,091	3.70	3,149
East	545	1500	817,715	3.70	3,026

Estimated Service Employment Growth Vehicle-Mile Generation

Service Area	Added Employees	Square Feet per emp.	Total Square Feet	Vehicle-Miles Per 1000/SF	Total Vehicle-Miles
West	1264	500	631,916	5.15	3,254
East	421	500	210,639	5.15	1,085

Estimated Retail Employment Growth Vehicle-Mile Generation

Service Area	Added Employees	Square Feet per emp.	Total Square Feet	Vehicle-Miles Per 1000/SF	Total Vehicle-Miles
West	152	1000	151,766	5.54	841
East	51	1000	50,589	5.54	280

Vehicle-mile Generation Summary

Service Area	Residential Growth Vehicle-Miles	Basic Growth Vehicle-Miles	Service Growth Vehicle-Miles	Retail Growth Vehicle-Miles	Total Growth Vehicle-Miles
West	1728	3149	3254	841	**8972**
East	964	3026	1085	280	**5355**
Totals	2,692	6,175	4,339	1,121	**14,327**

Appendix G
Roadway Impact Fee Project Cost Estimates

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
FUTURE LAS LOMAS PKWY (Spur 557 to southern City Limits)

Roadway Description:	Quantity	Unit
Roadway Length	936	LF
Right-of-Way Width	120	FT
Roadway Width (BOC - BOC) (Divided Section)	74	FT
Existing Right-of-Way Estimate	-	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13 Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$50,000.00	$50,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	4,200	CY	$12.00	$50,400
4	8" Reinforced Concrete Pavement	7,700	SY	$38.00	$292,600
5	8" Lime or Cement Stabilized Subgrade	8,200	SY	$8.00	$65,600
6	Lime or Cement for Stabilization (30lbs/SY)	200	TON	$130.00	$26,000
7	6" Monolithic Curb	3,800	LF	$5.00	$19,000
8	Sidewalk and Ramps	7,490	SF	$4.20	$31,458
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	936	LF	$120.00	$112,320
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	3,960	SY	$1.50	$5,940
12	Pavement Markings & Signage	936	LF	$5.00	$4,680
13	Traffic Control	936	LF	$15.00	$14,040
14	Erosion Control	1	LS	$10,000.00	$10,000
15	Landscaping	1	LS	$7,500.00	$7,500
16	Lighting (Foundations, Poles, Conduit, Conductors)	10	EA	$5,500.00	$55,000
	Subtotal Construction Cost Estimate				**$769,600**
	Contingency	**20%**			**$154,000**
	Total Construction Cost Estimate				**$923,600**
	Right-of-Way Cost	112,320	SF	$1.00	**$112,320.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$92,400.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$18,500.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*1.0%*			**$9,300.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$1,156,120.00**
	***Total Capital Cost Per Foot**				**$1,240.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$1,549,201.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
FUTURE LAS LOMAS PKWY (Spur 557 to Apache Trail)

Roadway Description:	Quantity	Unit
Roadway Length	1,312	LF
Right-of-Way Width	60	FT
Roadway Width (BOC - BOC) (Divided Section)	37	FT
Existing Right-of-Way Estimate	-	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13 Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$40,000.00	$40,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	3,000	CY	$12.00	$36,000
4	8" Reinforced Concrete Pavement	5,400	SY	$38.00	$205,200
5	8" Lime or Cement Stabilized Subgrade	6,000	SY	$8.00	$48,000
6	Lime or Cement for Stabilization (30lbs/SY)	100	TON	$130.00	$13,000
7	6" Monolithic Curb	5,300	LF	$5.00	$26,500
8	Sidewalk and Ramps	10,500	SF	$4.20	$44,100
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	1,312	LF	$75.00	$98,400
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	2,190	SY	$1.50	$3,285
12	Pavement Markings & Signage	1,312	LF	$5.00	$6,560
13	Traffic Control	1,312	LF	$15.00	$19,680
14	Erosion Control	1	LS	$12,000.00	$12,000
15	Landscaping	1	LS	$10,000.00	$10,000
16	Lighting (Foundations, Poles, Conduit, Conductors)	10	EA	$5,500.00	$55,000
	Subtotal Construction Cost Estimate				**$642,800**
	Contingency	**20%**			**$128,600**
	Total Construction Cost Estimate				**$771,400**
	Right-of-Way Cost	78,720	SF	$1.00	**$78,720.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$77,200.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$15,500.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*1.0%*			**$7,800.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$950,620.00**
	***Total Capital Cost Per Foot**				**$730.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$1,273,831.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
FUTURE LAS LOMAS PKWY (Apache Trail to US 80)

Roadway Description:	Quantity	Unit
Roadway Length	1,926	LF
Right-of-Way Width	120	FT
Roadway Width (BOC - BOC) (Divided Section)	74	FT
Existing Right-of-Way Estimate	-	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13 Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$160,000.00	$160,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	8,600	CY	$12.00	$103,200
4	8" Reinforced Concrete Pavement	15,900	SY	$38.00	$604,200
5	8" Lime or Cement Stabilized Subgrade	16,700	SY	$8.00	$133,600
6	Lime or Cement for Stabilization (30lbs/SY)	300	TON	$130.00	$39,000
7	6" Monolithic Curb	7,800	LF	$5.00	$39,000
8	Sidewalk and Ramps	15,410	SF	$4.20	$64,722
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	1,926	LF	$120.00	$231,120
10	Traffic Signals	1	LS	$150,000.00	$150,000
11	Hydromulching	8,140	SY	$1.50	$12,210
12	Pavement Markings & Signage	1,926	LF	$5.00	$9,630
13	Traffic Control	1,926	LF	$15.00	$28,890
14	Erosion Control	1	LS	$15,000.00	$15,000
15	Landscaping	1	LS	$15,000.00	$15,000
16	Lighting (Foundations, Poles, Conduit, Conductors)	20	EA	$5,500.00	$110,000
17	Railroad Crossing (track improvements, preemption, gates/bells)	1	EA	$1,000,000.00	$1,000,000
	Subtotal Construction Cost Estimate				**$2,740,600**
	Contingency	**20%**			**$548,200**
	Total Construction Cost Estimate				**$3,288,800**
	Right-of-Way Cost	231,120	SF	$1.00	**$231,120.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$328,900.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$65,800.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*1.0%*			**$32,900.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$3,947,520.00**
	***Total Capital Cost Per Foot**				**$2,050.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$5,289,677.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
WINDSOR AVENUE (Rockwall to FM 2578)

Roadway Description:	Quantity	Unit
Roadway Length	1,972	LF
Right-of-Way Width	40	FT
Roadway Width (BOC - BOC) (Divided Section)	23	FT
Existing Right-of-Way Estimate	0	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13 Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$40,000.00	$40,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	5,843	CY	$12.00	$70,116
4	8" Reinforced Concrete Pavement	5,040	SY	$38.00	$191,503
5	8" Lime or Cement Stabilized Subgrade	5,916	SY	$8.00	$47,328
6	Lime or Cement for Stabilization (30lbs/SY)	100	TON	$130.00	$13,000
7	6" Monolithic Curb	4,000	LF	$5.00	$20,000
8	Sidewalk and Ramps	7,890	SF	$4.20	$33,138
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	986	LF	$120.00	$118,320
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	1,980	SY	$1.50	$2,970
12	Pavement Markings & Signage	986	LF	$5.00	$4,930
13	Traffic Control	1,972	LF	$15.00	$29,580
14	Erosion Control	1	LS	$12,000.00	$12,000
15	Landscaping	1	LS	$25,000.00	$25,000
16	Lighting (Foundations, Poles, Conduit, Conductors)	10	EA	$5,500.00	$55,000
	Subtotal Construction Cost Estimate				**$687,900**
	Contingency	**20%**			**$137,600**
	Total Construction Cost Estimate				**$825,500**
	Right-of-Way Cost	78,880	SF	$1.00	**$78,880.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$82,600.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$16,600.00**
	Geotechnical Services (0.5%-1% of Construction Cost)	*0.5%*			**$4,200.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$1,007,780.00**
	***Total Capital Cost Per Foot**				**$520.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$1,350,426.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
WINDSOR AVENUE (Rosehill to Rockwall)

Roadway Description:	Quantity	Unit
Roadway Length	2,148	LF
Right-of-Way Width	80	FT
Roadway Width (BOC - BOC) (Divided Section)	46	FT
Existing Right-of-Way Estimate	0	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13			
		Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$80,000.00	$80,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	7,319	CY	$12.00	$87,829
4	8" Reinforced Concrete Pavement	11,000	SY	$38.00	$418,000
5	8" Lime or Cement Stabilized Subgrade	11,933	SY	$8.00	$95,467
6	Lime or Cement for Stabilization (30lbs/SY)	200	TON	$130.00	$26,000
7	6" Monolithic Curb	8,600	LF	$5.00	$43,000
8	Sidewalk and Ramps	17,190	SF	$4.20	$72,198
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	2,148	LF	$120.00	$257,760
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	6,210	SY	$1.50	$9,315
12	Pavement Markings & Signage	2,148	LF	$5.00	$10,740
13	Traffic Control	2,148	LF	$15.00	$32,220
14	Erosion Control	1	LS	$15,000.00	$15,000
15	Landscaping	1	LS	$25,000.00	$25,000
16	Lighting (Foundations, Poles, Conduit, Conductors)	20	EA	$5,500.00	$110,000
	Subtotal Construction Cost Estimate				**$1,307,600**
	Contingency	**20%**			**$261,600**
	Total Construction Cost Estimate				**$1,569,200**
	Right-of-Way Cost	171,840	SF	$1.00	**$171,840.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$157,000.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$31,400.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*0.5%*			**$7,900.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$1,937,340.00**
	***Total Capital Cost Per Foot**				**$910.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$2,596,036.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
ROSEHILL ROAD (City Limits to Lincoln Ln)

Roadway Description:	Quantity	Unit
Roadway Length	7,299	LF
Right-of-Way Width	120	FT
Roadway Width (BOC - BOC) (Divided Section)	74	FT
Existing Right-of-Way Estimate	437,940	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13			
		Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$330,000.00	$330,000
2	Right of Way Preparation	30	ACRE	$2,500.00	$75,000
3	Unclassified Street Excavation or Embankment	53,700	CY	$12.00	$644,400
4	8" Reinforced Concrete Pavement	60,100	SY	$38.00	$2,283,800
5	8" Lime or Cement Stabilized Subgrade	63,300	SY	$8.00	$506,400
6	Lime or Cement for Stabilization (30lbs/SY)	1,000	TON	$130.00	$130,000
7	6" Monolithic Curb	29,200	LF	$5.00	$146,000
8	Sidewalk and Ramps	58,400	SF	$4.20	$245,280
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	7,299	LF	$120.00	$875,880
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	30,820	SY	$1.50	$46,230
12	Pavement Markings & Signage	7,299	LF	$5.00	$36,495
13	Traffic Control	7,299	LF	$15.00	$109,485
14	Erosion Control	1	LS	$20,000.00	$20,000
15	Landscaping	1	LS	$35,000.00	$35,000
16	Lighting (Foundations, Poles, Conduit, Conductors)	50	EA	$5,500.00	$275,000
	Subtotal Construction Cost Estimate				**$5,759,000**
	Contingency	**20%**			**$1,151,800**
	Total Construction Cost Estimate				**$6,910,800**
	Right-of-Way Cost	437,940	SF	$1.00	**$437,940.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$691,100.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$138,300.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*0.5%*			**$34,600.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$8,212,740.00**
	***Total Capital Cost Per Foot**				**$1,130.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$11,005,072.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
FUTURE FM 986 (SH 205 to City Limits)

Roadway Description:	Quantity	Unit
Roadway Length	6,554	LF
Right-of-Way Width	120	FT
Roadway Width (BOC - BOC) (Divided Section)	74	FT
Existing Right-of-Way Estimate	-	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13 Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$290,000.00	$290,000
2	Right of Way Preparation	20	ACRE	$2,500.00	$50,000
3	Unclassified Street Excavation or Embankment	29,200	CY	$12.00	$350,400
4	8" Reinforced Concrete Pavement	53,900	SY	$38.00	$2,048,200
5	8" Lime or Cement Stabilized Subgrade	56,900	SY	$8.00	$455,200
6	Lime or Cement for Stabilization (30lbs/SY)	900	TON	$130.00	$117,000
7	6" Monolithic Curb	26,300	LF	$5.00	$131,500
8	Sidewalk and Ramps	52,440	SF	$4.20	$220,248
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	6,554	LF	$120.00	$786,480
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	27,680	SY	$1.50	$41,520
12	Pavement Markings & Signage	6,554	LF	$5.00	$32,770
13	Traffic Control	6,554	LF	$15.00	$98,310
14	Erosion Control	1	LS	$30,000.00	$30,000
15	Landscaping	1	LS	$50,000.00	$50,000
16	Lighting (Foundations, Poles, Conduit, Conductors)	50	EA	$5,500.00	$275,000
	Subtotal Construction Cost Estimate				**$4,976,700**
	Contingency	**20%**			**$995,400**
	Total Construction Cost Estimate				**$5,972,100**
	Right-of-Way Cost	786,480	SF	$1.00	**$786,480.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$597,300.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$119,500.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*1.0%*			**$59,800.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$7,535,180.00**
	***Total Capital Cost Per Foot**				**$1,150.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$10,097,142.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
BRADSHAW ROAD (West End to Moore)

Roadway Description:	Quantity	Unit
Roadway Length	1,388	LF
Right-of-Way Width	120	FT
Roadway Width (BOC - BOC) (Divided Section)	74	FT
Existing Right-of-Way Estimate	61,072	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13 Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$90,000.00	$90,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	21,227	CY	$12.00	$254,720
4	8" Reinforced Concrete Pavement	11,500	SY	$38.00	$437,000
5	8" Lime or Cement Stabilized Subgrade	12,100	SY	$8.00	$96,800
6	Lime or Cement for Stabilization (30lbs/SY)	200	TON	$130.00	$26,000
7	6" Monolithic Curb	5,600	LF	$5.00	$28,000
8	Sidewalk and Ramps	11,110	SF	$4.20	$46,662
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	1,388	LF	$120.00	$166,560
10	Traffic Signals	1	LS	$150,000.00	$150,000
11	Hydromulching	5,870	SY	$1.50	$8,805
12	Pavement Markings & Signage	1,388	LF	$5.00	$6,940
13	Traffic Control	1,388	LF	$15.00	$20,820
14	Erosion Control	1	LS	$15,000.00	$15,000
15	Landscaping	1	LS	$12,000.00	$12,000
16	Lighting (Foundations, Poles, Conduit, Conductors)	10	EA	$5,500.00	$55,000
	Subtotal Construction Cost Estimate				**$1,439,400**
	Contingency	**20%**			**$287,900**
	Total Construction Cost Estimate				**$1,727,300**
	Right-of-Way Cost	105,490	SF	$1.00	**$105,490.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$172,800.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$34,600.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*0.5%*			**$8,700.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$2,048,890.00**
	***Total Capital Cost Per Foot**				**$1,480.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$2,745,513.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
ROCHESTER STREET (Virginia St (SH 34) to Gardner St)

Roadway Description:	Quantity	Unit
Roadway Length	1,580	LF
Right-of-Way Width	60	FT
Roadway Width (BOC - BOC)	41	FT
Existing Right-of-Way Estimate	125,880	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13 Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$50,000.00	$50,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	3,600	CY	$12.00	$43,200
4	8" Reinforced Concrete Pavement	7,200	SY	$38.00	$273,600
5	8" Lime or Cement Stabilized Subgrade	7,600	SY	$8.00	$60,800
6	Lime or Cement for Stabilization (30lbs/SY)	200	TON	$130.00	$26,000
7	6" Monolithic Curb	3,200	LF	$5.00	$16,000
8	Sidewalk and Ramps	12,640	SF	$4.20	$53,088
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	1,580	LF	$100.00	$158,000
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	1,940	SY	$1.50	$2,910
12	Pavement Markings & Signage	1,580	LF	$4.00	$6,320
13	Traffic Control	1,580	LF	$15.00	$23,700
14	Erosion Control	1	LS	$10,000.00	$10,000
15	Lighting (Foundations, Poles, Conduit, Conductors)	20	EA	$5,500.00	$110,000
	Subtotal Construction Cost Estimate				**$858,700**
	Contingency	**20%**			**$171,800**
	Total Construction Cost Estimate				**$1,030,500**
	Right-of-Way Cost	-	SF	$1.00	**$0.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$103,100.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$20,700.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*1.0%*			**$10,400.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$1,164,700.00**
	***Total Capital Cost Per Foot**				**$740.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$1,560,698.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
TOWN DRIVE NORTH (Future FM 986 to Existing FM 986)

Roadway Description:	Quantity	Unit
Roadway Length	3,300	LF
Right-of-Way Width	60	FT
Roadway Width (BOC - BOC)	41	FT
Existing Right-of-Way Estimate	-	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13 Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$100,000.00	$100,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	7,400	CY	$12.00	$88,800
4	8" Reinforced Concrete Pavement	15,100	SY	$38.00	$573,800
5	8" Lime or Cement Stabilized Subgrade	15,800	SY	$8.00	$126,400
6	Lime or Cement for Stabilization (30lbs/SY)	300	TON	$130.00	$39,000
7	6" Monolithic Curb	6,600	LF	$5.00	$33,000
8	Sidewalk and Ramps	26,400	SF	$4.20	$110,880
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	3,300	LF	$90.00	$297,000
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	4,040	SY	$1.50	$6,060
12	Pavement Markings & Signage	3,300	LF	$4.00	$13,200
13	Traffic Control	3,300	LF	$15.00	$49,500
14	Erosion Control	1	LS	$20,000.00	$20,000
15	Lighting (Foundations, Poles, Conduit, Conductors)	30	EA	$5,500.00	$165,000
	Subtotal Construction Cost Estimate				**$1,647,700**
	Contingency	**20%**			**$329,600**
	Total Construction Cost Estimate				**$1,977,300**
	Right-of-Way Cost	198,000	SF	$1.00	**$198,000.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$197,800.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$39,600.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*1.0%*			**$19,800.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$2,432,500.00**
	***Total Capital Cost Per Foot**				**$740.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$3,259,550.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
TOWN NORTH DRIVE (Existing SH 34 to New SH 34)

Roadway Description:	Quantity	Unit
Roadway Length	2,200	LF
Right-of-Way Width	60	FT
Roadway Width (BOC - BOC)	41	FT
Existing Right-of-Way Estimate	-	SF

Item No.	**Item Description**	**Freese and Nichols Date Performed: 11/8/13**			
		Quantity	**Unit**	**Unit Cost**	**Total Cost**
1	Mobilization (5% of Construction Cost)	1	LS	$70,000.00	$70,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	4,900	CY	$12.00	$58,800
4	8" Reinforced Concrete Pavement	10,100	SY	$38.00	$383,800
5	8" Lime or Cement Stabilized Subgrade	10,600	SY	$8.00	$84,800
6	Lime or Cement for Stabilization (30lbs/SY)	200	TON	$130.00	$26,000
7	6" Monolithic Curb	4,400	LF	$5.00	$22,000
8	Sidewalk and Ramps	17,600	SF	$4.20	$73,920
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	2,200	LF	$90.00	$198,000
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	2,690	SY	$1.50	$4,035
12	Pavement Markings & Signage	2,200	LF	$4.00	$8,800
13	Traffic Control	2,200	LF	$15.00	$33,000
14	Erosion Control	1	LS	$12,000.00	$12,000
15	Lighting (Foundations, Poles, Conduit, Conductors)	20	EA	$5,500.00	$110,000
	Subtotal Construction Cost Estimate				**$1,110,200**
	Contingency	**20%**			**$222,100**
	Total Construction Cost Estimate				**$1,332,300**
	Right-of-Way Cost	132,000	SF	$1.00	**$132,000.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$133,300.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$26,700.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*1.0%*			**$13,400.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$1,637,700.00**
	***Total Capital Cost Per Foot**				**$750.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$2,194,518.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
WEST END STREET / WILLIAMS STREET (FM 148 to Bradshaw St.)

Roadway Description:	Quantity	Unit
Roadway Length	4,030	LF
Right-of-Way Width	60	FT
Roadway Width (BOC - BOC)	41	FT
Existing Right-of-Way Estimate	123,800	SF

Item No.	**Item Description**	**Freese and Nichols Date Performed: 11/8/13**			
		Quantity	**Unit**	**Unit Cost**	**Total Cost**
1	Mobilization (5% of Construction Cost)	1	LS	$110,000.00	$110,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	9,000	CY	$12.00	$108,000
4	8" Reinforced Concrete Pavement	18,400	SY	$38.00	$699,200
5	8" Lime or Cement Stabilized Subgrade	19,300	SY	$8.00	$154,400
6	Lime or Cement for Stabilization (30lbs/SY)	300	TON	$130.00	$39,000
7	6" Monolithic Curb	8,100	LF	$5.00	$40,500
8	Sidewalk and Ramps	32,240	SF	$4.20	$135,408
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	4,030	LF	$90.00	$362,700
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	4,930	SY	$1.50	$7,395
12	Pavement Markings & Signage	4,030	LF	$4.00	$16,120
13	Traffic Control	4,030	LF	$15.00	$60,450
14	Erosion Control	1	LS	$18,000.00	$18,000
15	Lighting (Foundations, Poles, Conduit, Conductors)	30	EA	$5,500.00	$165,000
	Subtotal Construction Cost Estimate				**$1,941,200**
	Contingency	**20%**			**$388,300**
	Total Construction Cost Estimate				**$2,329,500**
	Right-of-Way Cost	118,000	SF	$2.00	**$236,000.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$233,000.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$46,600.00**
	Geotechnical Services (0.5%-1% of Construction Cost)	*1.0%*			**$23,300.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$2,868,400.00**
	***Total Capital Cost Per Foot**				**$720.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$3,843,656.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
WEST END STREET (Bradshaw St to Hattie St)

Roadway Description:	Quantity	Unit
Roadway Length	2,094	LF
Right-of-Way Width	60	FT
Roadway Width (BOC - BOC)	41	FT
Existing Right-of-Way Estimate	54,440	SF

Item No.	**Item Description**	**Freese and Nichols Date Performed: 11/8/13**			
		Quantity	**Unit**	**Unit Cost**	**Total Cost**
1	Mobilization (5% of Construction Cost)	1	LS	$60,000.00	$60,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	4,700	CY	$12.00	$56,400
4	8" Reinforced Concrete Pavement	9,600	SY	$38.00	$364,800
5	8" Lime or Cement Stabilized Subgrade	10,100	SY	$8.00	$80,800
6	Lime or Cement for Stabilization (30lbs/SY)	200	TON	$130.00	$26,000
7	6" Monolithic Curb	4,200	LF	$5.00	$21,000
8	Sidewalk and Ramps	16,760	SF	$4.20	$70,392
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	2,094	LF	$90.00	$188,460
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	2,560	SY	$1.50	$3,840
12	Pavement Markings & Signage	2,094	LF	$4.00	$8,376
13	Traffic Control	2,094	LF	$15.00	$31,410
14	Erosion Control	1	LS	$12,000.00	$12,000
15	Lighting (Foundations, Poles, Conduit, Conductors)	20	EA	$5,500.00	$110,000
	Subtotal Construction Cost Estimate				**$1,058,500**
	Contingency	**20%**			**$211,700**
	Total Construction Cost Estimate				**$1,270,200**
	Right-of-Way Cost	71,200	SF	$2.00	**$142,400.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$127,100.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$25,500.00**
	Geotechnical Services (0.5%-1% of Construction Cost)	*1.0%*			**$12,800.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$1,578,000.00**
	***Total Capital Cost Per Foot**				**$760.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$2,114,520.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
GRIFFITH AVENUE (City Limts to Lovers Ln)

Roadway Description:	Quantity	Unit
Roadway Length	5,990	LF
Right-of-Way Width	80	FT
Roadway Width (BOC - BOC) (Divided Section)	46	FT
Existing Right-of-Way Estimate	629,500	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13			
		Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$190,000.00	$190,000
2	Right of Way Preparation	20	ACRE	$2,500.00	$50,000
3	Unclassified Street Excavation or Embankment	17,800	CY	$12.00	$213,600
4	8" Reinforced Concrete Pavement	30,700	SY	$38.00	$1,166,600
5	8" Lime or Cement Stabilized Subgrade	33,300	SY	$8.00	$266,400
6	Lime or Cement for Stabilization (30lbs/SY)	500	TON	$130.00	$65,000
7	6" Monolithic Curb	24,000	LF	$5.00	$120,000
8	Sidewalk and Ramps	47,920	SF	$4.20	$201,264
9	Drainage Improvements (RCP, Inlets, MH, Outfalls, Box Culvert)	5,990	LF	$90.00	$539,100
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	17,310	SY	$1.50	$25,965
12	Pavement Markings & Signage	5,990	LF	$5.00	$29,950
13	Traffic Control	5,990	LF	$15.00	$89,850
14	Erosion Control	1	LS	$18,000.00	$18,000
15	Landscaping	1	LS	$30,000.00	$30,000
16	Lighting (Foundations, Poles, Conduit, Conductors)	40	EA	$5,500.00	$220,000
	Subtotal Construction Cost Estimate				**$3,225,800**
	Contingency	**20%**			**$645,200**
	Total Construction Cost Estimate				**$3,871,000**
	Right-of-Way Cost	-	SF	$1.00	**$0.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$387,100.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$77,500.00**
	Geotechnical Services (0.5%-1% of Construction Cost)	*1.0%*			**$38,800.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$4,374,400.00**
	***Total Capital Cost Per Foot**				**$740.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$5,861,696.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
NINTH STREET (Eulalia Dr to Town North)

Roadway Description:	Quantity	Unit
Roadway Length	4,186	LF
Right-of-Way Width	60	FT
Roadway Width (BOC - BOC)	41	FT
Existing Right-of-Way Estimate	-	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13			
		Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$120,000.00	$120,000
2	Right of Way Preparation	10	ACRE	$2,500.00	$25,000
3	Unclassified Street Excavation or Embankment	9,400	CY	$12.00	$112,800
4	8" Reinforced Concrete Pavement	19,100	SY	$38.00	$725,800
5	8" Lime or Cement Stabilized Subgrade	20,000	SY	$8.00	$160,000
6	Lime or Cement for Stabilization (30lbs/SY)	300	TON	$130.00	$39,000
7	6" Monolithic Curb	8,400	LF	$5.00	$42,000
8	Sidewalk and Ramps	33,490	SF	$4.20	$140,658
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	4,186	LF	$90.00	$376,740
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	5,120	SY	$1.50	$7,680
12	Pavement Markings & Signage	4,186	LF	$4.00	$16,744
13	Traffic Control	4,186	LF	$15.00	$62,790
14	Erosion Control	1	LS	$15,000.00	$15,000
15	Landscaping	1	LS	$30,000.00	$30,000
16	Lighting (Foundations, Poles, Conduit, Conductors)	30	EA	$5,500.00	$165,000
	Subtotal Construction Cost Estimate				**$2,039,300**
	Contingency	**20%**			**$407,900**
	Total Construction Cost Estimate				**$2,447,200**
	Right-of-Way Cost	251,160	SF	$1.00	**$251,160.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$244,800.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$49,000.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*1.0%*			**$24,500.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$3,016,660.00**
	***Total Capital Cost Per Foot**				**$730.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$4,042,325.00**

**This estimate does not include Legal, Administration, or Financial Cost*

City of Terrell, Texas
Engineer's Opinion of Probable Construction Cost Estimate for
Moore Ave./SH 205 Intersection Improvements

Roadway Description:	Quantity	Unit
Roadway Length	4,587	LF
Right-of-Way Width	120	FT
Roadway Width (BOC - BOC)	25	FT
Existing Right-of-Way Estimate	550,440	SF

Item No.	Item Description	Freese and Nichols Date Performed: 11/8/13 Quantity	Unit	Unit Cost	Total Cost
1	Mobilization (5% of Construction Cost)	1	LS	$120,000.00	$120,000
2	Right of Way Preparation	20	ACRE	$2,500.00	$50,000
3	Unclassified Street Excavation or Embankment	20,400	CY	$12.00	$244,800
4	8" Reinforced Concrete Pavement	12,800	SY	$38.00	$486,400
5	8" Lime or Cement Stabilized Subgrade	13,800	SY	$8.00	$110,400
6	Lime or Cement for Stabilization (30lbs/SY)	300	TON	$130.00	$39,000
7	6" Monolithic Curb	9,200	LF	$5.00	$46,000
8	Sidewalk and Ramps	36,700	SF	$4.20	$154,140
9	Drainage Improvements (RCP, Inlets, MH, Outfalls)	4,587	LF	$90.00	$412,830
10	Traffic Signals	0	LS	$150,000.00	$0
11	Hydromulching	44,350	SY	$1.50	$66,525
12	Pavement Markings & Signage	4,587	LF	$4.00	$18,348
13	Traffic Control	4,587	LF	$15.00	$68,805
14	Erosion Control	1	LS	$15,000.00	$15,000
15	Landscaping	1	LS	$30,000.00	$30,000
16	Lighting (Foundations, Poles, Conduit, Conductors)	40	EA	$5,500.00	$220,000
	Subtotal Construction Cost Estimate				**$2,082,300**
	Contingency	**20%**			**$416,500**
	Total Construction Cost Estimate				**$2,498,800**
	Right-of-Way Cost	-	SF	$2.00	**$0.00**
	Engineering Services (10% of Construction Cost)	*10.0%*			**$249,900.00**
	Design Surveying (2% of Construction Cost)	*2.0%*			**$50,000.00**
	Geotechnical Services (0.5% -1% of Construction Cost)	*1.0%*			**$25,000.00**
	***Total Capital Cost (Based on Unit Prices for 11-03)**				**$2,823,700.00**
	***Total Capital Cost Per Foot**				**$620.00**
	***Future Capital Cost (Based on 34% Financing Cost)**				**$3,783,758.00**

**This estimate does not include Legal, Administration, or Financial Cost*

Appendix H
Roadway Improvement Plan Projects

Appendix H
Roadway Improvement Plan Projects

Definitions

LANES	The total number of lanes in both directions available for travel.
TYPE	The type of roadway (used in determining capacity): DA = divided arterial UA = undivided arterial DC = divided collector UC = undivided collector
% IN SERVICE AREA	If the roadway is located on the boundary of the service area (with the city limits running along the centerline of the roadway), then half of the roadway is inventoried in the service area and the other half is not. This value is either 50% or 100%.
PK-HR VOLUME	The existing volumes of cars on the roadway segment traveling during the afternoon (P.M.) peak hour of travel.
VEH-MI SUPPLY TOTAL	The number of total service units (vehicle-miles) supplied within the segment/service area, based on the length and established capacity of the roadway type.
VEH-MI DEMAND TOTAL	The total service unit (vehicle-mile) demand created by existing traffic on the roadway segment in the afternoon peak hour.
VEH-MI EXCESS CAPACITY TOTAL	The number of service units supplied but unused by existing traffic in the afternoon peak hour.
VEH-MI DEFICIENCY	The deficiency in service units during the afternoon peak hour when demand exceeds capacity supplied by the CIP.
PROJECT STATUS	Identification of project as “new” or “recoupment”.

2013 Terrell Roadway Impact Fee Study Update
Capital Improvements Plan Excess Capacity Analysis

Service Area	Roadway	From	To	Project Status	Length (mi)	No. of Lanes	Type Rdwy	Pct. in Serv. Area	Peak Hour Volume* A	B	Total	VMT Supply A Dir Pk Dir	VMT Supply B Dir Pk Dir	VMT Supply Pk Hr Total	VMT Dem A Dir Pk Dir	VMT Dem B Dir Pk Dir	VMT Demand Pk Hr Total	Excess Cap A Dir Pk Dir	Excess Cap B Dir Pk Dir	Excess VMT Capacity	Deficiency A Dir Pk Dir	Deficiency B Dir Pk Dir	CIP VMT Deficiency
West	Windsor Avenue	Rosehill Road	Rockwall Street	New	0.41	4	DC	100%	0	0	0	305	305	610	0	0	0	305	305	610	0	0	0
West	Windsor Avenue	Rockwall Street	FM 2578	New	0.37	2	DC	100%	0	177	177	140	140	280	0	66	66	140	74	214	0	0	0
West	Rosehill Road	City Limits	Lincoln Lane	New	1.38	6	DA	100%	30	29	59	1949	1949	3898	41	40	82	1908	1909	3817	0	0	0
West	Moore Ave./SH 205 Intersection Improvements			New	0.87	2	DA	100%	0	0	0	408	408	817	0	0	0	408	408	817	0	0	0
West	West End Street	FM 148	Bradshaw Street	New	0.76	2	UC	100%	73	69	142	259	259	517	56	53	108	203	206	409	0	0	0
West	West End Street	Bradshaw Street	Ann Street	New	0.45	2	UC	100%	0	0	0	155	155	309	0	0	0	155	155	309	0	0	0
West	Bradshaw Street	West End Street	Moore Avenue	New	0.26	6	DA	100%	68	85	153	371	371	741	18	22	40	353	348	701	0	0	0
West	Griffith Avenue	City Limits	Lovers Lane	New	1.13	4	DC	100%	111	90	201	848	848	1695	125	102	227	722	746	1468	0	0	0
West	Future FM 986	Griffith Avenue	City Limits	New	0.70	6	DA	100%	0	0	0	984	984	1968	0	0	0	984	984	1968	0	0	0
West	Las Lomas Parkway	Southern City Limits	Spur 557	New	0.18	6	DA	100%	0	0	0	250	250	500	0	0	0	250	250	500	0	0	0
West	Las Lomas Parkway	Spur 557	Apache Trail	New	0.25	2	DA	100%	0	0	0	117	117	234	0	0	0	117	117	234	0	0	0
West	Las Lomas Parkway	Spur 557	Apache Trail	Recoup	0.25	2	DA	100%	0	0	0	117	117	234	0	0	0	117	117	234	0	0	0
West	Las Lomas Parkway	Apache Trail	US 80	New	0.36	6	DA	100%	0	0	0	514	514	1029	0	0	0	514	514	1029	0	0	0
West	Town Drive North	Future FM 986	Existing FM 986	New	0.63	2	UC	100%	0	0	0	215	215	430	0	0	0	215	215	430	0	0	0
Sub-total SA West					**8.01**						**732**			**13262**	**240**	**283**	**523**	**6391**	**6348**	**12739**	**0**	**0**	**0**
East	Windsor Avenue	Home Depot	SH 34	Recoup	0.23	4	DC	100%	84	80	164	173	173	345	19	18	38	153	154	307	0	0	0
East	Ninth Street	Eulalia Drive	Town North Drive	New	0.79	2	UC	100%	0	0	0	270	270	539	0	0	0	270	270	539	0	0	0
East	Town North Drive	N. Francis Street (SH 34)	Future SH 34	New	0.42	2	UC	100%	0	0	0	142	142	284	0	0	0	142	142	284	0	0	0
East	SH 34[+]	S. Virginia St. (SH 34)	US 80	Recoup	0.76	4	DA	100%	0	0	0	714	714	1429	0	0	0	714	714	1429	0	0	0
East	SH 34[+]	US 80	City Limits	Recoup	1.48	4	DA	100%	186	103	289	1391	1391	2782	275	152	428	1116	1239	2355	0	0	0
East	No. 1 British Flying School Blvd.	SH 34	Airport	Recoup	0.42	2	DA	100%	2	2	4	198	198	396	1	1	2	197	197	394	0	0	0
East	Rochester Street	S. Virginia St. (SH 34)	Gardner Street	New	0.30	2	UC	100%	24	20	44	102	102	203	7	6	13	94	96	190	0	0	0
Sub-total SA East					**4.40**						**501**			**5978**	**303**	**178**	**480**	**2687**	**2811**	**5498**	**0**	**0**	**0**
Totals:					**12.41**						**1,233**			**19,240**			**1,003**			**18,237**			**0**

Notes:

DA- Divided arterial
DC- Divided collector
UC- Undivided collector

Recoup - Recoupment project
New - New Project
[+] TXDOT Project, City participation

Appendix I
Roadway Improvement Plan Cost Analysis

Appendix *I*
Roadway Improvement Plan Cost Analysis

Definitions

LANES	The total number of lanes in both directions available for travel.
TYPE	The type of roadway (used in determining capacity): DA = divided arterial UA = undivided arterial DC = divided collector UC = undivided collector
% IN SERVICE AREA	If the roadway is located on the boundary of the service area (with the city limits running along the centerline of the roadway), then half of the roadway is inventoried in the service area and the other half is not. This value is either 50% or 100%.
TOTAL PROJECT COST	The estimated cost (in dollars) of the entire segment of the proposed improvement.
STUDY UPDATE COST	The portion of the study update cost allocated to the proposed improvement. The allocated cost is based on capacity supplied by a proposed improvement relative to the entire CIP program.
SERVICE AREA TOTAL COST	The estimated cost (in dollars) of the portion of the proposed roadway improvement within the service area.
PROJECT STATUS	Identification of project as “new” or “recoupment”.

2013 Terrell Roadway Impact Fee Study Update
Capital Improvements Plan

Service Area	Roadway	From	To	Length (mi)	No. of Lanes	Type Rdwy	Actual Project Cost	*Study Update Cost*	*Serv Area Total Cost*	*Project Cost 50% Credit*
West	Windsor Avenue	Rosehill Road	Rockwall Street	0.41	4	DC	$2,596,036	$2,220	$2,598,256	$1,296,908
West	Windsor Avenue	Rockwall Street	FM 2578	0.37	2	DC	$1,350,425	$1,019	$1,351,444	$674,703
West	Rosehill Road	City Limits	Lincoln Lane	1.38	6	DA	$11,005,072	$14,183	$11,019,254	$5,495,444
West	Moore Ave./SH 205 Intersection Improvements			0.87	2	DA	$1,005,000	$2,971	$1,007,971	$501,014
West	West End Street	FM 148	Bradshaw Street	0.76	2	UC	$3,843,656	$1,883	$3,845,539	$1,920,887
West	West End Street	Bradshaw Street	Ann Street	0.45	2	UC	$2,114,520	$1,125	$2,115,645	$1,056,698
West	Bradshaw Street	West End Street	Moore Avenue	0.26	6	DA	$2,114,520	$2,697	$2,117,217	$1,055,911
West	Griffith Avenue	City Limits	Lovers Lane	1.13	4	DC	$5,861,696	$6,167	$5,867,863	$2,927,765
West	Future FM 986	Griffith Avenue	City Limits	0.70	6	DA	$10,097,141	$7,161	$10,104,302	$5,044,990
West	Las Lomas Parkway	Southern City Limits	Spur 557	0.18	6	DA	$1,549,201	$1,819	$1,551,020	$773,691
West	Las Lomas Parkway	Spur 557	Apache Trail	0.25	2	DA	$1,273,831	$850	$1,274,681	$636,491
West	Las Lomas Parkway	Spur 557	Apache Trail	0.25	2	DA	$1,496,018	$850	$1,496,868	$747,584
West	Las Lomas Parkway	Apache Trail	US 80	0.36	6	DA	$5,068,175	$3,742	$5,071,917	$2,532,216
West	Town Drive North	Future FM 986	Existing FM 986	0.63	2	UC	$3,259,550	$1,564	$3,261,114	$1,628,993
Sub-total SA West				**8.01**			**$52,634,840**	**$48,250**	**$52,683,090**	**$26,293,295**
East	Windsor Avenue	Home Depot	SH 34	0.23	4	DC	$980,099	$1,255	$981,354	$489,422
East	Ninth Street	Eulalia Drive	Town North Drive	0.79	2	UC	$4,042,324	$1,961	$4,044,286	$2,020,182
East	Town North Drive	N. Francis Street (SH 34)	Future SH 34	0.42	2	UC	$2,194,518	$1,032	$2,195,550	$1,096,743
East	SH 34[+]	S. Virginia St. (SH 34)	US 80	0.76	4	DA	$1,500,000	$5,198	$1,505,198	$747,401
East	SH 34[+]	US 80	City Limits	1.48	4	DA	$750,000	$10,123	$760,123	$369,939
East	No. 1 British Flying School Blvd.	SH 34	Airport	0.42	2	DA	$1,288,568	$1,441	$1,290,009	$643,563
East	Rochester Street	S. Virginia St. (SH 34)	Gardner Street	0.30	2	UC	$1,560,698	$740	$1,561,438	$779,979
Sub-total SA East				**4.40**			**$12,316,207**	**$21,750**	**$12,337,957**	**$6,147,229**
Totals:				**12.41**			**$64,951,047**	**$70,000**	**$65,021,047**	**$32,440,524**

$65,021,047

Notes:

DA- Divided arterial
DC- Divided collector
UC- Undivided collector

Recoup - Recoupment project
New - New Project
[+] TXDOT Project, City participation

Appendix J
Roadway Impact Fee Service Area Summary

Terrell Roadway Impact Fee Study
Service Area Analysis Summary

	1	2	3	4	5	6	7	8	9	10	11	12	13
Service Area	Capacity Supplied by CIP (veh-mi)	Existing Utilization (veh-mi)	Existing Deficiencies (veh-mi)	Net Capacity Supplied by CIP (veh-mi)	Total Project Cost of CIP	Project Cost of CIP with 50% Credit	Cost of Net Capacity Supplied	Cost to Meet Existing Utilization	Projected 10yr Demand (veh-miles)	Pcnt. of CIP Attributable to New Dev. (10-yr)	Cost Attributable to New Dev.	2013 Update Cost per Service Unit w/ 50% Credit	*Actual Cost per Service Unit (veh-mi)*
West	13,262	523	1,041	11,698	$52,683,090	$26,341,545	$23,235,062	$3,106,483	8,972	76.7	$17,820,565.66	$1,986.00	*$3,972.00*
East	5,978	480	75	5,423	$12,337,957	$6,168,979	$5,596,248	$572,731	5,355	98.7	$5,526,076.04	$1,031.00	*$2,062.00*
Totals	19,240	1,003	1,116	17,121	65,021,047	32,510,524	$28,929,973	$3,580,551	14,327	83.7	$24,208,850.17	$1,689.00	*$3,378.00*

1. TOTAL VEH-MI OF CAPACITY SUPPLIED BY CIP (TVMCAP)
2. TOTAL VEH-MI OF EXISTING DEMAND (VMEXT)
3. TOTAL VEH-MI OF EXISTING DEFICENCIES (VMDEF)
4. NET AMOUNT OF ROADWAY CAPACITY SUPPLIED (NVMCAP) =
   NVMCAP =TVMCAP-VMEXT-VMDEF
5. TOTAL COST OF CIP WITHIN STUDY AREA
6. TOTAL COST OF CIP IN SERVICE AREA w/50% CREDIT (TVMCOST)
7. COST OF NET CAPACITY SUPPLIED (NCVMCAP) =
   NCVMCAP = (NVMCAP/TVMCAP)*TVMCOST
8. COST TO MEET EXISTING NEEDS AND USAGE (EXCOST) =
   EXCOST = TVMCOST-NCVMCAP
9. TOTAL VEH-MI OF NEW DEMAND OVER TEN YEARS (TNEWDEM)
10. PERCENT OF CIP ATTRIBUTABLE TO NEW DEVELOPMENT (NPCNT) =
    IF TNEWDEM > NVMCAP, NPCNT = 100%
    IF TNEWDEM < NVMCAP, NPCNT = (TNEWDEM / NVMCAP)*100
11. COST OF CIP ATTRIBUTABLE TO NEW DEVELOPMENT (NCVMDEM) =
    NCVMDEM = (TNEWDEM / NVMCAP) * NCVMCAP
12. COST PER SERVICE UNIT = (MAX FEE)
    MAX FEE = NCVMDEM / TNEWDEM
13. ACTUAL COST PER SERVICE UNIT

Appendix K
Impact Fee Ordinance

ORDINANCE NO. 2597

AN ORDINANCE, AMENDING THE CODE OF ORDINANCES OF THE CITY OF TERRELL, TEXAS, CHAPTER 14 - IMPACT FEES; REPEALING AND REPLACING IN THEIR ENTIRETY ORDINANCES 2217, 2263, AND 2400; IMPOSING AN IMPACT FEE ON NEW DEVELOPMENT FOR PROVIDING WATER AND WASTEWATER FACILITIES NECESSITATED BY SUCH DEVELOPMENT; PROVIDING ROADWAY IMPROVEMENTS TO SUPPORT NEW DEVELOPMENT; ADOPTING UPDATED LAND USE ASSUMPTIONS, SERVICE AREA BOUNDARIES, AND CAPITAL IMPROVEMENTS PLANS; AND APPROVING REVISED ASSESSMENT AND COLLECTION SCHEDULES FOR WATER, WASTEWATER AND ROADWAY IMPACT FEES; PROVIDING DEFINITIONS; PROVIDING FOR USE OF PROCEEDS FROM SUCH ACCOUNTS; PROVIDING FOR APPEALS, RELIEF PROCEDURES AND EXEMPTIONS; PROVIDING FOR CREDITS; PROVIDING FOR UPDATES TO PLANS AND REVISION OF FEES; PROVIDING FOR SEVERABILITY; AND PROVIDING AN EFFECTIVE DATE.

WHEREAS, the City Council of the City of Terrell, Texas previously has approved Land Use Assumptions and Capital Improvements Plans and adopted water, wastewater and roadway impact fees by Ordinances 2217, 2263 and 2400 adopted on April 6, 2004, April 19, 2005 and April 7, 2009 respectively; and

WHEREAS, the City Council has appointed a Capital Improvements Advisory Committee to advise the City Council concerning amendments to current land use assumptions, capital improvements plans and impact fees for water, wastewater and roadway facilities; and

WHEREAS, the City Council finds that in all things the City has complied with Chapter 395 of the Texas Local Government Code in the notice, adoption, promulgation and methodology necessary to adopt impact fees; and

WHEREAS, the City has retained consultants to prepare and/or update land use assumptions, capital improvements plans, and impact fees water, wastewater and roadway facilities; and

WHEREAS, the Capital Improvements Advisory Committee has made its recommendations to the City Council regarding Land Use Assumptions, Capital Improvements Plan and the imposition of Impact Fees for Roadways, Water and Wastewater facilities to update and replace Schedule 1 (Capital Improvement Costs) and Schedule 2 rates for collecting impact fees previously adopted by Ordinances 2217, 2263 and 2400; adopted on April 6, 2004, April 19, 2005 and April 7, 2009 respectively; and

WHEREAS, the adoption of impact fees and the periodic updates and amendments to the adopted Ordinance are intended to ensure the availability of adequate water, wastewater and roadway facilities in order to serve new development consistent with the policies in the City's Comprehensive Plan and development regulations; and

WHEREAS, to the extent that such new development places demands upon the public infrastructure, finding that those demands should be satisfied by partially shifting responsibility for financing the provision of such facilities from the public at large to the development actually creating the demands for them; and

WHEREAS, the City Council, after careful consideration of the matter, hereby finds and declares that impact fees imposed upon residential and nonresidential development to finance specified major public facilities in designated service areas, the demand for which is created by such development, are in the best interest of the general welfare of the City and its residents, are equitable, and do not impose an unfair burden on such development;

WHEREAS, this Ordinance is intended to and satisfies the statutory requirements for adoption of land use assumptions, capital improvements plans and impact fees; and

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

ARTICLE I.
General Provisions

SECTION 1.

Short Title.
This Chapter shall be known and cited as the Terrell Impact Fee Regulations.

SECTION 2.

Purpose.
This Chapter is intended to ensure the provision of adequate public facilities to serve new development in the City by requiring each new development to pay its share of the cost of such improvements necessitated by and attributed to such new development.

SECTION 3.

Authority.
This Chapter is adopted pursuant to Texas Local Government Code Chapter 395 and the City Charter. The provisions of this Chapter shall not be construed to limit the power 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, resolution, or otherwise to implement and administer this Chapter.

SECTION 4.

Definitions.
For the purposes of this Chapter the following words and phrases shall have the meanings respectively ascribed to them by this section:

Assessment –The determination of the amount of the maximum impact fee per service unit which can be imposed on new development pursuant to this Ordinance.

Building Permit –Written permission issued by the City for the construction, repair, alteration or addition to a structure.

Capital Improvements Advisory Committee (Advisory Committee) –Advisory committee, appointed by the City Council, to regularly review and update the Capital Improvement plan in accordance with the requirements of Chapter 395.

Capital Improvement Plan (CIP) –The plan or plans which identify water, wastewater, and roadway capital improvements or facility expansions pursuant to which impact fees may be assessed. The Capital Improvement Plan may be composed of a separate Water and Wastewater Capital Improvement Plan and a Roadway Capital Improvement Plan.

City –City of Terrell.

City Council (Council) – Governing body of the City of Terrell.

Credit –The amount of the reduction of an impact assessment for fees, payments or charges for the same type of capital improvements for which the fee has been assessed.

Commercial Development – For the purposes of this Ordinance, all development which is not single-family residential.

Existing Development – All development within the service area which has a water or wastewater tap on the City's water or wastewater system, or which has access to the City's roadway system as of the date of adoption of this Ordinance.

Facility Expansion – The expansion of the capacity of an existing facility, which serves the same function as an otherwise necessary new capital improvement in order that the existing facility may serve new development. Facility expansion does not include repair, maintenance, modernization, or expansion of an existing facility to better serve existing development.

Final Plat – The map, drawing or chart meeting the requirements of the City's Subdivision Ordinance on which is provided a subdivider's plan of a subdivision, and which has received approval by the City, and which is recorded with the office of the County Clerk.

Growth Related Cost – Capital construction cost of service related to providing additional service units to new development, either from excess capacity in existing facilities, from facility expansions or from new capital facilities.

Impact Fees – Fee for water, wastewater and roadway facilities to be imposed upon new development, in order to generate revenue to fund or recoup all the costs of capital improvements or facility expansion necessitated by and attributable to such new development. Impact fees do not include dedication of land for public parks or payment in lieu of the dedication to serve park needs; dedication of right-of-way or easements, or construction or dedication of site-related water distribution or wastewater collection facilities or internal roadways required by other ordinances of the City Code.

Land Use Assumptions – Description of the service area and projections of changes in land uses, densities, intensities, and population therein over at least a 10-year period, adopted by the City, as may be amended from time to time, upon which capital improvement plans are based.

Land Use Equivalency Table – A table converting the demands for capital improvements generated by various land uses to numbers of service units, as may be amended from time to time, which table is attached hereto and incorporated by reference herein as Exhibit 1.

New Development – The subdivision of land; or the construction, reconstruction, redevelopment, conversion, structural alteration, relocation, or enlargement of any structure; or any use or extension of the use of land; any of which increases the number of service units for water; wastewater or roadway services, or requires the purchase of a new water or wastewater tap. New development includes the purchase of a water tap resulting from the conversion of an individual well to the City's water utility and includes the purchase of a wastewater tap resulting from the conversion of an individual septic or other individual waste disposal system to the City's wastewater utility.

Offset – The amount of the reduction of an impact fee designed to fairly reflect the value of system-related facilities, pursuant to rules herein established or administrative guidelines, provided and funded by a developer pursuant to the City's subdivision regulations or requirements.

Plat – The meaning given in the City's subdivision regulations. Plat includes replat.

Property Owner – Any person, corporation, legal entity or agent thereof having a legal or equitable interest in the land for which an impact fee becomes due. Property owner also includes the developer of the new development.

Recoupment – The imposition of an impact fee to reimburse the City for capital improvements which the City has constructed.

Residential Development – A lot developed for use and occupancy as a residence or residences, according to the City's Zoning Ordinance and Subdivision Ordinance as adopted or amended.

Roadway – Any freeway, expressway, principal or minor arterial or collector roadways designated in the City's adopted Thoroughfare Plan, as may be amended from time to time. Roadway also includes any roadway designated as a numbered highway on the official federal or Texas highway system, to the extent that the City incurs capital improvement costs for such facility.

Roadway Facility – Improvement for providing roadway service including, but not limited to, pavement, right-of-way, intersection improvements, drainage and traffic control devices. Roadway facility excludes roadways which are constructed by developers, the costs of which are reimbursed from charges paid by subsequent users of the facilities. Roadway facilities also exclude dedication of right-of-way or easements or construction or dedication of off-site roadways required by valid ordinances of the City of Terrell, Texas and necessitated and attributable to the new development.

Roadway Facility Expansion – Expansion of the capacity of any existing roadway improvement for the purpose of serving new development, not including repair, maintenance, modernization, or expansion of the existing roadway facility to serve existing development.

Roadway Improvement Plan – Portion of the CIP, as may be amended from time to time, which identifies the roadway facilities or roadway expansions and their associated cost which are necessitated by and which are attributable to new development, and which are to be financed in whole or in part through the imposition of roadway impact fees pursuant to this Ordinance.

Service Area – An area defined in this Ordinance within the corporate boundaries of the City for roadway facilities or with the corporate boundaries or extraterritorial jurisdiction of the City or other areas served in the City for water and wastewater facilities to be served by the capital improvements or facility expansions specified in the Capital Improvement Plan applicable to the service area.

Service Unit – 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. Service units for water and wastewater impact fees are expressed in Service Unit Equivalents (SUE's). Service units for roadway impact fees are expressed in vehicle miles.

Service Unit Equivalent (SUE) – Basis for establishing equivalency among and within various customer classes and land uses. The table of equivalencies for water, wastewater, and roadway are included in Exhibit 1.

Site-related Facility - Improvement or facility which is for the primary use or benefit of a new development and/or which is for the primary purpose of safe and adequate provision of water, wastewater or roadway facilities to serve the new development, and which is

not included in the impact fees capital improvements plan and for which the developer or property owner is solely responsible under subdivision or other applicable regulations.

Tap Purchase – The filing with the City of a written application of water or wastewater service and the acceptance of applicable fees by the City. The term "tap purchase" shall not be applicable to a meter purchased for and exclusively dedicated to fire protection.

Wastewater Facility – A wastewater interceptor or main, lift station, treatment facility or other facility included within and comprising an integral component of the City's collection and transmission system for wastewater. Wastewater facility includes land, easements or structures associated with such facilities. Wastewater facility excludes a site-related facility.

Wastewater Facility Expansion – Expansion of the capacity of any existing wastewater facility for the purpose of serving new development, not including the repair, maintenance, modernization or expansion of an existing wastewater facility to serve existing development.

Wastewater Improvement Plan – Portion of the Capital Improvement Plan, as may be amended from time to time, which identifies the wastewater facilities or wastewater expansions and their associated cost which are necessitated by and which are attributed to new development, and for a period not to exceed ten (10) years, and which are to be financed in whole or in part through the imposition of wastewater impact fees pursuant to this Ordinance.

Water Facility – A water main, pump station, storage tank or other facility included within and comprising an integral component of the City's water storage or distribution system. Water facility includes land, easements or structures associated with such facilities. Water facility excludes on site-related facilities or that portion of a water line or main which is constructed by a developer, the costs of which are reimbursed from charges paid by subsequent users of the facilities.

Water Facility Expansion – Expansion of the capacity of any existing water facility for the purpose of serving new development and not including the repair, maintenance, modernization or expansion of an existing water facility to serve existing development.

Water Improvement Plan – Portion of the Capital Improvement Plan, as may be amended from time to time, which identifies the water facilities or water expansions and their associated cost which are necessitated by and which are attributable to new development, and 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 impact fees pursuant to this Ordinance.

Water Meter – A device for measuring the flow of water to a development, whether for domestic or for irrigation purposes.

Vehicle Mile – A unit used to express both supply and demand provided by and placed on the roadway system. A combination of a number of vehicles traveling during a given time

period and the distance in which these vehicles travel in miles; for supply, it is the capacity provided by facility type over a given segment distance.

SECTION 5.

Applicability of Impact Fees.

The provisions of this Ordinance apply to all new development within the corporate boundaries of the City and its extraterritorial jurisdiction which lie within the service area for each category of capital improvement, except that it shall not apply to tracts of land that were platted prior to the adoption of this Ordinance for a period of one year subsequent to the date of its adoption. The provisions of this article apply to all new development uniformly within each service area, which will include roadways in the City limits only.

SECTION 6.

Impact Fees as Conditions of Development Approval.

No application for new development shall be approved within the City without assessment of impact fees pursuant to this Ordinance, and no water and wastewater tap shall be installed and no building permit shall be issued unless the applicant has paid the applicable impact fees imposed by and calculated hereunder.

SECTION 7.

Establishment of Water and Wastewater Service Areas and Roadway Service Areas.

A) There are hereby established Service Areas for Water and Wastewater Impact Fees as depicted on Exhibits 2 attached to this Ordinance.

B) There are hereby established Service Areas for Roadway Impact Fees as depicted on Exhibit 3 attached to this Ordinance.

C) The service areas shall be established consistent with any facility service area defined in the CIP for each utility or facility. Additions or revisions to the service areas may be approved by the City Council consistent with the procedure set forth in Chapter 395.

SECTION 8.

Impact fees per service unit.

A) The maximum impact fee per service unit for each service area shall be established by category of capital improvement as set forth in Schedule 1.

B) The amount of the impact fees to be assessed by water meter size or by vehicle mile shall be as set forth in Schedule 1, attached hereto and made a part of this

Ordinance by reference. Impact fees may be amended from time to time utilizing the amendment procedure set forth in Section 18.

C) The City may vary the rates of collection or amount of impact fees per service unit among or within service districts in order to reasonably further goals and policies affecting the adequacy of system facilities serving new development, or other regulatory purposes affecting the type, quality, intensity, economic development potential or development timing of land uses within such service districts.

D) The maximum impact fee per service unit for system facilities, as may be amended from time to time, hereby is declared to be an approximate and appropriate measure of the impacts generated by a new unit of development on the City's system facilities. To the extent that the impact fee charged against a new development, as may be amended from time to time, is less than the maximum impact fee per service unit, such difference hereby is declared to be founded on policies unrelated to measurement of the impacts of the new development on the City's system facilities. The maximum impact fee rate may be used in evaluating any claim by a property owner that the dedication or construction of a capital improvement imposed as a condition of development approval pursuant to the City's subdivision or development regulations is disproportionate to the impacts created by the development on the City's system facilities.

SECTION 9.

Service unit determination.

A) The number of service units for a new development shall be determined by using the land use equivalency table, attached hereto and incorporated herein by reference as Exhibit 1.

B) In determining the number of water and wastewater service units, the following rules shall apply:

1) Each new freestanding building requires a new water meter, except as provided in subsection (2).

2) Where a site is redeveloped (clearance and reconstruction), no new service units will be attributed to such redevelopment, provided that the water meter is of the same size as the development previously occupying the site. If the meter size is increased, the number of new service units will be based upon the increase in capacity of the meter.

3) Existing buildings or land uses may be expanded using existing meter service. No service units will be attributed to such development if the water meter size remains the same. If the meter size is increased, the

number of service units will be based upon the increase in capacity of the meter.

4) In determining the number of service units for wastewater impact fees, no service units will be attributed to irrigation meters.

5) If a new development does not require water or wastewater service, no service units will be attributable to the development.

6) For purposes of determining water impact fees, no service units will be attributable to an increase in the size of a water meter installed solely to provide capacity for sprinkler systems for fire safety.

7) Required meter size shall be determined by the City, based upon the proposed land use and AWWA Guidelines regarding meter sizing.

C) In determining the number of roadway service units, the following rules shall apply:

1) For residential structures, the number of units on the site shall be multiplied by the number of vehicle-miles per dwelling unit in Exhibit 1 to compute the total service units attributed to the site.

2) For business uses, the gross floor area (GFA) of a proposed structure divided by 1,000 shall be multiplied by the number of vehicle-miles per development unit for the proposed land use in Exhibit 1 to compute the total service units attributed to the site.

3) Where a site is redeveloped, no new service units will be attributed to the site provided that there is no increase in GFA and the proposed land use falls within the same category as the prior use. If the GFA is increased or if the proposed land use is in a different category, then the number of service units attributed to the site will be as computed for the change in impact.

SECTION 10.

Assessment of Impact Fees.

A) Assessment of the impact fee for any new development shall be at the time of final plat approval or upon approval of a building permit for property already platted for either new development, redevelopment resulting in an increase in service units, when possible (see G below) and shall be based upon the maximum impact fees per service unit then in effect, as set forth in Schedule 1. Assessment of the maximum impact fee for any new development shall be made as follows:

1) For land which is platted 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 Ordinance, and for which no replatting 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 at the rates set forth in Schedule 2.

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 Ordinance, or for which replatting 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 approval, and shall be at the rates set forth in Schedule 1.

B) Following assessment of the impact fee pursuant to subsection A, the amount of the 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 submittal of any replat, a new assessment must be made in accordance with the provisions set forth herein.

D) Approval of an amended plat pursuant to Texas Local Government Code, Section 212.016 and the City's subdivision regulations is not subject to reassessment for any impact fee.

E) For a development which received final plat approval prior to adoption of impact fees by the City, or for which no plat approval is required, assessment of impact fees shall be at the time of application for permit of service in the amount set forth herein.

F) After a development has been assessed impact fees under this Ordinance, no new impact fee shall be assessed against that development unless:

1) The final plat lapses or expires or a new application for final plat approval is submitted on the property; or

2) The number of service units to be developed on the property increases.

G) For business developments where building gross floor area is not known at the time of final plat approval, assessment of impact fees shall occur upon application for building permit.

SECTION 11.

Computation and Collection of Impact Fees.

A) Impact fees shall be collected at the time the City issues a building permit for land within the corporate limits, or at the time an application for an individual water meter connection to the City's water system is filed for land in Extra-Territorial Jurisdiction.

B) The impact fees to be paid and collected by water meter size or by vehicle-mile shall be at the rates listed in Schedule 2.

C) The City shall compute the impact fees for the new development in the following manner:

1) The amount of each impact fee shall be determined by multiplying the number of service units generated by the new development by the impact fee per service unit for the service area using Schedule 2. The number of service units shall be determined by using the land equivalency table (Exhibit 1).

2) The amount of each impact fee shall be reduced by any allowable offsets or credits for that category of capital improvements.

3) The total amount of the impact fees for the new development shall be calculated and attached to the development application or request for connection as a condition of approval.

D) The amount of each impact fee for a new development shall not exceed an amount computed by multiplying the fee assessed per service unit pursuant to Section 8 by the number of service units generated by the development.

E) If the building permit for which an impact fee has been paid has expired, and a new application is thereafter filed, the impact fees shall be computed using Schedule 2 then in effect, with credits for previous payment of fees being applied against the new fees due.

F) Whenever the property owner proposes to increase the number of service units for a development, the additional impact fees collected for such new service units shall be determined by using Exhibit 1 then in effect, and such additional fee shall be collected at the time prescribed by this section.

SECTION 12.

Credits Against Impact Fees.

A) A property owner who constructs an area-related facility pursuant to an improvements agreement approved by the City following adoption of this Ordinance may be charged reduced impact fees due for the property for that category of capital improvement by the value of such improvement, as determined in Subsection (C). The credit shall be associated with the plat of the property that is to be served by the capital improvement constructed.

B) The improvements agreement required by subsection (A) may provide for participation by the City in the costs of the capital improvement to be constructed by the property owner, as provided in the City's subdivision regulations. The amount of any credit shall be reduced by the amount of the City's participation.

C) The amount of a credit shall be determined pursuant to rules established in this Section or pursuant to administrative guidelines promulgated by the City. A credit against impact fees is limited to that portion of the cost of an area-related facility attributable to new development within the service area and does not include that portion of the cost of the equivalent to the cost of a standard or minimum size facility.

   The unit costs used to calculate offsets and credits shall not exceed those assumed for the capital improvements included in the impact fees capital improvements plan for the category of facility for which the impact fee is imposed, nor shall the amount of the offset or credit exceed the actual costs of constructing a capital improvement. For roadway facilities, the costs of any roadway improvement not included within the roadway improvements plan or the Master Thoroughfare Plan are not eligible for offsets or credits.

D) A credit associated with a plat shall be applied to reduce an impact fee at the time of final plat approval for developments. For all other developments, the credit 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 and, thereafter, to all subsequently issued building permits or utility connections, until the credit or offset is exhausted.

E) Unused credits or oversize costs which are not attributable to a new development shall be reimbursed.

F) Offsets or credits created after the effective date of an Ordinance establishing an impact fee for a particular category of capital improvement shall expire within 10 years from the date the offset or credit was created. Offsets or credits arising prior to such effective date shall expire ten years from such effective date. Credits for construction of improvements shall be deemed created when the improvements are completed and the City has accepted the facility, or in the case of improvements

constructed and accepted prior to the effective date of the Ordinance establishing the impact fee for a particular category of capital improvements, on such effective date.

SECTION 13.

Establishment of Accounts.

A) The City's Finance Department shall establish an account to which interest is allocated for each service area for each category of capital facility for which an Impact Fee is imposed pursuant to this Ordinance. Each impact fee collected within the service area shall be deposited in such account.

B) Interest earned on the account into which the impact fees are deposited shall be considered funds of the account, and shall be used solely for the purposes authorized in Section 14.

C) The City's Finance Department shall establish adequate financial and accounting controls to ensure that impact fees disbursed from the account are utilized solely for the purposes authorized in Section 14. 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 Ordinance; 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 Finance Department shall maintain and keep financial records for impact fees, which shall show the source and disbursement of all fees collected in or expended from each service area. 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.

E) The Finance Department shall maintain and keep adequate financial records for said account which shall show the source and disbursement of all funds placed in or expended from such account.

SECTION 14.

Use of Proceeds of Impact Fee Accounts.

A) The impact fees collected for each service area pursuant to this article may be used to finance or to recoup the costs of any capital improvements or facility expansion identified in the applicable capital improvements plan for the service area, including but not limited to the construction contract price, surveying and engineering fees, land acquisition costs (including land purchases, court awards and costs, attorney's fees and expert witness fees). 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 facility expansion.

B) Impact fees collected pursuant to this Ordinance 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 in the applicable capital improvements plan;

2) Repair, operation, or maintenance of existing or new capital improvements or facility expansion;

3) Upgrade, expansion or replacement of existing capital improvements to serve existing development in order to meet stricter safety, efficiency, environmental or regulatory standards;

4) Upgrade, expansion or replacement of existing capital improvements to provide better service to existing development; provided, however, that impact fees may be used to pay the cost 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 cost of the City.

SECTION 15.

Appeals.

A) The property owner or applicant for new development may appeal the following administrative decisions to the City Council.

1) The applicability of an impact fee to the development;

2) The amount of the impact fee due;

3) The denial of or the amount of a credit:

4) The amount of the impact fee assessment versus the benefit received by the new development; or

5) The amount of refund due, if any.

B) The burden of proof shall be on the appellant to demonstrate that the amount of the fee or the amount of the offset or credit was not calculated according to the applicable schedule of impact fees or the guidelines established for determining offsets or credit.

C) The appellant must file a written notice of appeal with the City within thirty (30) days following the decision. If the notice of appeal is accompanied by a payment

or other security satisfactory to the City Manager in an amount equal to the original determination of the impact fee due, the development application may be processed while appeal is pending.

SECTION 16.

Refunds.

A) Upon written application, any impact fee or portion thereof collected pursuant to these regulations, which has not been expended within the service area within ten (10) years from the date of payment, shall be refunded to the record owner of the property for which the impact fee was paid or, if the impact fee was paid by another governmental entity, to such governmental entity, together with the interest calculated from the date of the collection to the date of refund at the statutory rate as set forth in Chapter 1.03, Title 79, Revised Statutes (Chapter 5069-1.03, Vernon's Texas Civil Statutes) or its successor statute. The application for refund pursuant to this section shall be submitted within sixty (60) days after the expiration of the ten-year period for expenditure of the fee. An impact fee shall be considered expended on a first-in, first-out basis,

B) An impact fee collected pursuant to these regulations shall also be considered expended if the total expenditures for capital improvements or facility expansion authorized in Section 14 within the service area within ten (10) years following the date of payment exceeds the total fees collected within the service area for such improvements or expansions during such period.

C) Upon written application, any impact fee or portion thereof collected pursuant to these regulations shall be refunded 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 later than five (5) years from the date of fee payment.

SECTION 17.

Rebates.

A) If a tract of land for which an impact fee has been paid is replatted, resulting in a reduction in the number of service units for water and wastewater facilities, and the new impact fee to be collected is less than that paid, the City shall rebate the difference, provided that water meters to serve the development have not been installed.

B) If the building permit for a new development for which an impact fee has been paid has expired, no tap purchases for that category of capital improvements have been made to the development (for water and wastewater facilities), and a modified or new application has not been filed within six (6) months of such expiration, the City shall, upon written application, rebate the amount of the impact fee to the record owner of the property for which the impact fee was paid. If no application for rebate pursuant to this subsection has been filed within this period, no rebate shall become due.

SECTION 18.

Updates to Plans and Revision of Fees.

The City shall update its land use assumptions and capital improvements plans at least every five (5) years commencing 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. At the discretion of the Council, the fee structure in Schedule 2 may be updated or amended without revising land use assumptions and capital improvements plans as deemed necessary, not to exceed the maximum amounts as set forth in Schedule 1. Public notice and hearing is required to amend Schedule 2 in accordance with the procedure for amending impact fees set forth in Texas Local Gov't Code, Ch. 395, or in any successor statute.

SECTION 19.

Relief Procedures.

A) Any person who has paid an impact fee or an owner of land upon which an impact fee has been paid may petition the City Council to determine whether any duty required by this Ordinance has not been performed within the time so prescribed. The petition shall be in writing and shall state the nature of the unperformed duty and request that the duty be performed within sixty (60) days of the request. If the City Council determines that the duty is required pursuant to the Ordinance and is late in being performed, it shall cause the duty to commence within sixty (60)

days of the date of the request and to continue until completion. This subsection is not applicable to matters which may be appealed pursuant to Section 15.

B) The City Council may grant a variance from any requirement of this Ordinance, upon written request by a developer or owner of property subject to the Ordinance, following a public hearing, and only upon finding that a strict application of such requirement would, when regarded as a whole, result in confiscation of the property.

C) If the City Council grants a variance to the amount of the impact fee due for a new development under this section, it may cause to be appropriated from other City funds the amount of the reduction in the impact fee to the account for the service area in which the property is located.

SECTION 20.

Exemptions.

A) Pursuant to Tex. Loc. Gov't Code section 395.022, as amended, a school district is not required to pay impact fees imposed under this Ordinance unless the board of trustees of the district consents to the payment of the fees by entering a contract with the City imposing the fees.

B) Any building permit application which was duly accepted for filing prior to the adoption of this Ordinance and which was subsequently granted after its adoption shall pay impact fees according to the schedule in Ordinance 2400 or in accordance with any prior executed Developer's Agreement..

ARTICLE II.
Water Facilities Impact Fees

SECTION 21.

Water Service Area.

A) There is hereby established a water service area, constituting land within the City limits and within the City's extraterritorial jurisdiction, as depicted on Exhibit 2 attached hereto and incorporated herein by reference.

B) The boundaries of the water service area may be amended from time to time, or new water benefit areas may be delineated, pursuant to the procedures in Section 18.

SECTION 22.

Water Improvements Plan.

A) The Water Improvements Plan for the City Of Terrell, Texas, is hereby adopted as depicted on Exhibit 4, attached hereto and incorporated herein by reference.

B) The Water Improvements Plan may be amended from time to time, pursuant to the procedures in Section 18.

SECTION 23.

Water Facilities Impact Fee.

A) The maximum impact fees per service unit for water facilities are herby adopted and incorporated in Schedule 1 attached hereto and made a part hereof by reference.

B) The impact fees per service unit for water facilities, which are to be paid by each new development, are hereby adopted and incorporated in Schedule 2 attached hereto and made a part hereto by reference.

C) The impact fees per service unit for water facilities may be amended from time to time, pursuant to the procedures in Section 18.

ARTICLE III.
Wastewater Facilities Impact Fees

SECTION 24.

Wastewater Service Area.

A) There is hereby established a wastewater service area, constituting land within the City limits and within the City's extraterritorial jurisdiction, as depicted on Exhibit 2 attached hereto and incorporated herein by reference.

B) The boundaries of the wastewater service area may be amended from time to time, or new wastewater benefit areas may be delineated, pursuant to the procedures in Section 18.

SECTION 25.

Wastewater Improvements Plan.

A) The Wastewater Improvements Plan for the City Of Terrell, Texas, is hereby adopted as depicted on Exhibit 5, attached hereto and incorporated herein by reference.

B) The Wastewater Improvements Plan may be amended from time to time, pursuant to the procedures in Section 18.

SECTION 26.

Wastewater Facilities Impact Fee.

A) The maximum impact fees per service unit for wastewater facilities are herby adopted and incorporated in Schedule 1 attached hereto and made a part hereof by reference.

B) The impact fees per service unit for wastewater facilities, which are to be paid by each new development, are hereby adopted and incorporated in Schedule 2 attached hereto and made a part hereto by reference.

C) The impact fees per service unit for wastewater facilities may be amended from time to time, pursuant to the procedures in Section 18.

ARTICLE IV.
Roadway Impact Fees

SECTION 27.

Roadway Service Areas.

A) There are hereby established two (2) roadway service areas, constituting land within the City limits as depicted on Exhibit 3 attached hereto and incorporated herein by reference.

B) The boundaries of the roadway service area may be amended from time to time, or new roadway benefit areas may be delineated, pursuant to the procedures in Section 18.

SECTION 28.

Roadway Improvements Plan.

A) The Roadway Improvements Plan for the City Of Terrell, Texas, is hereby adopted as depicted by Exhibit 6, attached hereto and incorporated herein by reference.

B) The Roadway Improvements Plan may be amended from time to time, pursuant to the procedures in Section 18.

SECTION 29.

Roadway Facilities Impact Fee.

A) The maximum impact fees per service unit for roadway facilities are herby adopted and incorporated in Schedule 1 attached hereto and made a part hereof by reference.

B) The impact fees per service unit for roadway facilities, which are to be paid by each new development, are hereby adopted and incorporated in Schedule 2 attached hereto and made a part hereto by reference.

C) The impact fees per service unit for roadway facilities may be amended from time to time, pursuant to the procedures in Section 18.

ARTICLE V.

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

ARTICLE VI.

This Ordinance will take effect immediately from and after its passage and the publication of the caption, as the law in such cases provides.

PASSED AND APPROVED ON THIS THE 18TH DAY OF MARCH, 2014.

PASSED AND ADOPTED ON THIS THE 1ST DAY OF APRIL, 2014.

HAL RICHARDS, MAYOR

ATTEST:

JOHN ROUNSAVALL, CITY SECRETARY

APPROVED AS TO FORM:

MARY GAYLE RAMSEY, CITY ATTORNEY

Impact Fees
(Ordinance No.2597)

EXHIBIT 1
LAND USE OR SERVICE UNIT EQUIVALENCY

WATER AND WASTEWATER

Meter Size	Service Unit Equivalents
3/4"	1
1"	1.4
1 1/2"	2.8
2"	6.4
3"	12.8
4"	20
6"	40
8"	64
10" (Compound)	92
10" (Turbine)	116
12"	172

ROADWAYS

Land Use	Development Unit	Total Service Units (Veh-mi/Dev Unit)
Residential-Single Family	Dwelling Unit (D.U.)	2.88
Multi- Family	Dwelling Unit (D.U.)	1.77
Office	1,000 GFA*	5.15
Retail/Commercial	1,000 GFA*	5.54
Industrial	1,000 GFA*	3.70
Institutional	1,000 GFA*	2.02

*GFA = Gross Floor Area

EXHIBIT 2

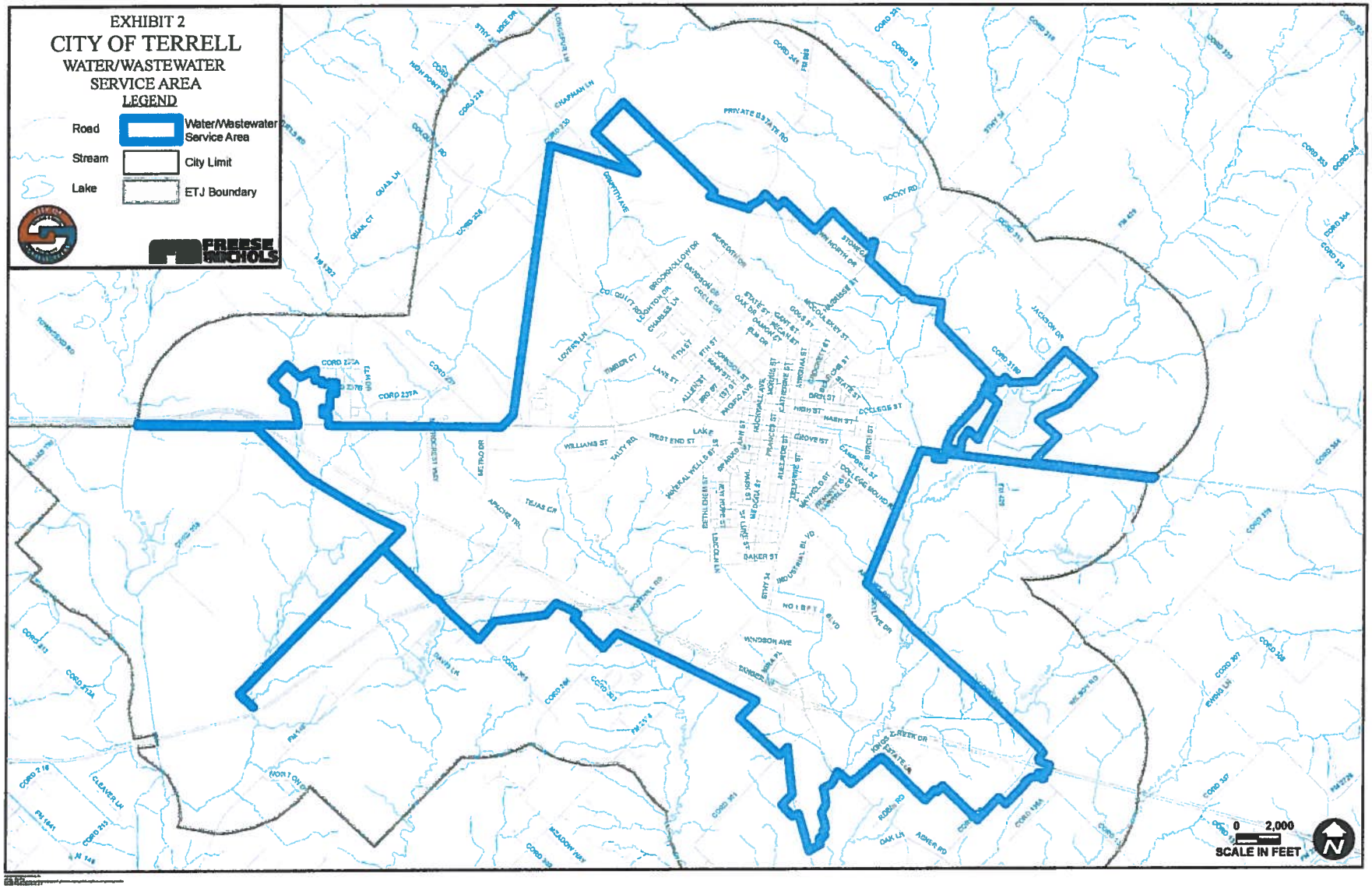


EXHIBIT 2
CITY OF TERRELL
WATER/WASTEWATER
SERVICE AREA
LEGEND
Road
Stream
Lake
Water/Wastewater Service Area
City Limit
ETJ Boundary
FREESE AND NICHOLS
0
2,000
SCALE IN FEET

EXHIBIT 3

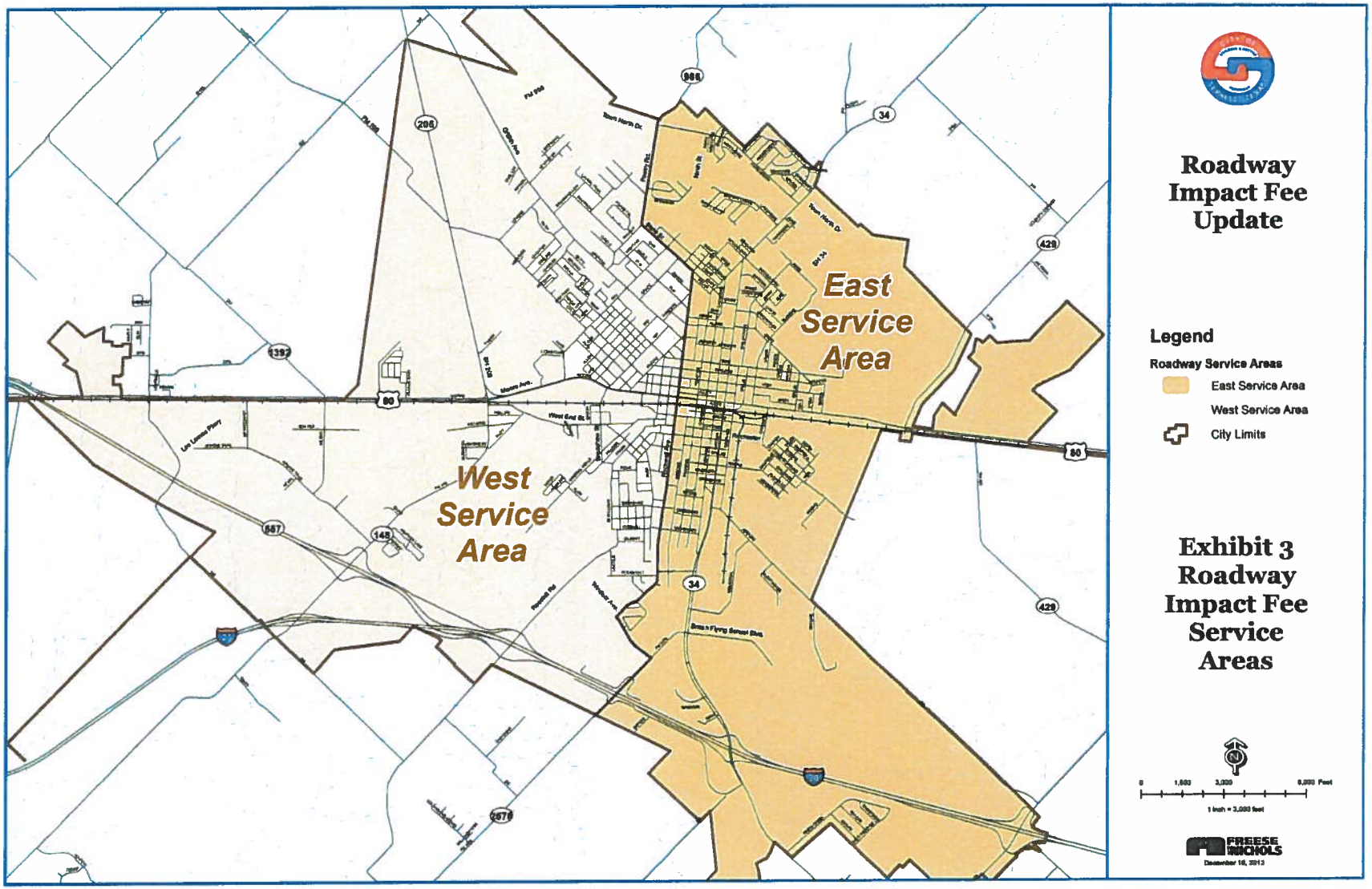

East Service Area
West Service Area
Roadway Impact Fee Update
Legend
Roadway Service Areas
East Service Area
West Service Area
City Limits
Exhibit 3 Roadway Impact Fee Service Areas
FREESE NICHOLS

EXHIBIT 4

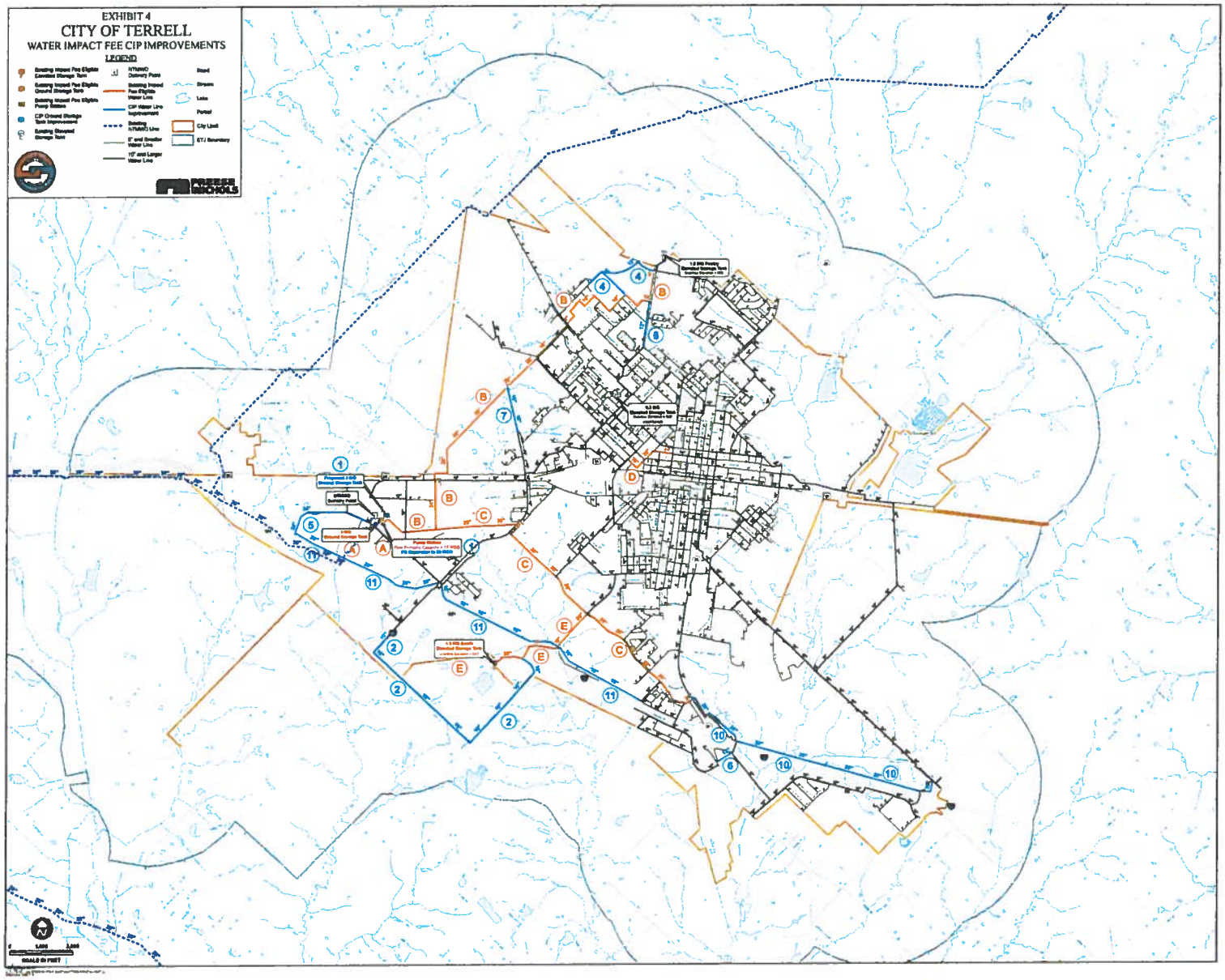


EXHIBIT 4
CITY OF TERRELL
WATER IMPACT FEE CIP IMPROVEMENTS
LEGEND

EXHIBIT 5

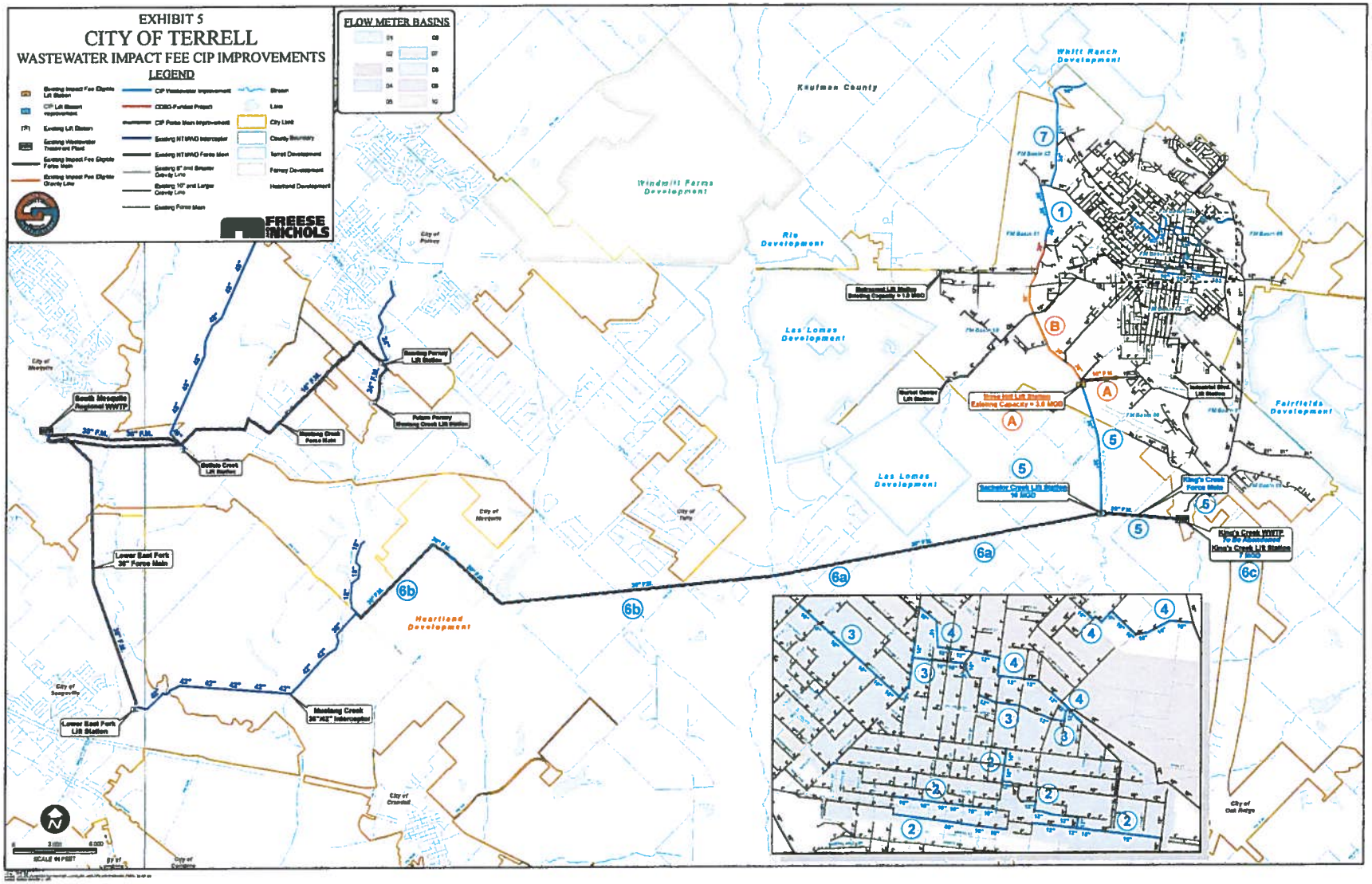
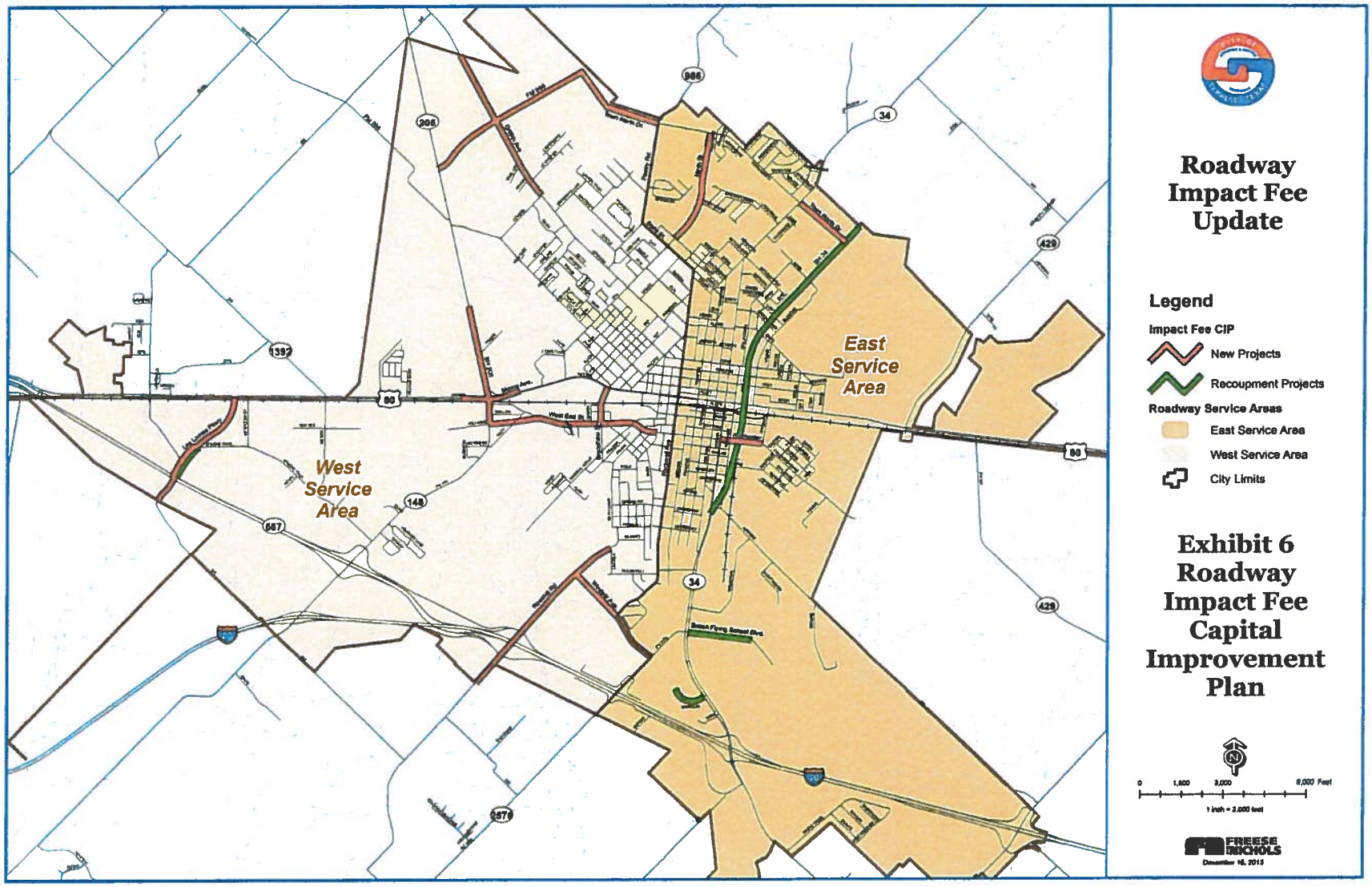


EXHIBIT 5
CITY OF TERRELL
WASTEWATER IMPACT FEE CIP IMPROVEMENTS
LEGEND
FLOW METER BASINS
FREESE NICHOLS
Kaufman County
Windmill Farms Development
Rio Development
Las Lomas Development
Whitt Ranch Development
Fairfields Development
Heartland Development
South Mesquite Regional WWTP
Lower East Fork 36" Force Main
Lower East Fork LIS Station
Mustang Creek 36"/42" Interceptor
Mustang Creek Force Main
Future Forney Mustang Creek LIS Station
Existing Forney LIS Station
Bethel Creek LIS Station
Rockwall LIS Station
Existing Capacity = 1.0 MGD
Market Center LIS Station
Rose Hill LIS Station
Existing Capacity = 3.0 MGD
Industrial Blvd. LIS Station
Rockwall Creek LIS Station
10 MGD
King's Creek Force Main
King's Creek WWTP
King's Creek LIS Station
7 MGD
City of Mesquite
City of Forney
City of Terrell
City of Seagoville
City of Crandall
City of Oak Ridge
SCALE IN FEET

EXHIBIT 6


Roadway Impact Fee Update
Legend
Impact Fee CIP
New Projects
Recoupment Projects
Roadway Service Areas
East Service Area
West Service Area
City Limits
Exhibit 6 Roadway Impact Fee Capital Improvement Plan
East Service Area
West Service Area
FREESE NICHOLS

SCHEDULE 1

Page 1 of 2

Water Impact Fee Summary

Existing Capital Improvement Costs	$2,272,000
Proposed Capital Improvement Costs	$3,645,888
Total Capital Improvement Costs	**$5,917,888**
Financing Costs	$2,035,259
Total Eligible Costs	**$7,953,147**
50% Credit	**$3,976,574**
Ten Year Growth in SUEs	**1,618**
Base Maximum Calculated Water Impact Fee Per Service Unit With 50% Credit	**$2,458**

Sewer Impact Fee Summary

Existing Capital Improvement Costs	$415,800
Proposed Capital Improvement Costs	$4,974,031
Total Capital Improvement Costs	**$5,389,831**
Financing Costs	$1,853,651
Total Eligible Costs	**$7,243,482**
50% Credit	**$3,621,741**
Ten Year Growth in SUEs	**1,618**
Base Maximum Calculated Sanitary Sewer Impact Fee Per Service Unit With 50% Credit	**$2,239**

SCHEDULE 1
Page 2 of 2

Roadway Impact Fee Summary

West Service Area

Proposed Capital Improvement Costs	$39,659,318
Financing Costs	$12,975,522
CIP Study and Updates	$48,250
Total Costs	$52,683,090
Total Costs (with 50% credit)	**$26,341,545**
Cost Attributable to New Development	**$23,235,062**
Total 10-year Projected Growth in Service Units (veh-mi)	**12,038**
Base Maximum Calculated Roadway Impact Fee Per Service Unit with 50% Credit	**$1,930**

East Service Area

Proposed Capital Improvement Costs	$10,337,727
Financing Costs	$1,978,480
CIP Study and Updates	$21,750
Total Costs	$12,337,957
Total Eligible Costs (with 50% credit)	**$6,168,979**
Cost Attributable to New Development	**$4,138,107**
Total 10-year Projected Growth in Service Units (veh-mi)	**4,010**
Base Maximum Calculated Roadway Impact Fee Per Service Unit with 50% Credit	**$1,031**

Schedule 2
Impact Fees
City of Terrell
April 2, 2014

Per Service Unit

Effective Date	April 2, 2014	April 2, 2015	April 2, 2016	April 2, 2017	April 2, 2018
Water Service Unit	$1,000	$1,102	$1,208	$1,321	$1,439
Wastewater Service Unit	$2,239	$2,239	$2,239	$2,239	$2,239
Roadway Service Unit	$401	$442	$485	$530	$577
Total Per Service Unit	$3,640	$3,783	$3,932	$4,090	$4,255

Example Fee per Single-Family Dwelling Unit

Effective Date	April 2, 2014	April 2, 2015	April 2, 2016	April 2, 2017	April 2, 2018
Total Per Single-Family Dwelling Unit[1]	$4,395	$4,615	$4,845	$5,087	$5,341

1. Example for April 2014: $401 x 2.88 (service unit equivalent) = $1,156 (roadway) + $1,000 (water) + $2,239 (wastewater) = $4,395 per single-family dwelling unit