

CIBOLO IMPACT FEE PROGRAM UPDATE

ROADWAY, WATER, WASTEWATER AND DRAINAGE SYSTEMS

FINAL REPORT

Prepared for:

City of Cibolo



July 2021

Prepared by:

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San Antonio, Texas 78216

ROADWAY, WATER, WASTEWATER AND DRAINAGE IMPACT FEE REPORT

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FNI Project Number: CIB20836

TABLE OF CONTENTS

EXECUTIVE SUMMARY	ES-1
1.0 BACKGROUND	7
2.0 LAND USE ASSUMPTIONS.....	10
2.1 Service Areas	10
2.2 Growth Assumptions	15
2.2.1 Roadway Growth Assumptions.....	15
2.2.2 Water and Wastewater Growth Assumptions	15
2.2.3 Drainage Growth Assumptions	17
3.0 ROADWAY IMPACT FEE ANALYSIS	19
3.1 Methodology	19
3.2 Roadway Service Areas.....	20
3.3 Roadway Impact Fee Service Units	21
3.3.1 Service Units	21
3.3.2 Service Units for New Development	22
3.3.3 Trip Generation	22
3.4 Existing Conditions Analysis	29
3.4.1 Existing Volumes.....	29
3.4.2 Vehicle-Miles of Existing Capacity Supply and Demand.....	30
3.4.3 Vehicle-Miles of Existing Excess Capacity and Deficiencies.....	30
3.5 Projected Roadway Demands	31
3.6 Capital Improvement Plan.....	32
3.6.1 Eligible Projects	32
3.6.2 Eligible Costs.....	32
3.6.3 Impact Fee CIP	34
3.6.4 Projected Vehicle-Miles Capacity Available for New Growth.....	37
3.6.5 Cost of Roadway Improvements.....	38
3.7 Calculation of Impact Fees	39
3.7.1 Cost per Service Unit	39
3.7.2 Cost Attributable to New Development.....	39
3.7.3 Sample Calculation of Roadway Impact Fees.....	41
4.0 WATER AND WASTEWATER IMPACT FEE ANALYSIS	42
4.1 Existing Water and Wastewater Systems.....	42
4.2 Water and Wastewater Load Projections	45
4.3 Water and Wastewater System Improvements	46
4.4 Water and Wastewater Impact Fee Analysis	51
4.4.1 Service Units	51
4.4.2 Maximum Impact Fee Calculations.....	53

5.0 DRAINAGE IMPACT FEE ANALYSIS.....	55
5.1 Methodology	55
5.2 Drainage Service Areas	55
5.3 Drainage Impact Fee Service Units.....	56
5.4 Drainage Impact Fee Analysis.....	57
5.5 Drainage Capital Improvement Projects	58
5.6 Drainage Impact Fee Calculations	60

LIST OF FIGURES

Figure 2-1: Roadway Service Areas.....	11
Figure 2-2: Water Service Area	12
Figure 2-3: Wastewater Service Area	13
Figure 2-4: Drainage Service Areas	14
Figure 2-5: Water and Wastewater Growth Areas	16
Figure 3-1: Roadway Capital Improvement Plan	35
Figure 4-1: Existing Water Distribution System	43
Figure 4-2: Existing Wastewater Collection System	44
Figure 4-3: Water System Impact Fee Capital Improvement Plan.....	49
Figure 4-4: Wastewater System Impact Fee Capital Improvement Plan	50
Figure 5-1: Drainage Service Areas	56
Figure 5-2: Drainage Impact Fee CIP	59

LIST OF TABLES

Table 1-1: Abbreviations.....	9
Table 2-1: Population and Employment Projections by Roadway Service Area.....	15
Table 2-2: Employment Projections by Type by Roadway Service Area.....	15
Table 2-3: Water and Wastewater Development Areas.....	17
Table 2-4: Growth in Water and Wastewater Connections.....	17
Table 2-5: Percent Impervious Values by Land Use Type.....	18
Table 2-6: Projected 10-Year Growth in Service Unit.....	18
Table 3-1: Trip Reduction Estimates (PM Peak Hour).....	25
Table 3-2: Trip Lengths and Adjustments.....	26
Table 3-3: Land Use Vehicle-Mile Equivalency.....	28
Table 3-4: Roadway Facility Vehicle-Mile Lane Capacities.....	29
Table 3-5: Peak Hour Vehicle-Miles of Existing Capacity, Demand, Excess Capacity, and Deficiencies.....	31
Table 3-6: Projected 10-Year Service Units of Growth.....	31
Table 3-7: Roadway Impact Fee CIP Listing.....	36
Table 3-8: Capacity and Net Capacity Provided by the Proposed CIP.....	38
Table 3-9: Projected Demand and Net Capacity Provided by the Proposed CIP.....	38
Table 3-10: Summary of Roadway Improvements Plan Cost Analysis.....	39
Table 3-11: Roadway Improvements Plan Cost Attributable to New Development.....	40
Table 3-12: Cost per Service Unit Summary.....	40
Table 4-1: Historical Water Demands.....	45
Table 4-2: Water Demand Projections.....	45
Table 4-3: Wastewater Flow Projections.....	45
Table 4-4: Water System Impact Fee Eligible Projects.....	47
Table 4-5: Wastewater System Impact Fee Eligible Projects.....	48
Table 4-6: Service Unit Equivalencies.....	52
Table 4-7: Water Service Units.....	52
Table 4-8: Wastewater Service Units.....	53
Table 4-9: Maximum Water Impact Fee Calculation.....	54
Table 4-10: Maximum Wastewater Impact Fee Calculation.....	54
Table 5-1: Percent Impervious Values by Land Use Type.....	57
Table 5-2: Projected 10-Year Growth in Service Unit.....	58
Table 5-3: Service Area CIP Costs.....	60
Table 5-4: 10-Year CIP Cost Allocation by Service Area.....	61
Table 5-5: Drainage Impact Fee Calculation by Service Area.....	61

LIST OF APPENDICES

Appendix A	Roadway Existing Facilities Inventory
Appendix B	Roadway Projected 10-Year Growth
Appendix C	Roadway Project Cost Estimates
Appendix D	Roadway CIP Service Units of Supply
Appendix E	Roadway Improvement Plan Cost Analysis
Appendix F	Roadway Service Area Analysis Summary
Appendix G	Water and Wastewater CIP Maps

EXECUTIVE SUMMARY

BACKGROUND

An impact fee is a fee imposed by the local government on new development to pay for a portion of the costs of providing public infrastructure to meet increasing system demands resulting from new growth. Impact fees are a one-time, up-front charge imposed to help fund and pay for construction or needed expansion of specific off-site capital improvements and provide a structured and predictable cost for new development rather than “negotiated” developer exactions. These fees are aimed at reducing the economic burden of infrastructure on the city while dealing with population growth both within the city and extra-territorial jurisdiction. Codified under Chapter 395, Texas Local Government Codes, impact fee programs have been implemented by many communities across Texas since enabling legislation was approved in 1989.

The City of Cibolo initially enacted impact fees in December 2008 as a funding mechanism to maintain infrastructure pace with growth. The program was amended in 2013. Freese and Nichols, Inc. (FNI) was authorized to perform the program update of water, wastewater, roadway, and drainage impact fees. The purpose of this report is to summarize analyses used in the calculation of updated impact fees in Cibolo. The methodology used herein satisfies the requirements of the Texas Local Government Code Section 395 for the establishment and update of water, wastewater, roadway, and drainage impact fees.

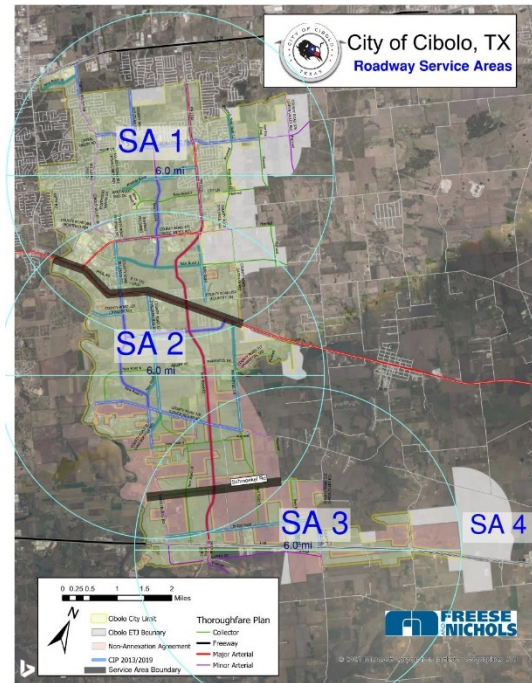
LAND USE ASSUMPTIONS

Population and land use assumptions are important elements in the determination of needs for infrastructure systems. To assist in the determination of need and timing of capital improvements to serve future development, a reasonable estimation of future growth over a ten-year planning period is required. Growth and future development projections were formulated based on assumptions pertaining to the type, location, quantity, and timing of various future land uses within the community. These land use assumptions, which include population and employment projections for the period 2021-2031, served as the basis for the preparation of impact fee capital improvements plans. The land use assumptions were developed using data developed from the Cibolo Comprehensive Master Plan, the 2020 Cibolo, Texas Demographics Report (Cibolo Economic Development Department), the Retail Marketplace Profile (Cibolo Economic Development Department), the Future Land Use Plan Use and Thoroughfare Map dated September 2017, demographic data from the Alamo Area Council of Governments, and with input from

City Staff. Within the city limits, Cibolo is forecasted to grow annually at 3.5% over the ten-year period, adding 14,609 residents for a total population of 48,609 in 2031. The water connections are estimated to grow 4.2% annually, and the wastewater connections are projected to grow 4.2% annually. Cibolo employment is forecasted to grow by 4,539 employees to a total of 8,633 within the city limits by 2031.

ROADWAY IMPACT FEE ANALYSIS

Capital improvements identified for the roadway program update is rooted on information from the City Thoroughfare Plan (September 2017), the City Capital Improvement Plan, FY 2019-2024, and the ten-year land use assumptions as described above. The roadway service area structure was amended to incorporate city annexations since 2012 and has increased from two to three zones. A fourth service area spanning ETJ area east of Linne Road has been identified for possible long-term incorporation into the impact fee program, as appropriate. The zonal structure conforms to legislative mandate per Chapter 395 so that no point of each service area is greater than a six-mile maximum across the service



area. This six-mile limit ensures that roadway improvements are in proximity to the development paying the fees that it serves.

Vehicle-miles of travel in the PM peak hour was determined to be the most effective service unit for calculating and assessing impact fees. Vehicle-miles establish a relationship between the intensity of land development and the demand on the roadway system using published trip generation data and average trip length. The PM peak hour is used as a more finite approach to the determination of capacity, utilization, and adequacy as well as, the peak hour is typically used for roadway design.

Projected growth, expressed in terms of vehicle-miles over a 10-year planning period, was based on population and employment data that was prepared as part of land use assumptions, as described above. Based on this growth, the projected vehicle-miles of demand generated in the 10-year period was calculated to be 2,024 vehicle-miles and is summarized in **Table ES-1**.

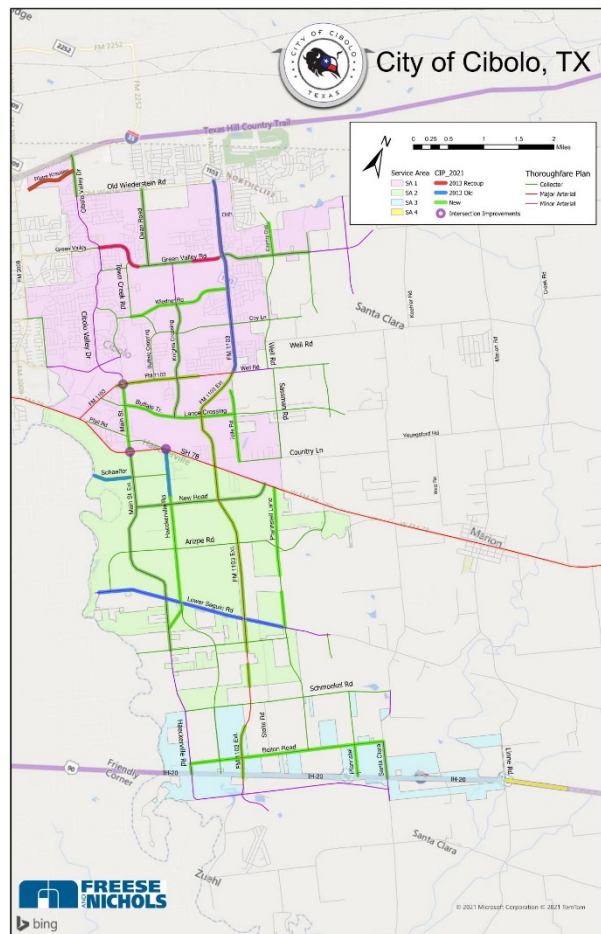
Table ES-1: 10-Year Roadway Demand

Service Area	Projected 10-Year Growth (Vehicle-Miles)
1	14,808
2	3,825
3	7,902
City Total	26,535

The impact fee CIP is aimed at facilitating anticipated long-term growth in Cibolo. The City Capital Improvement Plan, FY 2019-2024 identified in part capital projects programmed for long-term implementation. Other impact fee CIP projects were defined through analysis of need based on the 10-year land use assumptions. All projects identified on the impact fee CIP align with facilities defined as Arterial or Collector class in the current official Thoroughfare Plan. Projects identified in the impact fee CIP reflect (new) system capacity enhancements and aimed at facilitating continued growth in Cibolo. Cost estimates for construction, engineering, right-of-way and debt service were developed.

The roadway impact fee CIP identifies sixty-six (66) project segments totaling \$295 million and provides 59,106 vehicle-miles of net new capacity. State legislation requires that a credit for the portion of ad-valorem tax and utility service revenues generated by new service units during the program period that is used for payment of improvements, or a credit equal to 50% of the total projected cost of implementing a roadway impact fee capital improvements program be given. Applying the 50% credit to the CIP, the credited CIP projects totaled \$147 million of which \$101 million attributable to new development in the 10-year period.

The cost per service unit was calculated based on the cost attributable to new development and the projected 10-year demand. Applying the 50% credit



to the CIP cost, the maximum allowable cost per service unit was calculated.

The determination of fees due from new development is based upon the size of development, its associated service unit generation (equivalency table) and the cost per service unit derived and/or the adopted collection rate for each service area. This data is summarized in **Table ES-2**.

Table ES-2: Maximum Roadway Impact Fee Calculation

Roadway Impact Fee	SA 1	SA 2	SA 3
Total Eligible Capital Improvement Costs	\$88,683,829	\$137,881,756	\$22,001,181
Percent Attributable to Growth	70%	12%	100%
Total Eligible Impact Fee Costs	\$62,203,019	\$16,642,927	\$22,001,181
Growth in Service Units	14,808	3,825	7,902
Maximum Roadway Impact Fee per Service Unit ⁽¹⁾	\$4,200	\$4,351	\$2,784
Impact Fee Credit per Service Unit ⁽²⁾	\$2,100	\$2,175	\$1,392
Maximum Allowable Roadway Impact Fee ⁽³⁾	\$2,100	\$2,175	\$1,392

(1) Total Eligible Costs divided by the Growth in Service Units.

(2) Credit is 50% of Maximum Roadway Impact Fee per Service Unit.

(3) Maximum Allowable Roadway Impact Fee is Maximum Roadway Impact Fee minus the Impact Fee Credit per Service Unit.

WATER AND WASTEWATER IMPACT FEE ANALYSIS

A water and wastewater impact fee capital improvement plan (CIP) was developed for the City of Cibolo based on the City of Cibolo 2019-2024 list of projects for water and wastewater. The growth in water connections and wastewater connections is presented in **Table ES-3**.

Table ES-3: Growth in Water and Wastewater Connections

Year	Water Connections	Wastewater Connections
2021	5,787	9,927
2031	8,770	14,946

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 Improvement Plan. A 3.0% interest rate was used to calculate financing costs. **Table ES-4** and **Table ES-5** display a summary of the maximum allowable impact fee calculations for water and wastewater, respectively.

Table ES-4: Maximum Water Impact Fee Calculation

Total Eligible Capital Improvement Costs	\$12,484,991
Total Eligible Financing Costs	\$1,485,018
Total Eligible Impact Fee Costs	\$13,970,009
Growth in Service Units	3,797
Maximum Water Impact Fee per Service Unit ⁽¹⁾	\$3,679
Impact Fee Credit per Service Unit ⁽²⁾	\$1,840
Maximum Allowable Water Impact Fee ⁽³⁾	\$1,839

(1) Total Eligible Costs divided by the Growth in Service Units.

(2) Credit is 50% of Maximum Water Impact Fee per Service Unit.

(3) Maximum Allowable Water Impact Fee is Maximum Water Impact Fee minus the Impact Fee Credit per Service Unit.

Table ES-5: Maximum Wastewater Impact Fee Calculation

Total Eligible Capital Improvement Costs	\$11,089,917
Total Eligible Financing Costs	\$1,319,082
Total Eligible Impact Fee Costs	\$12,408,999
Growth in Service Units	7,102
Maximum Water Impact Fee per Service Unit ⁽¹⁾	\$1,747
Impact Fee Credit per Service Unit ⁽²⁾	\$874
Maximum Allowable Wastewater Impact Fee ⁽³⁾	\$873

(1) Total Eligible Costs divided by the Growth in Service Units.

(2) Credit is 50% of Maximum Wastewater Impact Fee per Service Unit.

(3) Maximum Allowable Wastewater Impact Fee is Maximum Wastewater Impact Fee minus the Impact Fee Credit per Service Unit.

DRAINAGE IMPACT FEE ANALYSIS

Drainage Capital Improvement Projects (CIP) were provided directly from the City. Drainage CIPs are only identified in the Dietz Creek-Cibolo Creek, Town Creek, and Upper Santa Clara Creek service areas at this time. The cost for each CIP was adjusted based on the portion attributable to the 10-year growth, and then a 50% credit was applied to the cost of the CIP in determining a cost per service unit for each service area in lieu of a credit analysis.

The drainage impact fees for the Dietz Creek-Cibolo Creek, Town Creek, and Upper Santa Clara Creek service areas were calculated by dividing the attributable 10-year growth cost by the computed growth in impervious area.

Based on the 50% credit, the drainage impact fees per square foot of impervious area proposed for the Dietz Creek-Cibolo Creek, Town Creek, and Upper Santa Clara Creek service areas are shown in **Table ES-6**.

Table ES-6: Maximum Drainage Impact Fee Calculation

Service Area	Fee per Square Foot Impervious Surface
Dietz Creek-Cibolo Creek	\$0.70
Lower Cibolo Creek	\$0.00
Lower Santa Clara Creek	\$0.00
Town Creek	\$0.91
Upper Santa Clara Creek	\$0.76

1.0 BACKGROUND

Chapter 395 of the Texas Local Government Code 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.” Impact fees have been implemented and maintained in numerous communities across Texas since the early 1990’s to serve as mechanism for exacting and funding infrastructure projects in a fair and equitable manner from new development. Chapter 395 mandates procedural and administrative requirements for implementing such programs as well as defining eligible costs including:

- Construction contract price,
- Surveying and engineering fees,
- Land acquisition costs,
- Fees paid to the consultant preparing or updating the capital improvement plan (CIP), and
- 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 improvement plan,
- Repair, operation, or maintenance of existing or new capital improvements,
- Upgrading, updating, expanding, or replacing existing capital improvements to serve existing development 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, and
- Principal payments and interest or other finance charges on bonds or other indebtedness, except as allowed above.

As a funding mechanism for capital improvements, impact fees allow cities to recover the costs associated with new or facility expansion to serve future development. For roads, only arterial and collector status roads on the Thoroughfare Development Plan may be considered. Statutory requirements mandate that impact fees be based on a specific list of improvements identified in a capital improvements program and only the cost attributed (and necessitated) by new growth over a ten-year period may be considered. As

projects in the program are completed, planned costs are updated with actual costs to reflect the capital expenditure of the program more accurately. Additionally, new capital improvement projects may be added to the system.

In December 2020, the City of Cibolo authorized Freese and Nichols, Inc. (FNI) to perform an update to the impact fee program for the roadway, water, wastewater, and drainage systems. The purpose of this report is to present the methodology used in the development and calculation of water, wastewater, roadway, and drainage impact fees for Cibolo. The methodology used herein satisfies the requirements mandated by Chapter 395 for the establishment of roadway, water, wastewater, and drainage impact fees.

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

Initially authorized by the Texas Legislature in 1987, roadway impact fees have undergone several technical and administrative changes, most notably since 2001. These include:

- Expansion of the service area structure for roadway facilities from three to six miles,
- A credit for the portion of ad valorem tax revenues generated by improvements over the program period, or the credit equal to 50% of the total projected cost of implementing the capital improvements plan,
- A city's share of costs on the federal or Texas highway system, including matching funds and costs related to utility line relocation, the establishment of curbs and gutters, sidewalks, drainage appurtenances, and rights-of-way,
- Increase in the time of update of impact fee land use assumptions and capital improvements plan from a three to a five-year period,
- Changes in compliance requirements related to annual reporting,
- For system updates, consolidation of the land use assumptions, capital improvements plan, and impact fee hearings, and
- The exemption of school districts and federal housing from impact fees.

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

Table 1-1: Abbreviations

Abbreviation	Full Nomenclature
CIP	Capital Improvement Plan
ETJ	Extra-territorial Jurisdiction
FNI	Freese and Nichols, Inc.
gpCd	gallons per connection per day
gpm	gallons per minute
IFCIP	Impact Fee Capital Improvement Plan
ITE	Institute of Transportation Engineers
LOS	Level of Service
LUA	Land Use Assumptions
MGD	Million Gallons per Day
AAMPO	Alamo Area Metropolitan Planning Organization
NHTS	National Household Travel Survey
SA	Special Arterial
SC	Special Collector
sf	square foot
TWLTL	Two-Way Left Turn Lane
veh-mi	Vehicle-miles
VMT	Vehicle-miles of travel

2.0 LAND USE ASSUMPTIONS

An initial step in the impact fee development process is the establishment of land use assumptions that address growth and development for a ten-year planning period (TLGC Section 395.001(5)). To assist in the determination of need and timing of capital improvements to serve future development, a reasonable estimation of future growth is required. Growth and future development projections were formulated based on assumptions pertaining to the type, location, quantity, and timing of various future land uses within the community. These land use assumptions, which include population and employment projections for the ten-year planning period 2021-2031, are the basis for the preparation of impact fee capital improvement plans. The land use assumptions were developed using data developed from the Cibolo Comprehensive Master Plan, the 2020 Cibolo, Texas Demographics Report (Cibolo Economic Development Department), the Retail Marketplace Profile (Cibolo Economic Development Department), the Future Plan Use and Thoroughfare Map dated September 2017, demographic data from the Alamo Area Council of Governments, and with input from City Staff. Growth rates and resultant population and employment forecasts were approved by the Impact Fee Capital Improvements Advisory Committee on April 20, 2021.

2.1 SERVICE AREAS

Service areas for roads, water, wastewater, and drainage were amended to address and structural changes since the last program update in 2013. With roadways confined to city limits, changes due to annexations were incorporated. A third service area addressing the far southern sector of the city south of Schmoekel Road was defined. For long-term program development, a fourth service area covering ETJ area east of Linne Road has been defined. Water service area conformed with water CCN boundary, and the wastewater service area is the area surrounded by other wastewater CCN holders. Drainage service areas align with drainage basins traversing the city and ETJ areas. Five drainage basins span the Cibolo area and include Dietz Creek-Cibolo Creek, Lower Cibolo Creek, Lower Santa Clara Creek, Town Creek, and Upper Santa Clara Creek. **Figures 2-1, 2-2, 2-3 and 2-4** illustrate the roadway, water, wastewater, and drainage service areas, respectively.

Figure 2-1: Roadway Service Areas

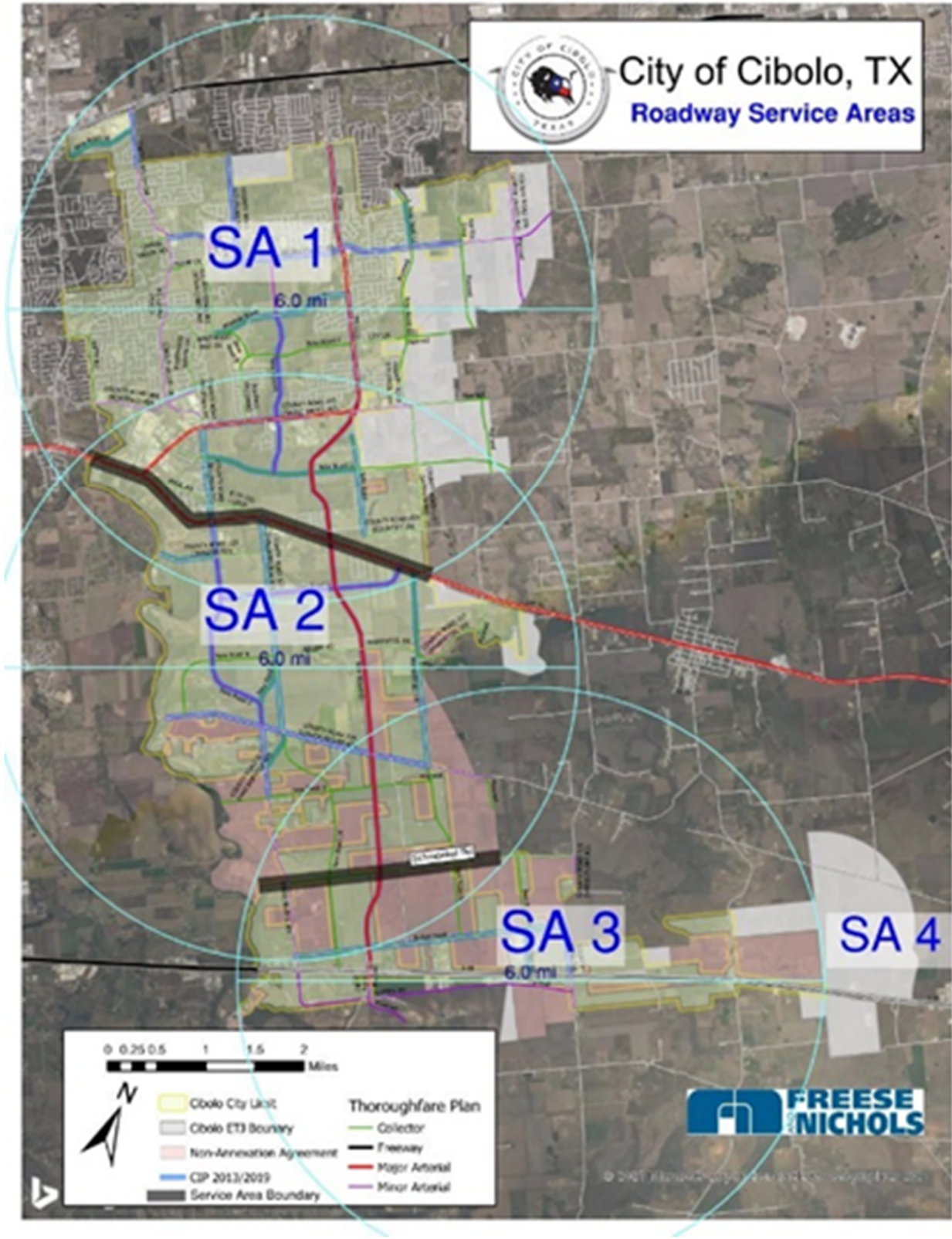


Figure 2-2: Water Service Area

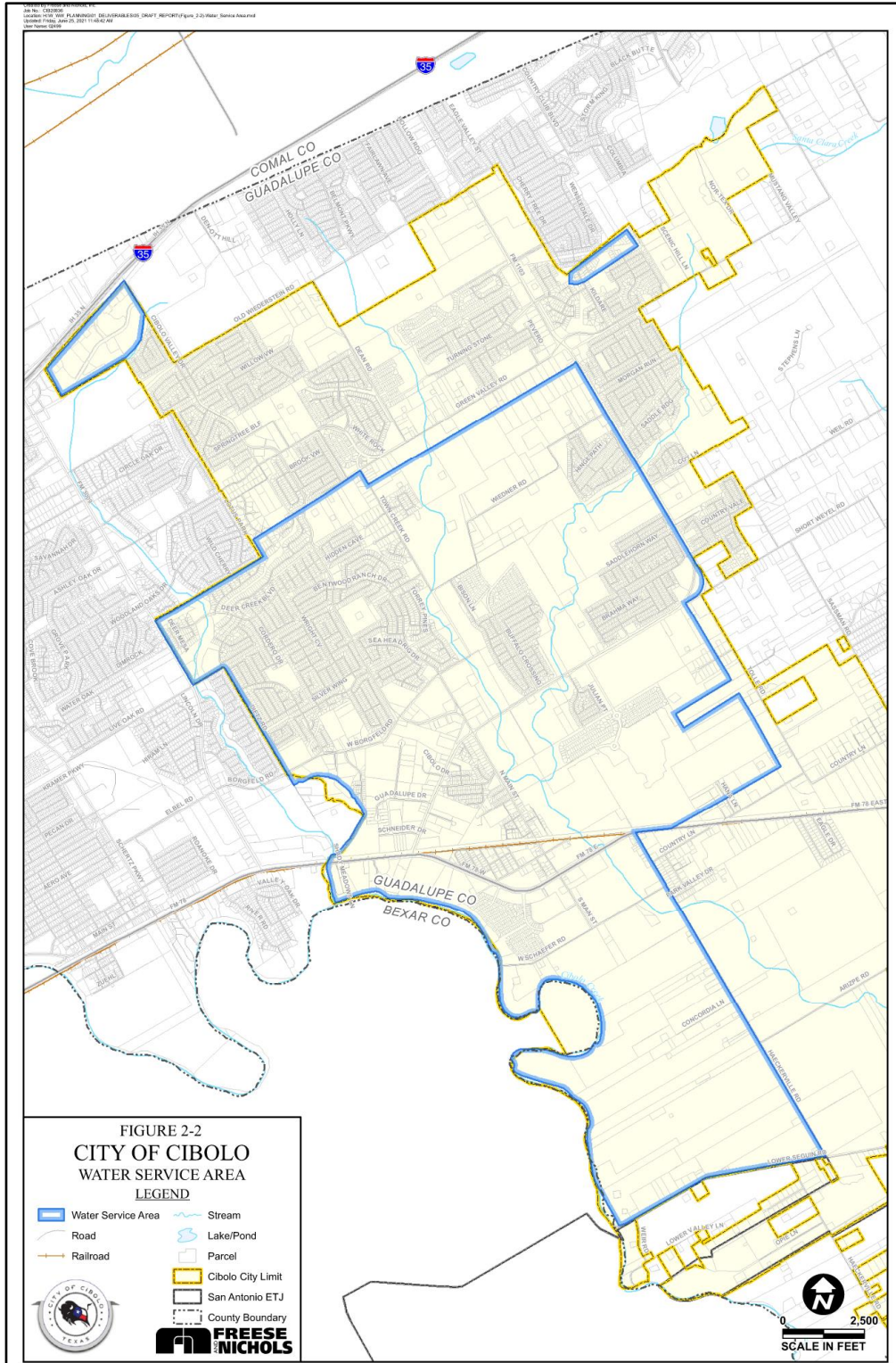


Figure 2-3: Wastewater Service Area

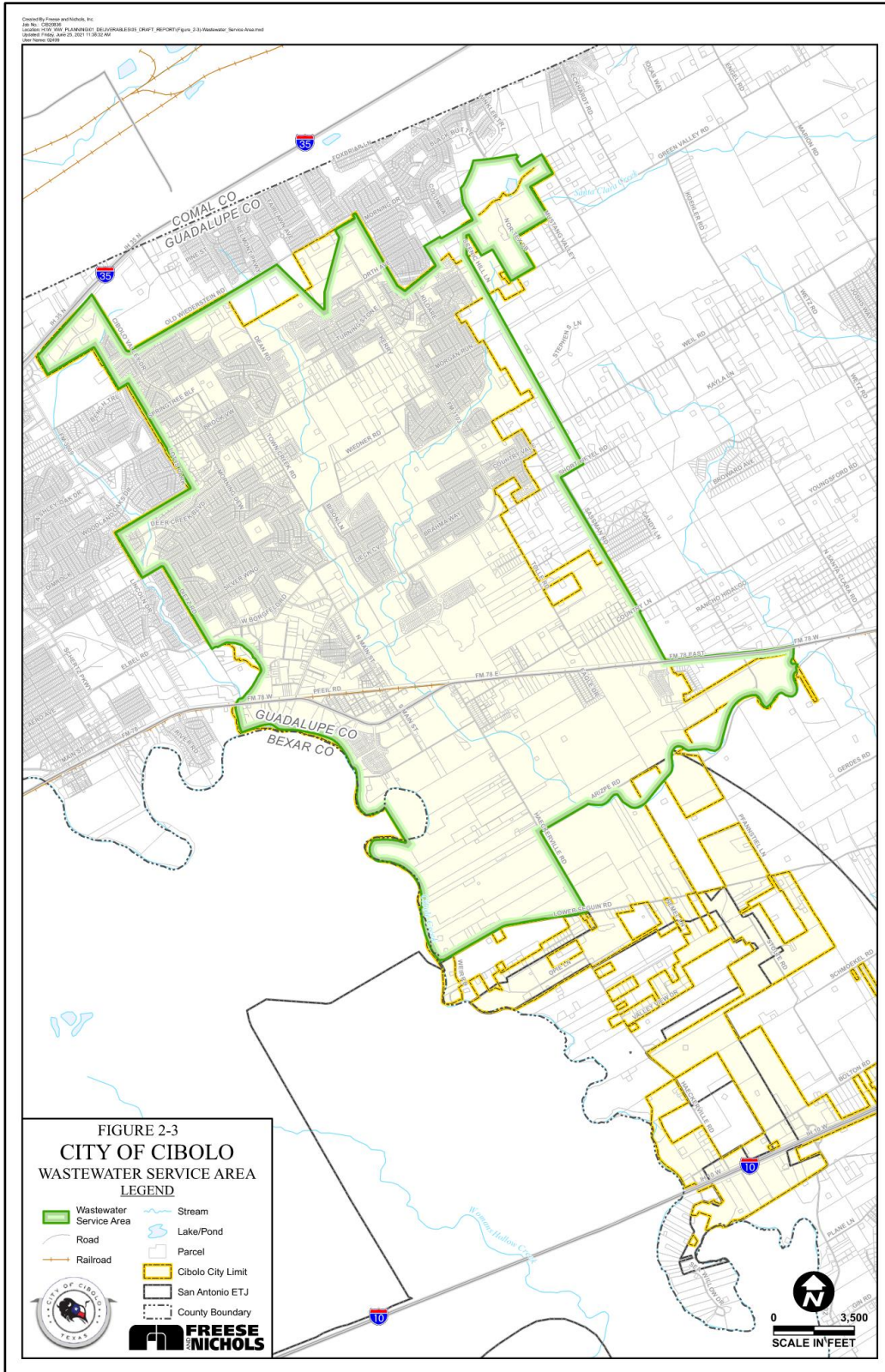
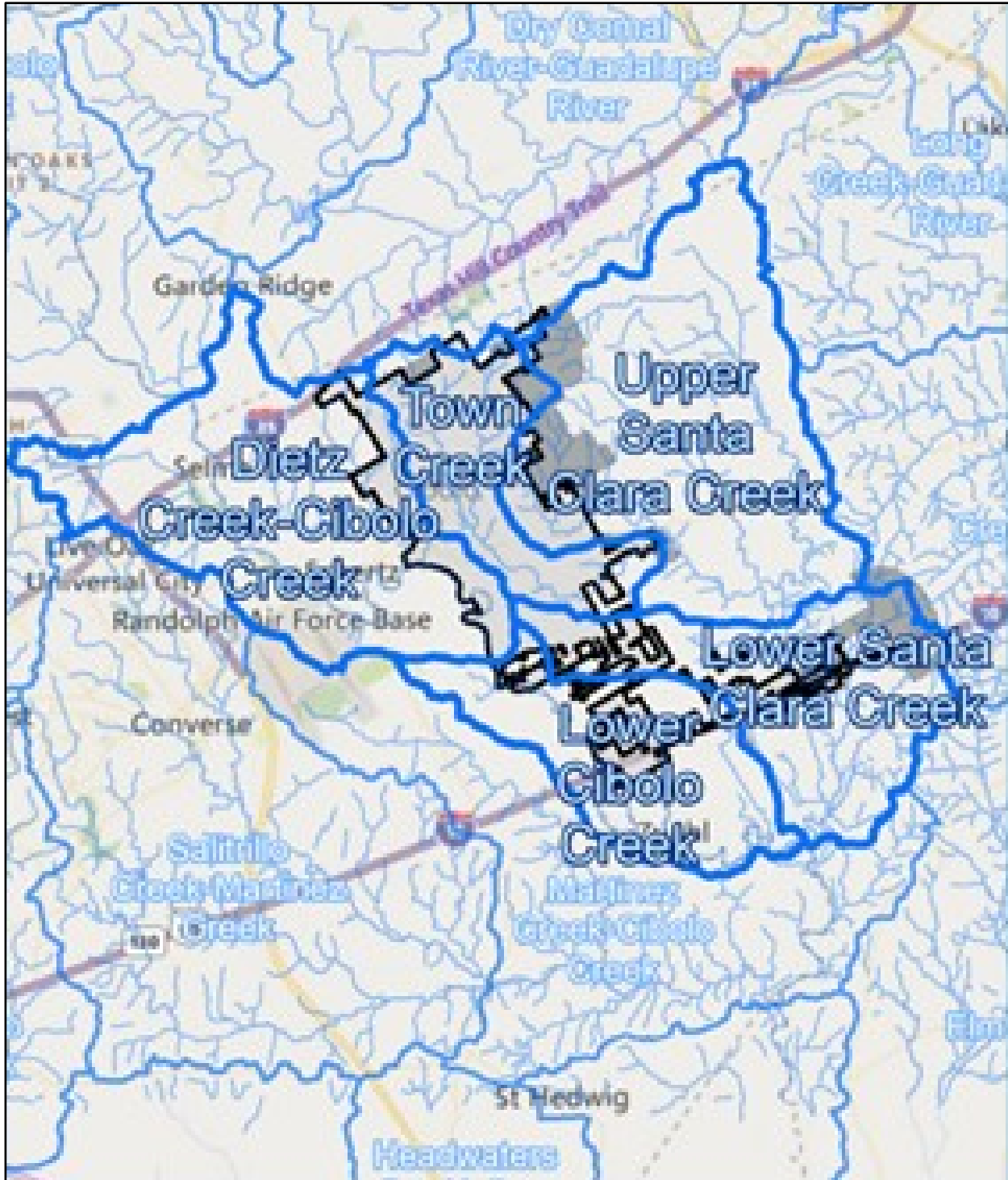


Figure 2-4: Drainage Service Areas



2.2 GROWTH ASSUMPTIONS

2.2.1 Roadway Growth Assumptions

Projected growth has been characterized in two forms: population and employment. A series of assumptions and conversions were made to arrive at reasonable growth rates for population and employment. The population and employment projections for the roadway service area are shown in **Table 2-1**. A breakdown of employment by type is listed in **Table 2-2**.

Table 2-1: Population and Employment Projections by Roadway Service Area

Roadway Service Area	Population			Employment		
	2021	2031	Total Increase	2021	2031	Total Increase
1	32,042	40,493	8,451	3,797	6,856	3,059
2	2,079	7,332	5,253	127	162	35
3	339	784	445	170	1,615	1,445
Total	34,460	48,609	14,149	4,094	8,633	4,539

Table 2-2: Employment Projections by Type by Roadway Service Area

Roadway Service Area	Employment 2021 (Employees)				Employment 2031 (Employees)			
	Basic	Retail	Service	Total	Basic	Retail	Service	Total
1	1,054	957	1,786	3,797	1,497	1,461	3,898	6,856
2	5	99	23	127	5	121	36	162
3	44	79	47	170	1,244	202	169	1,615
Total	1,103	1,135	1,856	4,094	2,746	1,784	4,103	8,633

2.2.2 Water and Wastewater Growth Assumptions

The City of Cibolo provided information on known developments in the water and wastewater service areas. A map of the areas is presented on **Figure 2-5** and a table summarizing the growth is provided in **Table 2-3**. The growth in water connections and wastewater connections for the 10-year planning period is provided in **Table 2-4**. The water connections are estimated to grow 4.2% annually, and the wastewater connections are projected to grow 4.2% annually.

Figure 2-5: Water and Wastewater Growth Areas

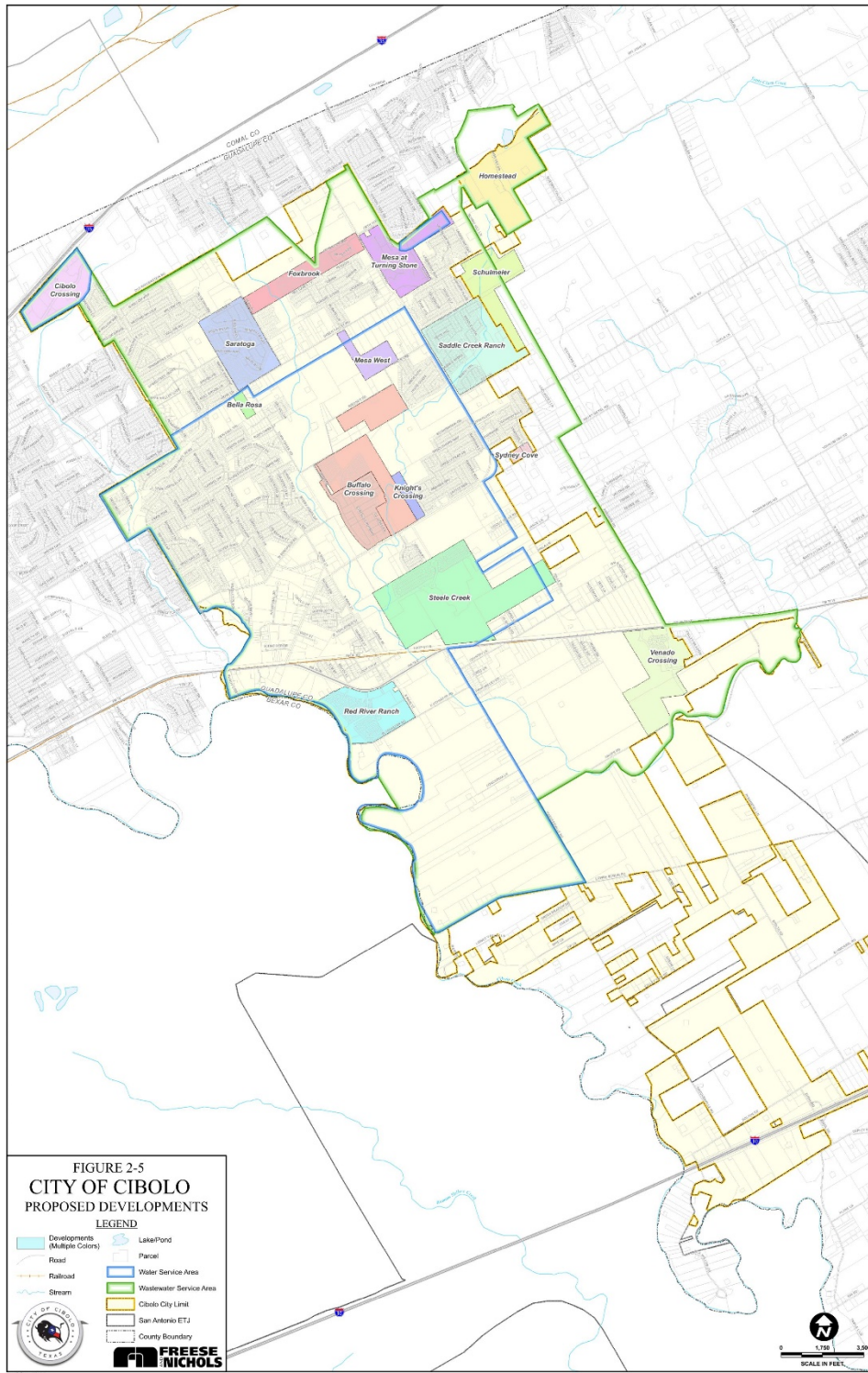


Table 2-3: Water and Wastewater Development Areas

Growth Area	Water Connections	Wastewater Connections
Steele Creek	1,180	1,180
Buffalo Crossing	285	285
Knights Crossing/New Develop	288	288
Sydney Cove	-	40
Saddle Creek Ranch	-	133
Mesa Western	160	160
Mesa Turning Stone	0	0
Saratoga	-	0
Foxbrook	-	131
Bella Rosa	53	53
Homestead	-	582
Cibolo Crossing	736	736
Red River	281	281
Venado Crossing	-	748
Schulmeier	-	402
Total	2,983	5,019

Table 2-4: Growth in Water and Wastewater Connections

Year	Water Connections	Wastewater Connections
2021	5,787	9,927
2031	8,770	14,946

2.2.3 Drainage Growth Assumptions

The impacts to drainage and stormwater runoff from development are primarily driven by the increase in impervious surface in each service area. Impervious surface includes any paved areas such as roads, parking lots, and driveways, as well as building rooftops. Increases in impervious surface produce more stormwater runoff, thereby driving the need for additional drainage system capacity. Therefore, the drainage impact fee service units are defined as the amount of impervious area in square feet. The amount of impervious surface area was determined based on the land use type, as shown in **Table 2-5**.

Table 2-5: Percent Impervious Values by Land Use Type

Land Use	Percent Impervious
High Density Residential	70%
Medium Density Residential (1/4 ac.)	47%
Medium Density Residential (1/3 ac.)	41%
Medium Density Residential (1/2 ac.)	25%
Low Density Residential (1 acre)	20%
Low Density Residential (2 acres)	12%
Commercial	90%
Industrial	90%

Growth and future development projections were formulated based on assumptions pertaining to the type, location, quantity, and timing of various future land uses within each service area. The 2031 land use was then equated to the amount of project impervious surface area using **Table 2-5**. **Table 2-6** below shows the projected growth in impervious area for the five service areas.

Table 2-6: Projected 10-Year Growth in Service Unit

Service Area (Watershed)	Existing sq.ft. Impervious	10-Year sq.ft. Impervious	10-Year Increase (sq.ft.)	10-Year Increase (%)
Dietz Creek-Cibolo Creek	33,978,767	37,436,820	3,458,054	10%
Lower Cibolo Creek	8,333,200	14,187,595	5,854,396	70%
Lower Santa Clara Creek	17,434,935	17,434,935	-	0%
Town Creek	63,115,044	76,975,294	13,860,250	22%
Upper Santa Clara Creek	19,251,180	22,245,026	2,993,847	16%

3.0 ROADWAY IMPACT FEE ANALYSIS

The impact fee CIP is aimed at facilitating anticipated long-term growth in Cibolo. The City Thoroughfare Plan, the FY 2019-2024 Capital Improvement Plan, and needs based on the 10-year land use assumptions served as a basis for defining the impact fee CIP. All projects identified on the impact fee CIP align with facilities defined as Arterial or Collector class in the current official Thoroughfare Plan. Projects contained within the CIP reflect new system capacity enhancements and aimed at facilitating continued growth and development within Cibolo. The recommended CIP will provide sufficient capacity to meet projected needs over the ten-year planning period 2021-2031.

3.1 METHODOLOGY

To update of the roadway impact fee program, a series of work tasks were undertaken. These tasks are described below.

1. Meetings were held with the City Staff and the Capital Improvement Advisory Committee to discuss technical approach, growth rates and land use assumptions, defined capital improvements plans, project costing and associated cost per service unit calculations, and program amendments for policy consideration.
2. Impact fee service areas were reviewed and amended for any city annexations. Roadway service areas are contained to the current city limits.
3. The vehicle-mile of travel (VMT) during the PM peak hour was defined as the unit of measure for the roadway impact fee system.
4. A roadway conditions inventory was conducted on city thoroughfares for lane geometries, roadway classifications and segment lengths. New arterial and/or collector streets not previously assessed were added to the program database.
5. The existing roadway network was evaluated based on traffic volume count data collected March 2021, to determine roadway capacity, current utilization, and if any capacity deficiencies exist within each impact fee service area. Data was cross-checked to data from StreetLight, a third-party vendor that uses cell phone data to define travel lines, to minimize any effects of the pandemic on data.
6. Projected 10-year growth, in terms of vehicle-miles of demand, was calculated for the service areas based on updated land use assumptions (projections of population and employment growth) prepared by Freese and Nichols and supplemented with service unit generation for residential, office, commercial and industrial land uses per an updated land use equivalency table. Land Use Assumptions data was reviewed and approved by the Capital Improvements Advisory Committee (CIAC) prior to development of VMT growth projections and capital improvements plan (CIP) update.

7. The existing impact fee CIP was evaluated with updated traffic count data to ensure that excess capacity remained within each impact fee project for retention in the program. The analysis of the existing impact fee CIP revealed excess capacity and therefore could remain in the impact fee program.
8. A roadway impact fee CIP was amended to incorporate several new projects, consistent with the official City Thoroughfare Plan, into the impact fee program. Projects added to the impact fee program included only capacity enhancement type projects.
9. Roadway costs associated with construction, engineering, right-of-way were obtained from the Cibolo CIP FY2019-2024 or estimates prepared by Freese and Nichols. For projects recently completed, from which excess capacity is considered in the program, actual costs from City bid tabs were obtained. Debt service was conservatively included and estimated at 3% interest over a 10-year period. Costs for study updates are eligible for recovery and were included in the total project cost. Roadway cost data was compiled and summed by service area.
10. The cost of capacity supplied, cost attributable to new development and the maximum cost per service unit was calculated for each service area. A credit of 50% was applied to the overall cost of the capital improvements program for use in the calculation of the cost per service unit.
11. The Land Use Equivalency Table (service unit generation for specific land use categories) was updated to incorporate trip rate and trip length data consistent with impact fee methodology. Trip rate data was obtained from *Trip Generation, Tenth Edition* by the Institute of Transportation Engineers (ITE). Trip length statistics of the city were obtained from two sources; the Capital Area Metropolitan Planning Organization (CAMPO), travel demand model, supplemented with data from the National Travel Survey and Census data statistics of workplace travel time.
12. This report was prepared to document the procedures, findings, and conclusions of the study.

3.2 ROADWAY SERVICE AREAS

Legislative requirements stipulate that roadway service areas be limited to a six-mile maximum and must be located within the current city limits. Roadway service areas are different from water and wastewater systems, which can include the city limits and its extra-territorial jurisdiction (ETJ) or other defined service area. This is primarily because roadway systems are "open" to both local and regional (non-city) use as opposed to a "closed" system of improvements within a water and wastewater system. 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. Cibolo's growth required for the addition of a third and fourth service area to address both the far southern sector of the city and southeastern edge that is currently within city ETJ. Considerations were made for possible long-term city expansion and hence the fourth service area. No growth or development anticipated there at this time. As growth and need arises, a

revised service area map can be prepared incorporating any specific changes. The roadway service area is depicted in **Figure 2-1**.

3.3 ROADWAY IMPACT FEE SERVICE UNITS

Service units establish a relationship between roadway projects and demand placed on the street system by development as well as, the ability to calculate and assess impact fees for specific development proposals. As defined in Chapter 395, "service unit means a standardized measure of consumption, use, generation, or discharge attributable to an individual unit of development in accordance with generally accepted engineering or planning standards for a particular category of capital improvements or facility expansions."

To determine the roadway impact fee for a new development, the service unit must accurately identify the impact that the development will have on the major roadway system (i.e., arterial and collector roads) serving the development. This impact is a combination of the number of new trips generated by the development, the peaking characteristics of the land-use(s) within the development, and the length of each new trip on the transportation system.

The service unit must also reflect the capacity, which is provided by the roadway system, and the demand placed on the system during the time in which peak, or design, conditions are present on the system. Transportation facilities are designed and constructed to accommodate volumes expected to occur during the peak hours (design hours). These volumes typically occur during the peak hours as motorists travel to and from work.

The vehicle-mile during the PM peak hour serves as the service unit for impact fees in Cibolo. This service unit establishes a more precise measure of capacity, utilization, and intensity of land development through published trip generation data. It also recognizes legislative requirements with regards to trip length. This service unit has been tested and validated since the inception of impact fee legislation in 1989.

3.3.1 Service Units

Service units create a link between supply (roadway projects) and demand (development). Both 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.

Service Unit Supply

For roadway capital project improvements, the number of service units provided during the peak hour is simply the product of the capacity of the roadway in one hour and the length of the product. For example:

Given a four-lane divided roadway project with a 600 vehicle per hour per lane capacity and a length of two miles, the number of service units provided is:

$$600 \text{ vehicles per hour per lane} \times 4 \text{ lanes} \times 2 \text{ miles} = 4,800 \text{ vehicles-miles}$$

Service Unit Demand

The demand placed on the system can be expressed in a similar manner. For example, a development generating 100 vehicle trips in the PM peak hour with an average trip length of two miles would generate:

$$100 \text{ vehicle-trips} \times 2 \text{ miles/trip} = 200 \text{ vehicle-miles}$$

Similarly, demand placed on the existing roadway network is calculated in the same manner with a known traffic volume (peak hour roadway counts collected in 2020) on a street and a given segment length.

3.3.2 Service Units for New Development

An important objective in the development of the impact fee system is the development of a specific service unit equivalency for individual developments. The vehicle-miles generated by a new development are a function of the trip generation and average trip length characteristics of that development. The following describes the process used to develop the vehicle-equivalency table, which relates land use types and sizes to the resulting vehicle-miles of demand created by that development.

3.3.3 Trip Generation

Trip generation information for the PM peak hour was based on data published in the Tenth Edition of *Trip Generation* by the Institute of Transportation Engineers (ITE). *Trip Generation* is a reference publication that contains travel characteristics of over 100 land uses across the nation and is based on empirical data gathered from over 3,200 studies that were reported to the Institute by public agencies, developers, and consulting firms.

Pass-by and Diverted Trips Adjustments

The actual "traffic impact" of a specific site for impact fee purposes is based on the amount of traffic added to the street system. To accurately estimate new trips generated by a new development,

adjustments must be made to trip generation rates and equations to account for pass-by and diverted trips. The added traffic is adjusted so that each development is assigned only for a portion of trips associated with that specific development, reducing the possibility of over-counting by counting only primary trips generated.

Pass-by trips are those trips that are already on a particular route for a different purpose and simply stop at a particular development on that route. For example, a stop at a convenience store on the way home from the office is a pass-by trip for the convenience store. A pass-by trip does not create an additional burden on the street system and therefore should not be counted in the assessment of impact fees of a convenience store.

A diverted trip is a similar situation, except that a diversion is made from the regular route to make an interim stop. On a system-wide basis, this trip places a slightly additional burden on the street system but in many cases, this burden is minimal.

Trip generation rates were reduced by the percentages presented in **Table 3-1** to isolate the primary trip purpose. Adjustments were based on studies conducted by ITE and other published studies.

The resulting recommended trip rates are illustrated as part of the Land Use/Vehicle-Mile Equivalency Table illustrated later in this chapter. Rates were developed in lieu of equations to simplify the assessment of impact fees by the City and likewise, the estimation of impact fees by persons who may be required to pay an impact fee in conjunction with a development project.

A local study may also be conducted to confirm rates in Trip Generation or to change rates reflecting local conditions. In such cases, a minimum of three similar sites should be counted. Selected sites should be isolated in nature with driveways that specifically serve the development and no other land uses. The results should be plotted on the scatter diagram of the selected land use contained in Trip Generation for comparison purposes. It is recommended that no change be approved unless the results show a variation of at least fifteen percent across the range of the sample size surveyed.

Trip Length

Trip lengths (in miles) are used in conjunction with site trip generation to estimate vehicle-miles of travel. Trip length data was based on information generated by several sources including the AAMPO travel demand modeling, National Household Travel Survey, US Census workplace travel time information, and

engineering judgment. Travel characteristics were used to determine average trip lengths for common land use types.

Table 3-2 summarizes the average trip lengths compiled from the forecast model. These trip lengths represent the average distance that a vehicle will travel between an origin and destination of which either the origin or destination contains the land-use category identified below. This compiled data represents the best available information on trip lengths for this area.

Localized Trip Adjustment

Impact fee legislation mandates that, fees be limited to locally funded roadways. As such, an analysis of potential trip lengths was conducted for roadways within Cibolo. An average of trip lengths to travel across city limits along several roadways was calculated. The localized average home-based work trip was determined to be between 3.7 and 4.1 miles and dependent on land use type.

Origin and Destination Adjustments

The assessment of an individual development's impact fee is based on the premise that each vehicle-trip has an origin and a destination, and that the development end should pay for one-half of the cost necessary to complete each trip. To prevent the potential of double charging, trip lengths were divided in half to reflect half of the vehicle trip associated with development. **Table 3-2** illustrates the adjusted trip length.

Service Unit Equivalency Table

The result of combining the trip generation and trip length information is an equivalency table which establishes the service unit rate for various land uses. These service unit rates are based on an appropriate development unit for each land use. For example, a dwelling unit is the basis for residential uses, while 1,000 gross square feet of floor area is the basis for office, commercial, and industrial uses. Other less common land uses use appropriate independent variables.

Separate rates have been established for specific land uses within the broader categories of residential, commercial, industrial, and institutional to reflect the differences between land uses within the categories. However, even with these specific land use types, information is not available for every conceivable land use, so limitations do exist.

Table 3-1: Trip Reduction Estimates (PM Peak Hour)

Land Use Category	ITE Code	Development Unit	Trip Gen Rate (PM Peak)	Pass-by Rate (%)	Diverted Rate (%)	Trip Rate w/ Reductions (PM Peak)
RESIDENTIAL						
Single-Family Detached Housing	210	Dwelling Units	0.99	0%	0%	0.99
Multifamily Housing (Low-Rise)	220	Dwelling Units	0.56	0%	0%	0.56
Mid-Rise Residential with 1st-Floor Commercial	231	Dwelling Units	0.36	0%	0%	0.36
Senior Adult Housing - Detached	251	Dwelling Units	0.3	0%	0%	0.30
Assisted Living	254	Beds	0.26	0%	0%	0.26
Continuing Care Retirement Community	255	Dwelling Units	0.16	0%	0%	0.16
OFFICE						
General Office Building	710	1,000 Sq Ft GFA	1.15	0%	0%	1.15
Medical-Dental Office Building	720	1,000 Sq Ft GFA	3.46	0%	0%	3.46
United States Post Office	732	1,000 Sq Ft GFA	11.21	70%	0%	3.36
COMMERCIAL/RETAIL						
Hotel	310	Rooms	0.6	0%	0%	0.60
All Suites Hotel	311	Rooms	0.36	0%	0%	0.36
Miniature Golf Course	431	Holes	0.33	0%	0%	0.33
Golf Driving Range	432	Driving Positions	1.25	0%	0%	1.25
Movie Theater	444	Screens	14.6	0%	0%	14.60
Health/Fitness Club	492	1,000 Sq Ft GFA	3.45	0%	0%	3.45
Hospital	610	1,000 Sq Ft GFA	0.97	0%	0%	0.97
Nursing Home	620	1,000 Sq Ft GFA	0.59	0%	0%	0.59
Free-Standing Emergency Room	650	1,000 Sq Ft GFA	1.52	0%	0%	1.52
Shopping Center	820	1,000 Sq Ft GLA	3.81	34%	26%	1.52
Building Materials and Lumber Store	812	1,000 Sq Ft GFA	2.06	25%	0%	1.55
Free-Standing Discount Store	815	1,000 Sq Ft GFA	4.83	17%	35%	2.32
Hardware/Paint Store	816	1,000 Sq Ft GFA	2.68	26%	28%	1.23
Nursery (Garden Center)	817	1,000 Sq Ft GFA	6.94	25%	0%	5.21
Supermarket	850	1,000 Sq Ft GFA	9.24	36%	38%	2.40
Discount Club	857	1,000 Sq Ft GFA	4.18	30%	0%	2.93
Sporting Goods Superstore	861	1,000 Sq Ft GFA	2.02	40%	0%	1.21
Home Improvement Superstore	862	1,000 Sq Ft GFA	2.33	48%	24%	0.65
Electronic Superstore	863	1,000 Sq Ft GFA	4.26	40%	33%	1.15
Baby Superstore	865	1,000 Sq Ft GFA	1.82	30%	0%	1.27
Department Store	875	1,000 Sq Ft GFA	1.95	30%	0%	1.37
Arts and Crafts Store	879	1,000 Sq Ft GFA	6.21	30%	0%	4.35
Pharmacy/Drugstore w/o Drive-Through Window	880	1,000 Sq Ft GFA	8.51	49%	13%	3.23
Pharmacy/Drugstore w/ Drive-Through Window	881	1,000 Sq Ft GFA	10.29	49%	13%	3.91
Furniture Store	890	1,000 Sq Ft GFA	0.52	53%	31%	0.08
Walk-in Bank	911	1,000 Sq Ft GFA	12.13	47%	26%	3.28
Drive-in Bank	912	Drive-in Lanes	27.15	47%	26%	7.33
Quality Restaurant	931	1,000 Sq Ft GFA	7.8	44%	27%	2.26
High-Turnover (Sit-Down) Restaurant	932	1,000 Sq Ft GFA	9.77	43%	26%	3.03
Fast-Food Restaurant w/ Drive-Through Window	934	1,000 Sq Ft GFA	32.67	50%	23%	8.82
Quick Lubrication Vehicle Shop	941	Service Positions	2.43	0%	0%	2.43
Automobile Parts Service Center	943	1,000 Sq Ft GFA	0.77	0%	0%	0.77
Gasoline/Service Station w/ Convenience Market	945	Fueling Positions	9.24	36%	38%	2.40
Car Wash and Detail Center	949	Wash Stalls	23.04	63%	26%	2.53
INDUSTRIAL						
General Light Industrial	110	1,000 Sq Ft GFA	0.63	0%	0%	0.63
Manufacturing	140	1,000 Sq Ft GFA	0.67	0%	0%	0.67
Warehousing	150	1,000 Sq Ft GFA	0.19	0%	0%	0.19
Mini-Warehouse	151	1,000 Sq Ft GFA	0.17	0%	0%	0.17
INSTITUTIONAL						
Private School (K-8)	534	Students	0.26	0%	0%	0.26
Private School (K-12)	536	Students	0.17	0%	0%	0.17
Charter Elementary School	537	Students	0.14	0%	0%	0.14
Church	560	1,000 Sq Ft GFA	0.49	0%	0%	0.49
Day Care Center	565	Students	0.79	75%	0%	0.20

Table 3-2: Trip Lengths and Adjustments

Land Use Category	ITE Code	Localized Trip Length (mi)	O-D Adjusted Trip Length (mi)
RESIDENTIAL			
Single-Family Detached Housing	210	3.72	1.86
Multifamily Housing (Low-Rise)	220	3.11	1.55
Mid-Rise Residential with 1st-Floor Commercial	231	3.11	1.55
Senior Adult Housing - Detached	251	2.81	1.4
Assisted Living	254	2.81	1.4
Continuing Care Retirement Community	255	2.81	1.4
OFFICE			
General Office Building	710	3.92	1.96
Corporate Headquarters Building	714	3.92	1.96
Single Tenant Office Building	715	3.92	1.96
Medical-Dental Office Building	720	3.72	1.86
COMMERCIAL/RETAIL			
Hotel	310	2.35	1.18
All Suites Hotel	311	2.35	1.18
Miniature Golf Course	431	3.67	1.83
Golf Driving Range	432	3.67	1.83
Movie Theater	444	3.67	1.83
Health/Fitness Club	492	3.67	1.83
Hospital	610	3.72	1.86
Nursing Home	620	3.72	1.86
Free-Standing Emergency Room	650	3.72	1.86
Shopping Center	820	1.36	0.68
Hardware/Paint Store	816	2.35	1.18
Nursery (Garden Center)	817	2.35	1.18
Supermarket	850	2.35	1.18
Discount Supermarket	854	2.35	1.18
Discount Club	857	2.35	1.18
Sporting Goods Superstore	861	2.35	1.18
Home Improvement Superstore	862	2.35	1.18
Electronic Superstore	863	2.35	1.18
Department Store	875	2.35	1.18
Arts and Crafts Store	879	2.35	1.18
Pharmacy/Drugstore w/o Drive-Through Window	880	0.40	0.2
Pharmacy/Drugstore w/ Drive-Through Window	881	0.40	0.2
Furniture Store	890	2.35	1.18
Walk-in Bank	911	2.35	1.18
Drive-in Bank	912	2.35	1.18
Fast Casual Restaurant	930	1.86	0.93
Quality Restaurant	931	1.86	0.93
High-Turnover (Sit-Down) Restaurant	932	1.86	0.93
Fast-Food Restaurant w/ Drive-Through Window	934	1.86	0.93
Quick Lubrication Vehicle Shop	941	2.35	1.18
Automobile Parts Service Center	943	2.35	1.18
Gasoline/Service Station w/ Convenience Market	945	0.40	0.2
Car Wash and Detail Center	949	2.35	1.18
General Light Industrial	110	4.14	2.07
Industrial Park	130	4.14	2.07
Manufacturing	140	4.14	2.07
Warehousing	150	4.14	2.07
Mini-Warehouse	151	3.72	1.86
High-Cube Fulfillment Center Warehouse	155	4.37	2.19
INSTITUTIONAL			
Private School (K-8)	534	2.05	1.03
Private School (K-12)	536	2.05	1.03
Charter Elementary School	537	2.05	1.03
Church	560	2.30	1.15
Day Care Center	565	2.05	1.03

Service Unit Equivalency Table

The result of combining the trip generation and trip length information is an equivalency table which establishes the service unit rate for various land uses. These service unit rates are based on an appropriate development unit for each land use. For example, a dwelling unit is the basis for residential uses, while 1,000 gross square feet of floor area is the basis for office, commercial, and industrial uses. Other less common land uses use appropriate independent variables.

Separate rates have been established for specific land uses within the broader categories of residential, commercial, industrial, and institutional to reflect the differences between land uses within the categories. However, even with these specific land use types, information is not available for every conceivable land use, so limitations do exist. The equivalency table is illustrated in **Table 3-3**.

Table 3-3: Land Use Vehicle-Mile Equivalency

Land Use Category	ITE Code	Development Unit	Trip Rate w/ Reductions (PM Peak)	O-D Adjusted Trip Length (mi)	Service Unit Equivalency
RESIDENTIAL					
Single-Family Detached Housing	210	Dwelling Units	0.99	1.86	1.84
Multifamily Housing (Low-Rise)	220	Dwelling Units	0.56	1.55	0.87
Mid-Rise Residential with 1st-Floor Commercial	231	Dwelling Units	0.36	1.55	0.56
Senior Adult Housing - Detached	251	Dwelling Units	0.30	1.4	0.42
Assisted Living	254	Beds	0.26	1.4	0.36
Continuing Care Retirement Community	255	Dwelling Units	0.16	1.4	0.22
OFFICE					
General Office Building	710	1,000 Sq Ft GFA	1.15	1.96	2.25
Corporate Headquarters Building	714	1,000 Sq Ft GFA	0.60	1.96	1.18
Single Tenant Office Building	715	1,000 Sq Ft GFA	1.71	1.96	3.35
Medical-Dental Office Building	720	1,000 Sq Ft GFA	3.46	1.86	6.44
COMMERCIAL/RETAIL					
Hotel	310	Rooms	0.60	1.18	0.71
All Suites Hotel	311	Rooms	0.36	1.18	0.42
Miniature Golf Course	431	Holes	0.33	1.83	0.60
Golf Driving Range	432	Driving Positions	1.25	1.83	2.29
Movie Theater	444	Screens	14.60	1.83	26.72
Health/Fitness Club	492	1,000 Sq Ft GFA	3.45	1.83	6.31
Hospital	610	1,000 Sq Ft GFA	0.97	1.86	1.80
Nursing Home	620	1,000 Sq Ft GFA	0.59	1.86	1.10
Free-Standing Emergency Room	650	1,000 Sq Ft GFA	1.52	1.86	2.83
Shopping Center	820	1,000 Sq Ft GLA	1.52	0.68	1.03
Hardware/Paint Store	816	1,000 Sq Ft GFA	1.23	1.18	1.45
Nursery (Garden Center)	817	1,000 Sq Ft GFA	5.21	1.18	6.15
Supermarket	850	1,000 Sq Ft GFA	2.40	1.18	2.83
Discount Supermarket	854	1,000 Sq Ft GFA	2.18	1.18	2.57
Discount Club	857	1,000 Sq Ft GFA	1.67	1.18	1.97
Sporting Goods Superstore	861	1,000 Sq Ft GFA	1.21	1.18	1.43
Home Improvement Superstore	862	1,000 Sq Ft GFA	0.65	1.18	0.77
Electronic Superstore	863	1,000 Sq Ft GFA	1.15	1.18	1.36
Department Store	875	1,000 Sq Ft GFA	1.37	1.18	1.62
Arts and Crafts Store	879	1,000 Sq Ft GFA	4.35	1.18	5.13
Pharmacy/Drugstore w/o Drive-Through Window	880	1,000 Sq Ft GFA	3.23	0.2	0.65
Pharmacy/Drugstore w/ Drive-Through Window	881	1,000 Sq Ft GFA	3.91	0.2	0.78
Furniture Store	890	1,000 Sq Ft GFA	0.08	1.18	0.09
Walk-in Bank	911	1,000 Sq Ft GFA	3.28	1.18	3.87
Drive-in Bank	912	Drive-in Lanes	7.33	1.18	8.65
Fast Casual Restaurant	930	1,000 Sq Ft GFA	4.38	0.93	4.07
Quality Restaurant	931	1,000 Sq Ft GFA	2.26	0.93	2.10
High-Turnover (Sit-Down) Restaurant	932	1,000 Sq Ft GFA	3.03	0.93	2.82
Fast-Food Restaurant w/ Drive-Through Window	934	1,000 Sq Ft GFA	8.82	0.93	8.20
Quick Lubrication Vehicle Shop	941	Service Positions	3.64	1.18	4.30
Automobile Parts Service Center	943	1,000 Sq Ft GFA	2.26	1.18	2.67
Gasoline/Service Station w/ Convenience Market	945	1,000 Sq Ft GFA	11.49	0.2	2.30
INDUSTRIAL					
General Light Industrial	110	1,000 Sq Ft GFA	0.63	2.07	1.30
Industrial Park	130	1,000 Sq Ft GFA	0.40	2.07	0.83
Manufacturing	140	1,000 Sq Ft GFA	0.67	2.07	1.39
Warehousing	150	1,000 Sq Ft GFA	0.19	2.07	0.39
Mini-Warehouse	151	1,000 Sq Ft GFA	0.17	1.86	0.32
High-Cube Fulfillment Center Warehouse	155	1,000 Sq Ft GFA	1.37	2.19	3.00
INSTITUTIONAL					
Private School (K-8)	534	Students	0.26	1.03	0.27
Private School (K-12)	536	Students	0.17	1.03	0.18
Charter Elementary School	537	Students	0.14	1.03	0.14
Church	560	1,000 Sq Ft GFA	0.49	1.15	0.56
Day Care Center	565	Students	0.20	1.03	0.21

3.4 EXISTING CONDITIONS ANALYSIS

An inventory of major roadways that are designated as Arterial and/or Collector facilities on the City Thoroughfare Plan was conducted to determine: 1) capacity provided by the existing roadway system, 2) the demand currently placed on the system, and 3) the potential existence of deficiencies on the system. Any deficiencies found to occur will be carried over in the impact fee calculations (netting out capacity made available by the CIP) yielding a conservative estimate of system capacity. Data for the inventory were obtained from the city Thoroughfare Plan, peak hour traffic volume count data, and City Staff input.

The roadways were divided into segments based on changes in lane configuration, major intersections, city limits or area development that may influence roadway characteristics. For the assessment of individual segments, lane capacities were assigned to each segment based on roadway functional class defined by the Thoroughfare Plan and type of existing cross-section, as listed in **Table 3-4**. Roadway hourly volume capacities are based on general carrying capacity values based upon generally accepted capacities defined by the AAMPO travel demand modeling description for suburban residential setting. The AAMPO modeling capacities describe a level-of-service (LOS) “D” operation which has been tailored to the context of Cibolo and reduced by a factor of 20% to reflect minimum acceptable traffic operational condition by the city of LOS “D” operation.

Table 3-4: Roadway Facility Vehicle-Mile Lane Capacities

Roadway Facility Functional Classification	Designation	Hourly Vehicle-mile Capacity per Lane Mile of Roadway Facility
Divided Arterial*	DA/SA*	675
Divided Collector*	DC/SC*	550
Undivided Arterial	UA	625
Undivided Collector	UC	500

*Facilities with a two-way left turn lane (TWLTL) treated as a divided facility and marked with a Special Arterial (SA) or Special Collector (SC) designation.

3.4.1 Existing Volumes

Existing directional PM peak hour volumes were obtained from automated traffic counts conducted in March 2020. Automated traffic counts at 15 separate locations were collected on major roadways throughout the city. To minimize the total number of counts, data was collected at locations where traffic volumes would typify link volumes on the major segments within the immediate area. For

segments not counted, existing volumes were used or estimates were developed based on data from adjoining roadway counts. Data was cross-checked to data from StreetLight, a third-party vendor that uses cell phone data to define travel lines, to minimize any effects of the pandemic on data.

This data was compiled for roadway segments throughout the city and entered a database for use in calculations. A summary of volumes by roadway segment is included in **Appendix A** as part of the existing capital improvements database.

3.4.2 Vehicle-Miles of Existing Capacity Supply and Demand

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:

$$\text{Vehicle-Miles of Capacity} = \text{Link capacity per peak hour per lane} \times \text{No. of Lanes} \times \text{Length of segment (miles)}$$

A summary of the current capacity available on the roadway system is detailed in **Table 3-5**.

Similarly, the level of current usage in terms of vehicle-miles was calculated for each roadway segment.

The vehicle-miles of existing demand were calculated by the following equation:

$$\text{Vehicle-Miles of Demand} = \text{PM peak hour volume} \times \text{Length of segment (miles)}$$

The total vehicle-miles of demand summarized is listed in **Table 3-5**. Vehicle-miles of existing capacity and demand by roadway segment is detailed in **Appendix A**.

3.4.3 Vehicle-Miles of Existing Excess Capacity and Deficiencies

For each roadway segment, the existing vehicle-miles of capacity were calculated and are listed in **Table 3-5**. 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 peak hour excess capacity and deficiencies is also shown in the table. Any deficiencies identified under current operations will be carried over to the impact fee calculation. A detailed listing of existing excess capacity and deficiencies by roadway segment is also located in **Appendix A**.

Table 3-5: Peak Hour Vehicle-Miles of Existing Capacity, Demand, Excess Capacity, and Deficiencies

Service Area	Capacity	Demand	Excess Capacity	Existing Deficiencies
1	22,365	12,464	11,173	1,272
2	2,036	219	1,818	0
3	2,761	110	2,651	0
Total	27,162	12,793	15,642	1,272

3.5 PROJECTED ROADWAY DEMANDS

The projected growth for the roadway service areas is represented by the increase in the number of new vehicle-miles of demand generated over the 10-year planning period (2021-2031). The basis for the calculation of new demand is the population and employment projections identified in the land use assumptions (**Section 2.0**).

Projected vehicle-miles of demand were calculated based on the net growth expected to occur over the 10-year planning period and on the associated 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 each service area. Vehicle-miles of demand for population growth were based on dwelling units (residential). Vehicle-miles of demand for employment were based on square footage of building space.

These growth assumptions were then multiplied by the service unit equivalency for vehicle-mile generation based on trip rates in the Institute for Transportation Engineer’s (ITE) *Trip Generation, Tenth Edition*, and trip lengths from the AAMPO travel demand model, tailored to the City of Cibolo.

The 10-year projected vehicle-miles of demand by service area are summarized in **Table 3-6. Appendix B** details the derivation of the projected demand calculations.

Table 3-6: Projected 10-Year Service Units of Growth

Service Area	Projected 10-Year Growth (Vehicle-Miles)
1	14,808
2	3,825
3	7,902
Total	26,535

3.6 CAPITAL IMPROVEMENT PLAN

The impact fee CIP is aimed at facilitating anticipated long-term growth in Cibolo. The City Capital Improvement Plan, FY 2019-2024 identified in part capital projects programmed for long-term implementation. Other impact fee CIP projects were defined through analysis of need based on the 10-year land use assumptions. Projects identified in the impact fee CIP reflect (new) system capacity enhancements and aimed at facilitating continued growth and development in Cibolo. Other considerations for the CIP for roadways include:

- Recently completed projects with excess capacity available to serve new growth;
- Projects currently under construction; and
- Projects needed to achieve Thoroughfare Plan standard.

3.6.1 Eligible Projects

Projects contained within the CIP reflect new system capacity enhancements and aimed at facilitating continued growth and development within Cibolo. Legislative mandate stipulates that the impact fee CIP contain only those roadways classified as *arterial* or *collector* status facilities that are included in the City's adopted Thoroughfare Plan. The recommended CIP will provide sufficient capacity to meet projected needs over the ten-year planning period 2021-2031. Impact fee legislation also allows for the recoupment of costs for previously constructed facilities and projects currently under construction.

3.6.2 Eligible Costs

In general, those costs associated with the design, right-of-way acquisition, and construction and financing of all items necessary to implement the roadway projects identified in the capital improvement plan are eligible. These estimates are based on roadway sections identified in *Cibolo Comprehensive Master Plan* and September 2017 *Thoroughfare Plan map*. It is important to note that upon completion of the capital improvements identified in the CIP, the city must recalculate the impact fee using the *actual* costs. Chapter 395.012 identifies roadway costs eligible for impact fee recovery. The law states that:

“An impact fee may be imposed only to pay the cost of constructing capital improvements for facility expansions, including and limited to the construction contract price, surveying and engineering fees, land acquisition costs, including land purchases, court awards and costs, attorney fees, and expert witness fees; and fees actually paid or contracted to be paid to an independent qualified engineer or

financial consultant preparing or updating the capital improvement plan who is not an employee of the political subdivision.”

“Projected interest charges and other finance costs may be included in determining the amount of impact fees only if the impact fees are used for the payment of principal and interest on bonds, notes, or other obligations issued by or on behalf of the political subdivision to finance the capital improvements or facility expansions identified in the capital improvement plan and are not used to reimburse bond funds expended for facilities that are not identified in the capital improvement plan.”

The following details the individual cost components of the impact fee CIP.

Construction: Construction costs include those costs which are normally associated with construction, including: paving, dirt work (including sub-grade preparation, embankment fill and excavation), clearing and grubbing, retaining walls or other slope protection measures, and general drainage items which are necessary in order to build the roadway and allow the roadway to fulfill its vehicle carrying capability. Individual items may include bridges, culverts, inlets and storm sewers, junction boxes, manholes, curbs and/or gutters, and channel linings and other erosion protection appurtenances. Other items included in cost estimates may include sidewalks, traffic control devices at select locations (initial cost only), ancillary adjustments to existing utilities, and minimal sodding/landscaping.

Engineering: These are the costs associated with the design and surveying necessary to construct the roadway. Because the law specifically references fees, it has generally been understood that in-house City design and surveying cannot be included. Only those services that are contracted out can be included and it may be necessary to use outside design and surveying firms to perform the work. For planned projects, a percentage based on typical engineering contracts was used to estimate these fees.

Right-of-Way: Any land acquisition cost estimated to be necessary to construct a roadway can be included in the cost estimate. For planning purposes, only the additional amount of land needed to bring a roadway right-of-way to thoroughfare standard was considered. For example, if a 120’ right-of-way for an arterial road was needed and 80’ of right-of-way currently existed, only 40’ would be considered in the acquisition cost.

The cost for right-of-way may vary based on location of project and will be based on data from the most current County Appraisal District data.

Debt Service: Predicted interest charges and finance costs may be included in determining the amount of impact fees only if the impact fees are used for the payment of principle and interest on bonds, notes, or other obligations issued by the city to finance capital improvements identified in the impact fee CIP. They cannot be used to reimburse bond funds for other facilities. Debt service was conservatively estimated and included at 3% annual interest over a 10-year period.

Study Updates: The fees paid or contracted to be paid to an independent qualified engineer or financial consultant preparing or updating the capital improvement plan who is not an employee of the political subdivision can be included in the impact fees. The cost of two 5-year updates was included in the program.

Only the cost necessitated by new development is considered for impact fee calculations. For example, if only 60% of the capacity provided by the impact fee CIP is needed over the ten-year window, then only 60% of the cost associated with those facilities will be considered.

3.6.3 Impact Fee CIP

The proposed CIP consists of 66 project segments over the roadway service area and advance the implementation of the Thoroughfare Plan network, as illustrated on **Figure 3-1**.

Roadway costs associated with construction, engineering, right-of-way were obtained from the Cibolo CIP FY2019-2024 or estimates prepared by Freese and Nichols. Individual project costs were developed for engineering, right-of-way, and construction as found in the **Appendix C**. These construction estimates include all appurtenances called for in the city construction standards. Other costs were based on the following:

- Engineering/surveying – 7-10% of construction costs
- Right-of-way acquisition - \$0.50-\$1.00/square foot
- Debt service – 3% compounded annually over 10 years
- Study updates – 2 5-year studies at \$50,000 each

The cost for the impact fee CIP program totals \$295.8 million. **Figure 3-1** and **Table 3-7** illustrate and list the capital improvement projects and their associated total cost for the impact fee program.

Figure 3-1: Roadway Capital Improvement Plan

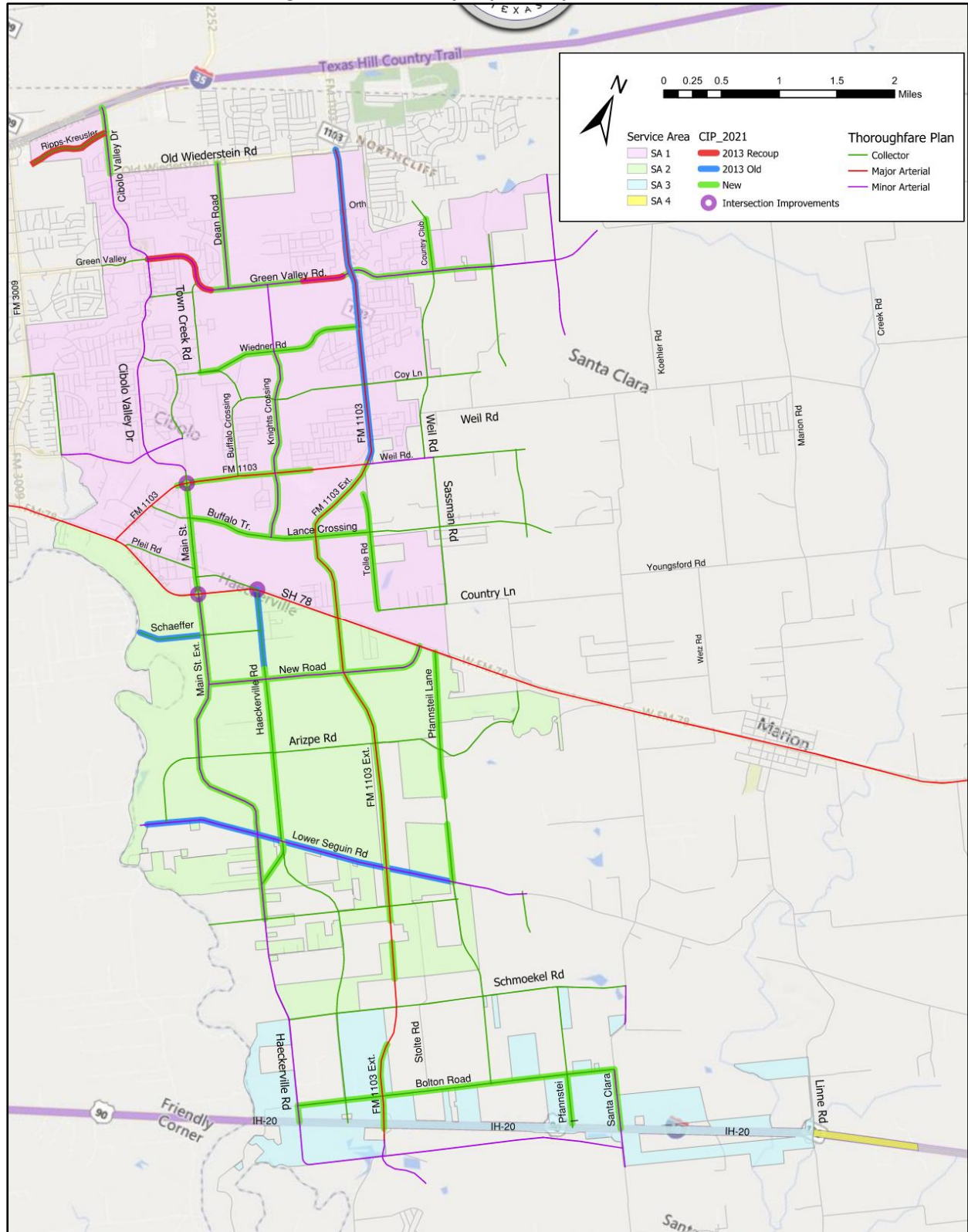


Table 3-7: Roadway Impact Fee CIP Listing

CIP Origin	Serv Area	Project Type	Roadway	From	To	Length (mi)	Added Lanes	Thoroughfare Section	Type	Pct. in Serv. Area	Total Project Cost
2019	1	R	Ripps-Kreusler Road	West City Limit	Cibolo Valley Drive	0.92	5	Minor Arterial	SA	100%	\$ 1,169,700
2013/2019	1	N	Green Valley Road	end of Southern Way	2000 ft west of FM 1103	0.80	3	Minor Arterial	SA	100%	\$ 11,880,221
2013	1	R	Green Valley Road	2000 ft west of FM 1103	FM 1103	0.38	5	Minor Arterial	SA	100%	\$ 3,098,130
2013/2019	1	N	Green Valley Road	FM 1103	Landmark Way	0.49	2	Minor Arterial	DA	100%	\$ 5,253,494
2019	1	N	Green Valley Road	Landmark Way	Homestead Parkway	0.22	3	Minor Arterial	SA	100%	\$ 3,359,791
2019	1	N	Green Valley Road	Landmark Way	Homestead Parkway	0.22	2	Minor Arterial	DA	100%	\$ 2,379,951
2013	1	N	Wiedner Road	Town Creek Road	Hinge Falls	1.14	2	Major Collector	UC	100%	\$ 5,715,077
2013	1	N	Wiedner Road	Hinge Falls	FM 1103	0.26	2	Major Collector	UC	100%	\$ 1,310,318
2019	1	N	FM 1103/Main Street Improvements							100%	\$ 3,628,574
2019	1	N	FM 1103	Main Street	Rodeo Way	1.08	5	Major Arterial	SA	100%	\$ 6,719,582
2019	1	N	Buffalo Tr/Lance Xing	Main Street	Knights Crossing	0.73	2	Major Collector	UC	100%	\$ 2,117,676
2019	1	N	Buffalo Tr/Lance Xing	Knights Crossing	Tolle Road	0.85	2	Major Collector	UC	100%	\$ 3,494,183
2013/2019	1	N	Cibolo Valley Road	north City limit	Old Wiederstein Road	0.56	4	Minor Arterial	DA	50%	\$ 3,151,820
2019	1	N	Dean Road	north City limit	Green Valley Road	1.09	3	Major Collector	SC	100%	\$ 8,157,572
2019	1	N	Country Club Drive	north City Limit	Green Valley Rd	0.46	3	Major Collector	SC	100%	\$ 3,394,032
2019	1	N	Knights Crossing	Wiedner Road	FM 1103	1.07	2	Minor Arterial	UA	100%	\$ 9,273,023
2013/2019	1	N	Knights Crossing	FM 1103	Buffalo Tr/Lance Xing	0.56	2	Minor Arterial	UA	100%	\$ 4,703,707
2019	1	N	Main Street	FM 1103	FM 78	0.96	3	Major Collector	SC	100%	\$ 6,665,825
2019	1	N	Tolle Road	FM 1103	Country Lane	1.22	2	Major Collector	UC	100%	\$ 7,630,757
2013	1	N	FM 1103	North City Limit	Saddle Spoke/Greenwood B	1.82	5	Major Arterial	SA	100%	\$ 4,429,954
2013	1	N	FM 1103	Saddle Spoke/Greenwood Bay	Brite Road	0.76	5	Major Arterial	SA	100%	\$ 1,847,062
2019	1	N	FM 1103 Ext	Brite Road	Buffalo Tr/Lance Xing	0.73	3	Major Arterial	SA	100%	\$ 5,100,936
2013/2019	1	N	FM 1103 Ext	Buffalo Tr/Lance Xing	FM 78	0.75	3	Major Arterial	SA	100%	\$ 5,241,122
2019	1	N	FM 1103 Ext	Brite Tr/Lance Xing	Buffalo Tr/Lance Xing	0.73	2	Major Arterial	DA	100%	\$ 6,763,573
2013/2019	1	N	FM 1103 Ext	Buffalo Tr/Lance Xing	FM 78	0.75	2	Major Arterial	DA	100%	\$ 6,949,453
2013	1	N	FM 78 at Main St Traffic Signal							100%	\$ 453,572
Sub-Total Service Area 1						18.57					\$ 123,889,107
2013	2	N	FM 78 at Haeckerville Traffic Signal			0.00				100%	\$ 453,572
2013	2	N	Shaeffer Road	West City limit	Main St	0.43	2	Major Collector	UC	100%	\$ 3,400,686
2019	2	N	New Road-1	Main St Ext	FM 1103 Ext	1.17	3	Minor Arterial	SA	100%	\$ 13,721,386
2019	2	N	New Road-1	FM 1103 Ext	FM 78	0.78	3	Minor Arterial	SA	100%	\$ 11,651,755
2013	2	N	Lower Seguin Road	west City Limit	Haeckerville Rd	0.97	4	Minor Arterial	DA	50%	\$ 3,868,725
2013	2	N	Lower Seguin Road	Haeckerville Rd	FM 1103 Ext	1.12	4	Minor Arterial	DA	100%	\$ 8,932,018
2013	2	N	Lower Seguin Road	FM 1103 Ext	Stolte Rd	0.24	4	Minor Arterial	DA	50%	\$ 981,455
2013	2	N	Lower Seguin Road	Stolte Rd	Pfannsteil Lane	0.38	4	Minor Arterial	DA	100%	\$ 3,078,455
2013/2019	2	N	Main Street	FM 78	Shaefer Road	0.37	4	Minor Arterial	DA	100%	\$ 5,121,128
2019	2	N	Main Street Ext	Shaefer Road	Lower Seguin Road	2.01	4	Minor Arterial	DA	100%	\$ 18,069,191
2013	2	N	Haeckerville Road	FM 78	Town Creek	0.54	4	Minor Arterial	DA	100%	\$ 7,809,336
2019	2	N	Haeckerville Road	Town Creek	Lower Seguin Road	1.63	4	Minor Arterial	DA	100%	\$ 23,614,729
2019	2	N	Haeckerville Road	Lower Seguin Road	540' S of Haeckerville Road	0.10	4	Minor Arterial	DA	50%	\$ 459,993
2019	2	N	Haeckerville Road	540' S of Haeckerville road	286' S of Green Meadow Rd	0.11	4	Minor Arterial	DA	100%	\$ 1,022,206
2019	2	N	Haeckerville Road	286' S of Green Meadow Road	288' S of Fread Lane	0.11	4	Minor Arterial	DA	50%	\$ 511,103
2019	2	N	Haeckerville Road	288' S of Fread Lane	DW Lane	0.13	4	Minor Arterial	DA	100%	\$ 1,202,795
2013/2019	2	N	FM 1103 Ext	FM 78	Arizpe Road	1.10	3	Major Arterial	SA	100%	\$ 7,681,160
2013/2019	2	N	FM 1103 Ext	Arizpe Road	Lower Seguin Road	1.13	3	Major Arterial	SA	50%	\$ 3,945,058
2013/2019	2	N	FM 1103 Ext	Lower Seguin Road	1736' S of Lower Seguin Road	0.33	3	Major Arterial	SA	50%	\$ 1,147,942
2013/2019	2	N	FM 1103 Ext	1736' S of Lower Seguin Road	2400' S of Lower Seguin Road	0.13	3	Major Arterial	SA	100%	\$ 872,859
2013/2019	2	N	FM 1103 Ext	Valley View Road	1275' N of Schmoekel Road	0.32	3	Major Arterial	SA	100%	\$ 2,248,273
2013/2019	2	N	FM 1103 Ext	Lower Seguin Road	Schmoekel Road	1.21	3	Major Arterial	SA	100%	\$ 8,425,214
2013/2019	2	N	FM 1103 Ext	Arizpe Road	Lower Seguin Road	1.13	2	Major Arterial	DA	50%	\$ 5,230,941
2013/2019	2	N	FM 1103 Ext	Lower Seguin Road	1736' S of Lower Seguin Road	0.33	2	Major Arterial	DA	50%	\$ 1,522,111
2013/2019	2	N	FM 1103 Ext	1736' S of Lower Seguin Road	2400' S of Lower Seguin Road	0.13	2	Major Arterial	DA	100%	\$ 1,157,365
2013/2019	2	N	FM 1103 Ext	Valley View Road	1275' north of Schmoekel Roa	0.32	2	Major Arterial	DA	100%	\$ 2,981,093

Table 3-7: Roadway Impact Fee CIP Listing (Cont.)

CIP Origin	Serv Area	Project Type	Roadway	From	To	Length (mi)	Added Lanes	Thoroughfare Section	Type	Pct. in Serv. Area	Total Project Cost
2013	2	N	Pfannsteil Lane	FM 78	N. of Arizpe Road	0.74	3	Major Collector	SC	100%	\$ 5,342,640
2013	2	N	Pfannsteil Lane	Arizpe Road	3900' N of Lower Seguin Road	0.41	3	Major Collector	SC	50%	\$ 1,496,624
2013	2	N	Pfannsteil Lane	2100' N of Lower Seguin Road	Lower Seguin Road	0.40	3	Major Collector	SC	50%	\$ 1,438,403
Sub-Total Service Area 2						17.77					\$ 147,388,217
2013/2019	3	N	Bolton Road	Haeckerville Road	2200' E of Haeckerville Road	0.42	3	Major Collector	SC	50%	\$ 562,260
2013/2019	3	N	Bolton Road	2200' E of Haeckerville Road	500' E of Zuehl Road	0.41	3	Major Collector	SC	100%	\$ 1,098,963
2013/2019	3	N	Bolton Road	500' E of Zuehl Road	1450' E of Zuehl Road	0.18	3	Major Collector	SC	50%	\$ 242,794
2013/2019	3	N	Bolton Road	650' E of Stolte Road	2250' E of Stolte Road	0.30	3	Major Collector	SC	50%	\$ 408,916
2013/2019	3	N	Bolton Road	4708' W of Santa Clara Road	Santa Clara Road	0.89	3	Major Collector	SC	50%	\$ 1,203,237
2013/2019	3	N	FM 1103 Ext	3200' N of Bolton Road	IH - 10	0.69	3	Major Arterial	SA	100%	\$ 4,863,085
2013/2019	3	N	FM 1103 Ext	3200' N of Bolton Road	IH - 10	0.69	2	Major Arterial	DA	100%	\$ 6,364,671
2019	3	N	Pfannsteil Lane	Bolton Road	IH - 10	0.42	3	Major Collector	SC	100%	\$ 3,050,690
2019	3	N	Santa Clara Road	Bolton Road	1200' S of Bolton Road	0.23	4	Minor Arterial	DA	100%	\$ 2,556,195
2019	3	N	Santa Clara Road	1200' S of Bolton Road	IH - 10	0.28	4	Minor Arterial	DA	100%	\$ 1,037,698
2021	3	N	Haeckerville Road	Bolton Road	IH - 10	0.11	4	Minor Arterial	DA	100%	\$ 1,022,206
Sub-Total Service Area 3						4.62					\$ 22,410,716
Totals:											\$ 293,688,040

Summary:	Engineering Cost	\$ 16,350,809
	Right-of-Way Cost	\$6,934,660
	Construction Cost	\$195,545,348
	Finance Cost	\$74,857,223
	TOTAL NET COST	\$293,688,040
	Future IF Study Update Cost	\$100,000
	TOTAL IMPLEMENTATION COST	\$293,788,040
	50% Percent Credit	\$146,894,020

Notes:

- DA - Divided Arterial
- UA - Undivided Arterial
- DC - Divided collector
- UC - Undivided Collector
- SA - Special Arterial with two-way left turn lane (TWLTL)
- SC - Special Collector with two-way left turn lane (TWLTL)

3.6.4 Projected Vehicle-Miles Capacity Available for New Growth

The vehicle-miles of new capacity supply were calculated like the vehicle-miles of existing capacity supplied. The equation used was:

$$\text{Vehicle-Miles of New Capacity} = \text{Link capacity per peak hour per lane} \times \text{No. of Lanes} \times \text{Length of segment (miles)}$$

Vehicle-miles of new supply provided by the CIP are listed in **Table 3-8** and **Appendix D**.

Table 3-8: Capacity and Net Capacity Provided by the Proposed CIP

	A	B	C = A – B	D	E = C – D
Service Area	Capacity Supplied by CIP (veh-mi)	Existing Utilization (veh-mi)	Excess Capacity (veh-mi)	Existing Deficiencies (veh-mi)	Net Capacity Supplied by CIP (veh-mi)
1	29,503	8,391	21,112	0	21,112
2	33,885	924	32,961	1,272	31,689
3	6,425	120	6,305	0	6,305
Total	69,813	9,435	60,378	1,272	59,106

A comparison of net capacity provided by the proposed CIP relative to 10-year needs is listed below in **Table 3-9**. The percent attributable to new growth is a direct result of the land use assumptions described earlier in the report. Based on the defined capital improvements plan, there is sufficient capacity to serve projected growth over the ten-year planning period.

Table 3-9: Projected Demand and Net Capacity Provided by the Proposed CIP

	A	B	B / A (Max 100%)
Service Area	Net Capacity Supplied by CIP (veh-mi)	Projected 10-Year Growth (veh-mi)	Pct. Of CIP Attributable to New Dev. (10-Yr.)
1	21,112	14,808	70.1%
2	31,689	3,825	12.1%
3	6,305	7,902	100.0%
Total	59,106	26,535	44.9%

3.6.5 Cost of Roadway Improvements

The total impact fee CIP cost, including study update costs, credited (50%) CIP cost, and cost of net capacity supplied to implement the roadway improvements plan projects by service area is shown in **Table 3-10**. If traffic exists on proposed CIP project roadways or there are any deficiencies present in each respective service area (existing utilization), the total system cost is adjusted to reflect the net capacity being made available by the impact fee program. In other words, only the unused portion of the CIP and

its associated costs are considered eligible and derived by applying the percentage of net capacity (from Table 3.8) to the credited cost of the CIP. A detailed listing by project segment in each service area can be found in **Appendix E**. **Appendix F** details system costs by service area.

Table 3-10: Summary of Roadway Improvements Plan Cost Analysis

Service Area	Total Cost of Proposed IFCIP Projects	Credited Cost of Proposed IFCIP Projects (with 50% CIP Credit)	Credited Cost of Net Capacity Supplied (with 50% CIP Credit)	Credited Cost to Meet Existing Utilization (with 50% CIP Credit)
1	\$123,931,367	\$61,965,683	\$44,341,915	\$17,623,769
2	\$147,436,754	\$73,718,377	\$68,940,878	\$4,777,499
3	\$22,419,919	\$11,209,959	\$11,000,590	\$209,369
Total	\$293,788,040	\$146,894,020	\$124,283,383	\$22,610,637

3.7 CALCULATION OF IMPACT FEES

This section discusses the calculation of the cost per service unit and the calculation of roadway impact fees. The roadway impact fee will vary by the specific land use, service area, and size of the development. Examples are included to better illustrate the method by which the roadway impact fees are calculated.

3.7.1 Cost per Service Unit

The cost per service unit is calculated by dividing the cost of the CIP necessitated and attributable to new demand (net cost) by the projected service units of growth over the 10-year planning period.

3.7.2 Cost Attributable to New Development

Generally, the cost per service unit varies by service area because of; the net capacity being provided by the proposed projects, variations in cost of CIP and, the number of service units necessitated by new growth in each impact fee service area. Where net capacity supplied is greater than 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 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 result is generally a decrease in the cost per service unit, because such cost is spread over the larger

number of service units of growth. This is shown in **Table 3-11** in Columns A-C calculating the cost attributable to new development through the percent of CIP capacity attributable calculated in **Table 3-11**.

Table 3-11: Roadway Improvements Plan Cost Attributable to New Development

	A	B	C = A x B
Service Area	Credited Cost of Net Capacity Supplied (Table 3-10)	% Of CIP Attributable to New Development (Table 3-9)	CIP Cost Attributable to New Development
1	\$44,341,915	70.1%	\$31,101,510
2	\$68,940,878	12.1%	\$8,321,464
3	\$11,000,590	100.0%	\$11,000,590
Total	\$124,283,383	44.9%	\$50,423,564

Maximum Cost per Service Unit Calculation

Table 3-12 lists the resultant cost per service unit calculation. The base cost per service unit reflects the true burden to the City for the implementation of the roadway capital improvements program. As per state law, 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 the capital improvement plan must be given. Opting for the 50% credit, the maximum collection rate after credit reflects the maximum amount per service unit that can be charged to follow the state statute. **Appendix F** details the maximum fee per service unit calculation for each service area.

Table 3-12: Cost per Service Unit Summary

	A	B	C = B / A
Service Area	Projected 10-Year Growth (Vehicle-Miles)	Credited Cost Attributable to New Development (with 50% Credit)	Credited Maximum Allowable Cost per Service Unit (with 50% Credit)
1	14,808	\$31,101,510	\$2,100
2	3,825	\$8,321,464	\$2,175
3	7,902	\$11,000,590	\$1,392
Total	26,535	\$50,537,252	\$2,071.00
			<i>Weighted Average</i>

3.7.3 Sample Calculation of Roadway Impact Fees

The calculation of roadway impact fees for new development involves a two-step process. *Step One* is the calculation of the total number of service units that will be generated by the development. *Step Two* is the calculation of the impact fee due by the new development.

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

$$\begin{array}{r} \text{No. of Development} \\ \text{Units} \end{array} \times \begin{array}{r} \text{Vehicle-miles} \\ \text{per development unit} \end{array} = \begin{array}{r} \text{Development's} \\ \text{Vehicle-miles} \end{array}$$

Step 2: Calculate the impact fee based on the fee per service unit for the service area where the development is located.

$$\begin{array}{r} \text{Development's} \\ \text{Vehicle-miles} \end{array} \times \begin{array}{r} \text{Fee per} \\ \text{vehicle-mile} \end{array} = \begin{array}{r} \text{Impact Fee due} \\ \text{from Development} \end{array}$$

Examples: The following fees would be collected from new development located in Road Service Area 1, if the collection rate were \$2,100 per vehicle-mile:

Single-Family Dwelling

$$\begin{array}{l} 1 \text{ dwelling unit} \times 1.84 \text{ vehicle-miles/dwelling unit} = 1.84 \text{ vehicle-miles} \\ 1.84 \text{ vehicle-miles} \times \$2,100.00/\text{vehicle-mile} = \$3,864.00 \end{array}$$

10,000 square foot (s.f.) Office Building

$$\begin{array}{l} 10 (1,000 \text{ s.f. units}) \times 2.25 \text{ vehicle-miles}/1,000 \text{ s.f. units} = 22.50 \text{ vehicle-miles} \\ 22.50 \text{ vehicle-miles} \times \$2,100.00/\text{vehicle-mile} = \$47,250.00 \end{array}$$

50,000 s.f. Shopping/Retail Center

$$\begin{array}{l} 50 (1,000 \text{ s.f. units}) \times 1.03 \text{ vehicle-miles}/1,000 \text{ s.f. units} = 51.50 \text{ vehicle-miles} \\ 51.50 \text{ vehicle-miles} \times \$2,100.00/\text{vehicle-mile} = \$108,150.00 \end{array}$$

4.0 WATER AND WASTEWATER IMPACT FEE ANALYSIS

The water and wastewater impact fee CIP developed for the City of Cibolo is based on the land use assumptions presented in **Section 2.0**, projected water demands and wastewater flows, input from City staff, and existing CIP projects proposed by the city. The recommended improvements will provide the required capacity to meet projected water demands and wastewater flows through 2031.

4.1 EXISTING WATER AND WASTEWATER SYSTEMS

The City of Cibolo's water distribution system has two pressure planes, a network of lines ranging from 2 inches to 20 inches, two pump stations, three elevated storage tanks, and two ground storage tanks. The City purchases wholesale water from Canyon Regional Water Authority. The existing water distribution system is shown on **Figure 4-1**.

The City of Cibolo's wastewater collection system consists of wastewater lines ranging from 2 inches to 24 inches, and 3 lift stations. The City send their wastewater flow to Cibolo Creek Municipal Authority for treatment. The existing wastewater collection system is shown on **Figure 4-2**.

Figure 4-1: Existing Water Distribution System

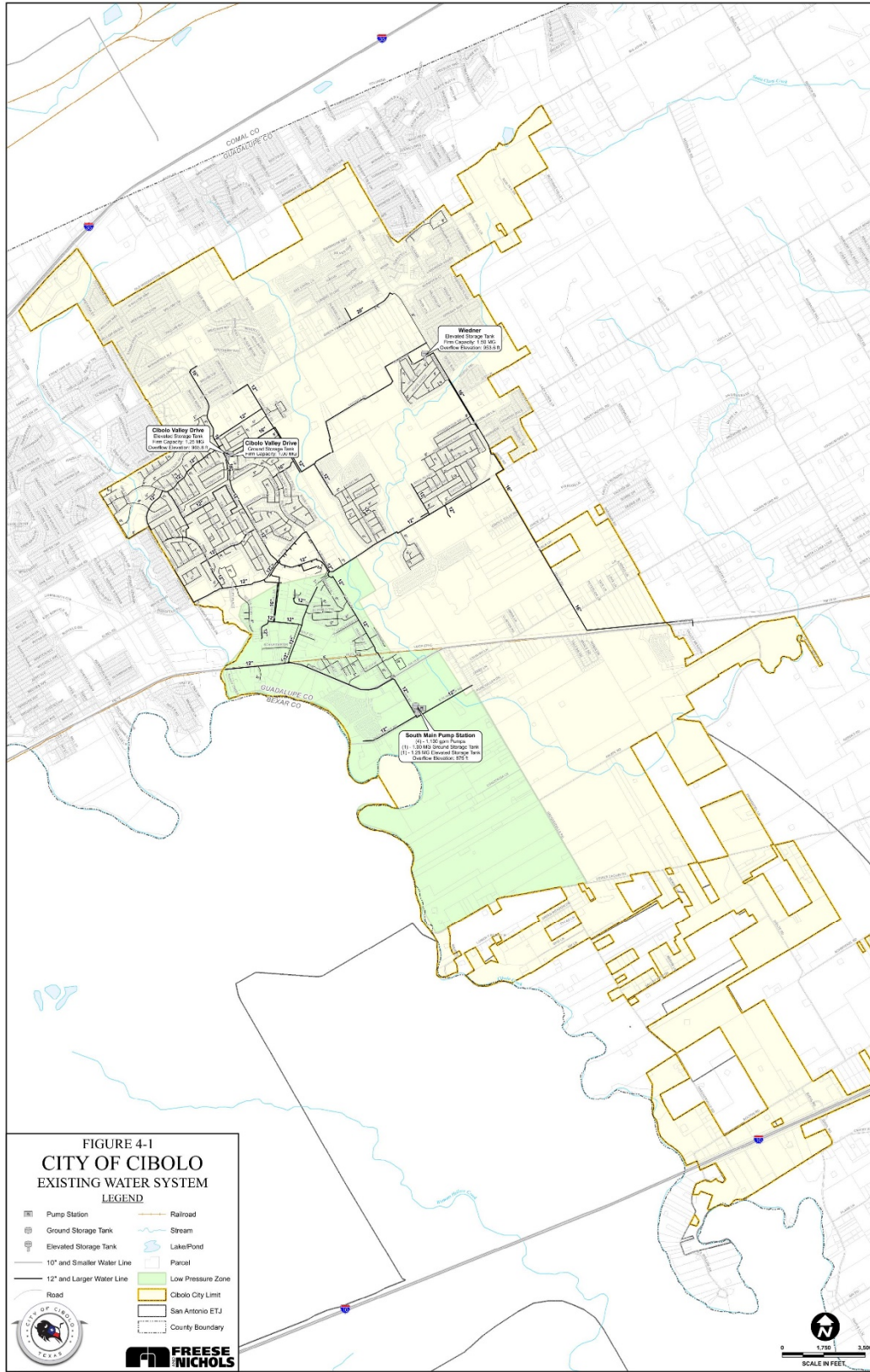
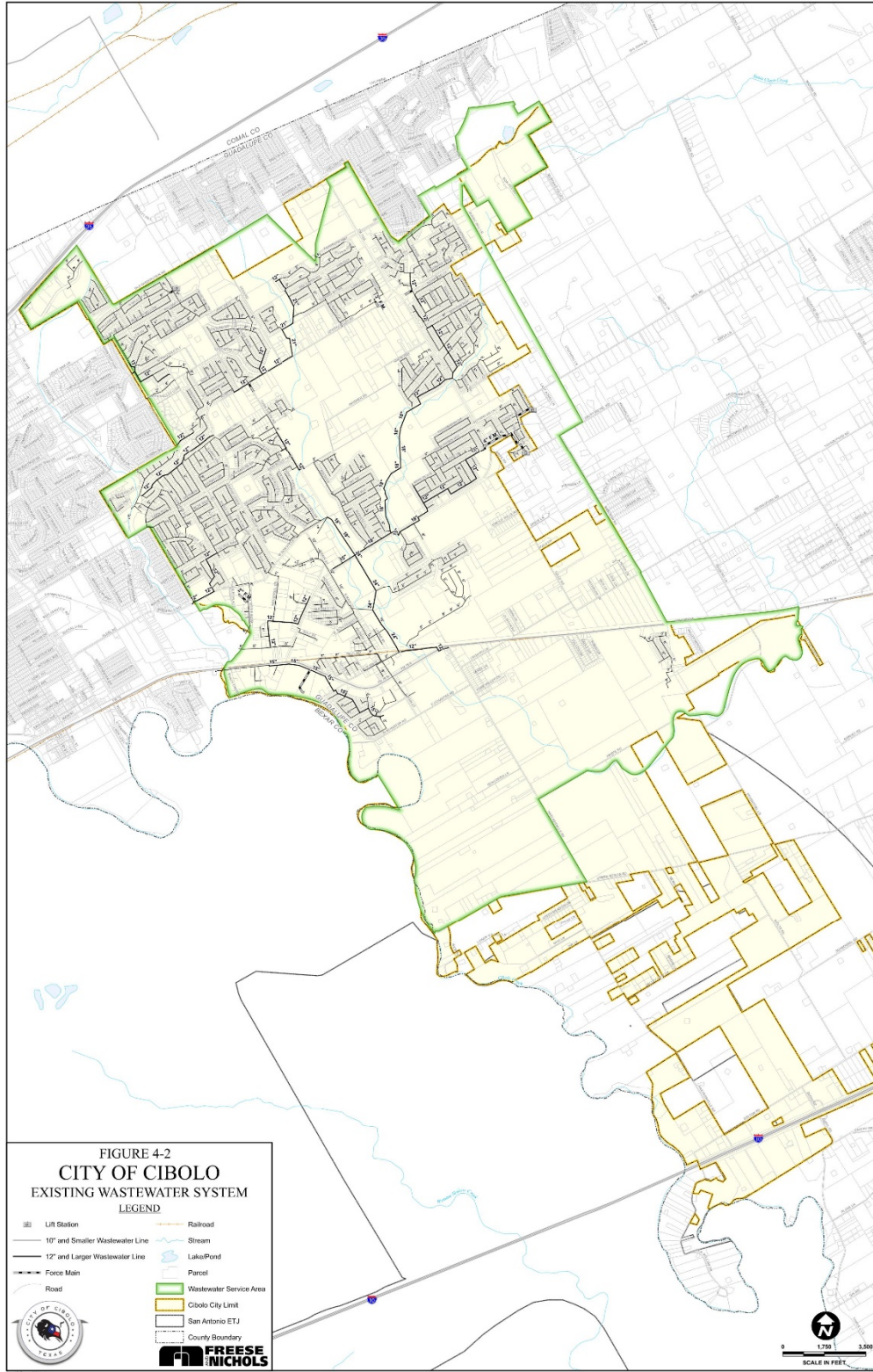


Figure 4-2: Existing Wastewater Collection System



4.2 WATER AND WASTEWATER LOAD PROJECTIONS

The land use data, historical water demands, and wastewater flow characteristics were used to develop future water demands and wastewater flows. **Table 4-1** summarizes the historical water demands. Based on the historical water demands, an average day demand of 275 gallons per connection per day (gpCd) was selected and a maximum day to average day peaking factor of 2.2 was selected. Historical wastewater flow data was not available, so design criteria was selected based on experience with cities of similar size. Wastewater flows were projected using 245 gpCd for average annual daily flow and a 4.0 wet weather peaking factor. **Table 4-2** presents the projected water demands, and **Table 4-3** presents the projected wastewater flows for the City of Cibolo.

Table 4-1: Historical Water Demands

Year	Connections ⁽¹⁾	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Average Day Demand (gpCd)	Maximum Day to Average Day Peaking Factor
2019	5,580	1.53	3.22	275	2.10
2020	5,698	1.55	3.43	272	2.22

(1) Connections taken from June of each year of water production data received from City.

Table 4-2: Water Demand Projections

Year	Water Connections	Average Day Demand (MGD)	Maximum Day Demand (MGD)
2021	5,787	1.59	3.50
2031	8,770	2.41	5.31

Table 4-3: Wastewater Flow Projections

Year	Wastewater Connections	Average Annual Daily Flow (MGD)	Peak Wet Weather Flow (MGD)
2021	9,927	2.43	9.73
2031	14,946	3.66	14.65

4.3 WATER AND WASTEWATER SYSTEM IMPROVEMENTS

Proposed water and wastewater system improvement projects and costs were developed based on input from City staff and City Capital Improvement Plan, FY 2019-2024. The proposed 10-year impact fee eligible water system projects and costs are summarized in **Table 4-4** and shown on **Figure 4-3**. Proposed impact fee eligible wastewater projects and costs are summarized in **Table 4-5** and shown on **Figure 4-4**. **Tables 4-4** and **4-5** show a 2021 percent utilization, which is the portion of a project's capacity that is required to serve existing development. This portion of the project cost is not impact-fee-eligible. The 2031 percent utilization is the portion of the project's capacity that will be required to serve projected growth in the City in 2031. The 2021-2031 percent utilization is the portion of the project's capacity required to serve development from 2021 to 2031. The impact fee eligible cost for each project is calculated as the total capital cost multiplied by the 2021-2031 percent utilization. Only this portion of the cost can be used to calculate maximum allowable impact fees. Full sized maps are provided in **Appendix G**.

Table 4-4: Water System Impact Fee Eligible Projects

Project Number	Description of Project	Percent Utilization			Costs Based on 2021 Dollars	
		2021 ⁽¹⁾	2031	2021-2031	Capital Cost	Impact Fee Eligible Cost
EXISTING ELIGIBLE						
18WA001-A	16" Water Line - Haeckerville Rd - Loop 539 to Schaefer Rd	5%	70%	65%	\$553,000	\$359,450
18WA004	16" Water Line - Turning Stone to Town Creek Road	10%	60%	50%	\$800,000	\$400,000
18WA006	16" Water Line - Knights Crossing South - FM 1103 to Lance Crossing	5%	80%	75%	\$800,000	\$600,000
-	South Main Pump Station	10%	30%	20%	\$4,134,031	\$826,806
-	Impact Fee Study	0%	100%	100%	\$39,917	\$39,917
PROPOSED ELIGIBLE						
18WA001	16" Water Line - Haeckerville Rd - Arizpe to Schaefer Rd	0%	60%	60%	\$227,000	\$136,200
18WA002	Dobie Boulevard Water Line Improvements	60%	90%	30%	\$608,727	\$182,618
18WA003	12" Water Main - Lance Crossing - Steel Creek to Tolle Road	10%	90%	80%	\$1,500,000	\$1,200,000
18WA004	16" Water Line - Turning Stone to Town Creek Road	10%	90%	80%	\$800,000	\$640,000
18WA005	12" Water Line Cibolo Valley Drive (Kove Lane) to Town Creek Road	30%	80%	50%	\$400,000	\$200,000
18WA007	12" Waterline FM 3009 to Deer Creek Blvd.	80%	90%	10%	\$350,000	\$35,000
18WA009	12" Water Line Along FM 78 - Buffalo Pl. to Dietz Creek	20%	40%	20%	\$300,000	\$60,000
18WA010	12" Water Line - Knights Crossing North - FM 1103 to Weidner Road	10%	80%	70%	\$1,250,000	\$875,000
-	Water Rights	0%	33%	33%	\$21,000,000	\$6,930,000
Total Capital Improvements Cost					\$11,762,675	\$12,484,991

(1) Utilization in 2021 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.

Table 4-5: Wastewater System Impact Fee Eligible Projects

Project Number	Description of Project	Percent Utilization			Costs Based on 2021 Dollars	
		2021 ⁽¹⁾	2031	2021-2031	Capital Cost	Impact Fee Eligible Cost
EXISTING ELIGIBLE						
-	Impact Fee Study	0%	100%	100%	\$39,917	\$39,917
PROPOSED ELIGIBLE						
18WW002	15" WW Trunk Line from CCMA TC Lift Station to FM 1103 @ Gatewood	10%	90%	80%	\$6,000,000	\$4,800,000
18WW005	12" WW Outfall - Town Creek East Fork - Gatewood @ FM 1103 to GVR	0%	90%	90%	\$1,900,000	\$1,710,000
18WW008	15" Wastewater Line from UPRR to Weil Rd LS.	0%	60%	60%	\$2,900,000	\$1,740,000
18WW009	Regional Wastewater System - Haeckerville Rd to Venado	0%	80%	80%	\$3,500,000	\$2,800,000
Total Capital Improvements Cost					\$14,339,917	\$11,089,917

(1) Utilization in 2021 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.

Figure 4-3: Water System Impact Fee Capital Improvement Plan

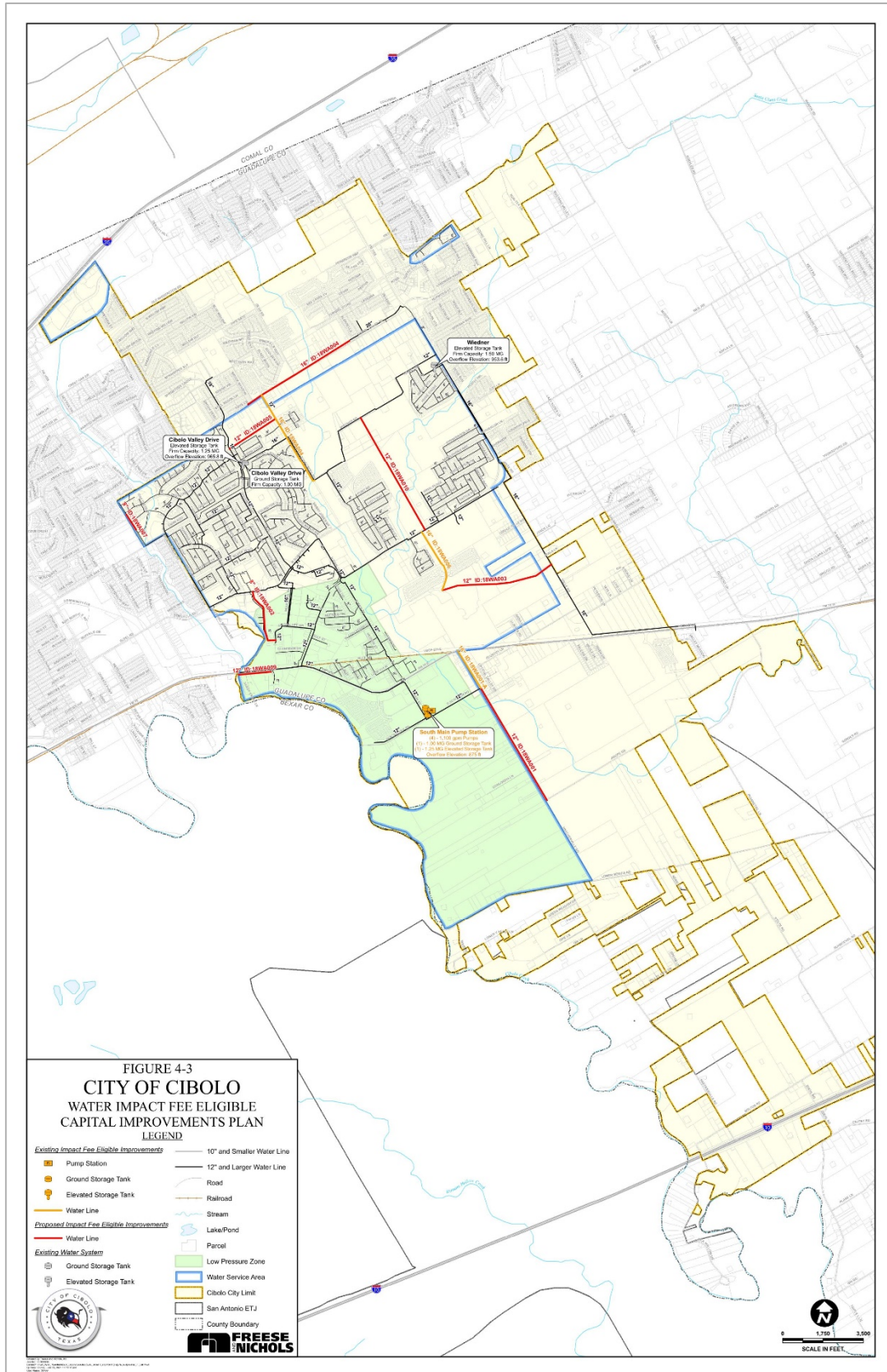
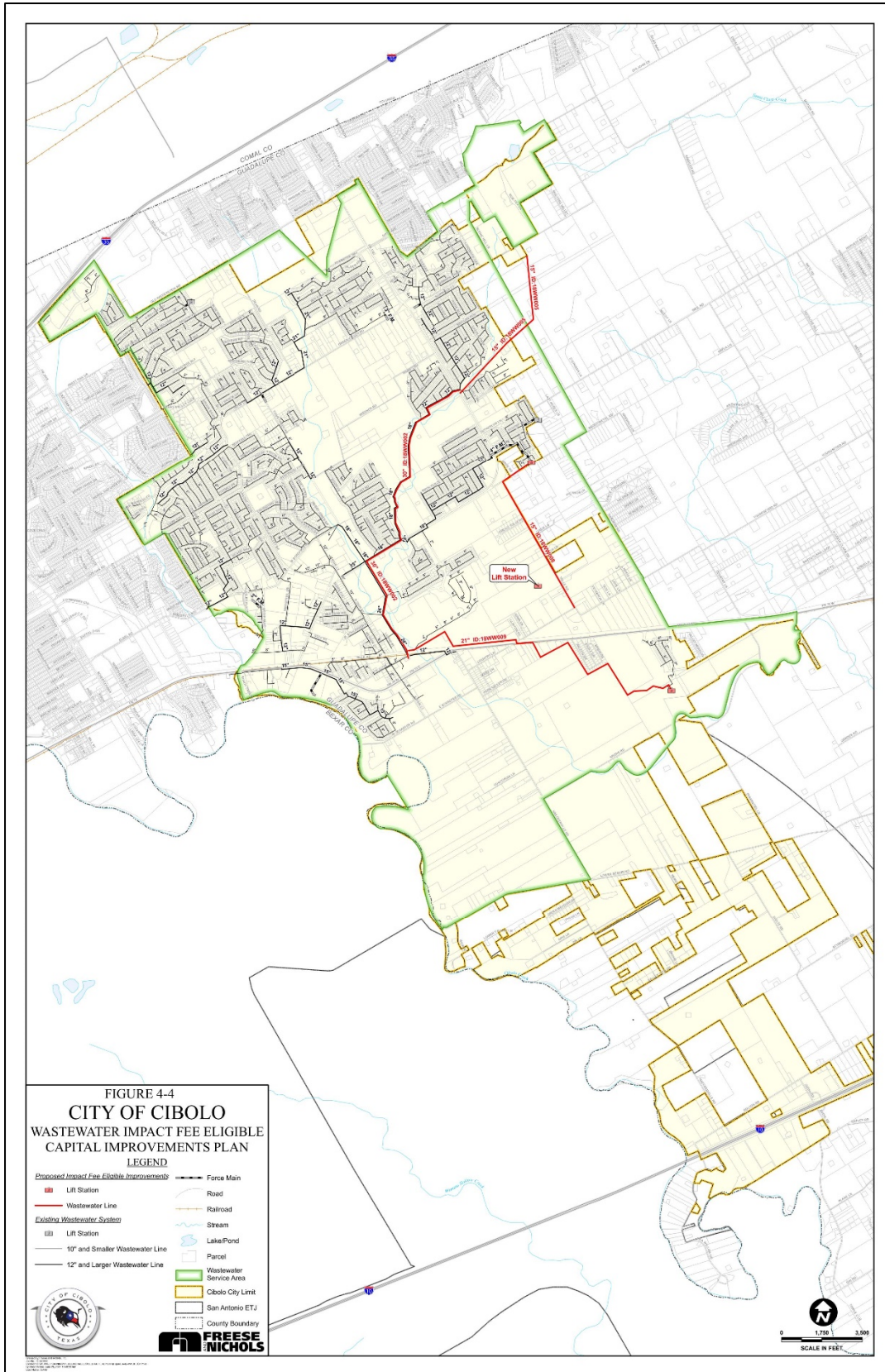


Figure 4-4: Wastewater System Impact Fee Capital Improvement Plan



4.4 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 period. For existing or proposed projects, the impact fee eligible cost is calculated as a percentage of the total project cost, based upon the percentage of the project's capacity required to serve development projected to occur between 2021 and 2031. Capacity serving existing development and development projected to occur more than 10 years in the future cannot be included in the maximum allowable impact fee calculations.

4.4.1 Service Units

According to Chapter 395 of the Texas Local Government Code, the maximum allowable impact fee may not exceed the amount determined by dividing the cost of required capital improvements by the total number of service units attributed to new development during the impact fee eligibility period. A service unit for water and wastewater is defined as the service equivalent to a water connection for a single-family residence.

Public, commercial, and industrial connections are converted into service units based upon the capacity of each meter used to provide service. The number of service units required to represent each meter size is based on the operating capacity of the appropriate meter type. The City provided manufacturer data used to determine the operating capacity, as these meter types represent those in place and stocked by the City. The service unit equivalent for each meter size used by the city is listed in **Table 4-6**.

Table 4-6: Service Unit Equivalencies

Meter Size	Maximum Flow (gpm)	Service Unit Equivalents
5/8"	20	1.0
3/4"	30	1.5
1"	50	2.5
1 1/2"	140	7.0
2"	200	10.0
3"	400	20.0
4"	800	40.0
6"	1,280	64.0
8"	2,240	112.0
10"	4,400	220.0
12"	4,400	220.0

Typically, in Cibolo, single-family residences are served with 5/8-inch water meters. Larger meters represent multi-family, public, commercial, and industrial water use. **Table 4-7** and **Table 4-8** show the service units for 2021 and the projected service units for 2031 for water and wastewater, respectively.

Table 4-7: Water Service Units

Meter Size	2021		2031		Growth in Service Units
	Meters	Service Units	Meters	Service Units	
5/8"	5,589	5,589	8,471	8,471	2,882
3/4"	18	27	28	42	15
1"	65	163	99	248	85
1 1/2"	29	203	44	308	105
2"	68	680	103	1,030	350
3"	10	200	15	300	100
4"	3	120	4	160	40
6"	1	64	1	64	0
8"	1	112	1	112	0
10"	1	220	1	220	0
12"	2	440	3	660	220
Total	5,787	7,818	8,770	11,615	3,797

Table 4-8: Wastewater Service Units

Meter Size	2021		2031		Growth in Service Units
	Meters	Service Units	Meters	Service Units	
5/8"	9,588	9,588	14,429	14,429	4,841
3/4"	31	47	47	71	24
1"	111	278	168	420	143
1 1/2"	50	350	76	532	182
2"	117	1,170	177	1,770	600
3"	17	340	26	520	180
4"	5	200	8	320	120
6"	2	128	4	256	128
8"	2	224	4	448	224
10"	1	220	2	440	220
12"	3	660	5	1,100	440
Total	9,927	13,204	14,946	20,306	7,102

4.4.2 Maximum Impact Fee Calculations

Texas Local Government Code Chapter 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. Chapter 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 Cibolo 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 Improvement Plan. A 3.0% interest rate was used to calculate financing costs. **Table**

4-9 and Table 4-10 show a summary of the maximum allowable impact fee calculations for the City of Cibolo’s water system and wastewater system, respectively.

Table 4-9: Maximum Water Impact Fee Calculation

Total Eligible Capital Improvement Costs	\$12,484,991
Total Eligible Financing Costs	\$1,485,018
Total Eligible Impact Fee Costs	\$13,970,009
Growth in Service Units	3,797
Maximum Water Impact Fee per Service Unit ⁽¹⁾	\$3,679
Impact Fee Credit per Service Unit ⁽²⁾	\$1,840
Maximum Allowable Water Impact Fee ⁽³⁾	\$1,839

(1) Total Eligible Costs divided by the Growth in Service Units.

(2) Credit is 50% of Maximum Water Impact Fee per Service Unit.

(3) Maximum Allowable Water Impact Fee is Maximum Water Impact Fee minus the Impact Fee Credit per Service Unit.

Table 4-10: Maximum Wastewater Impact Fee Calculation

Total Eligible Capital Improvement Costs	\$11,089,917
Total Eligible Financing Costs	\$1,319,082
Total Eligible Impact Fee Costs	\$12,408,999
Growth in Service Units	7,102
Maximum Wastewater Impact Fee per Service Unit ⁽¹⁾	\$1,747
Impact Fee Credit per Service Unit ⁽²⁾	\$874
Maximum Allowable Wastewater Impact Fee ⁽³⁾	\$873

(1) Total Eligible Costs divided by the Growth in Service Units.

(2) Credit is 50% of Maximum Wastewater Impact Fee per Service Unit.

(3) Maximum Allowable Wastewater Impact Fee is Maximum Wastewater Impact Fee minus the Impact Fee Credit per Service Unit.

5.0 DRAINAGE IMPACT FEE ANALYSIS

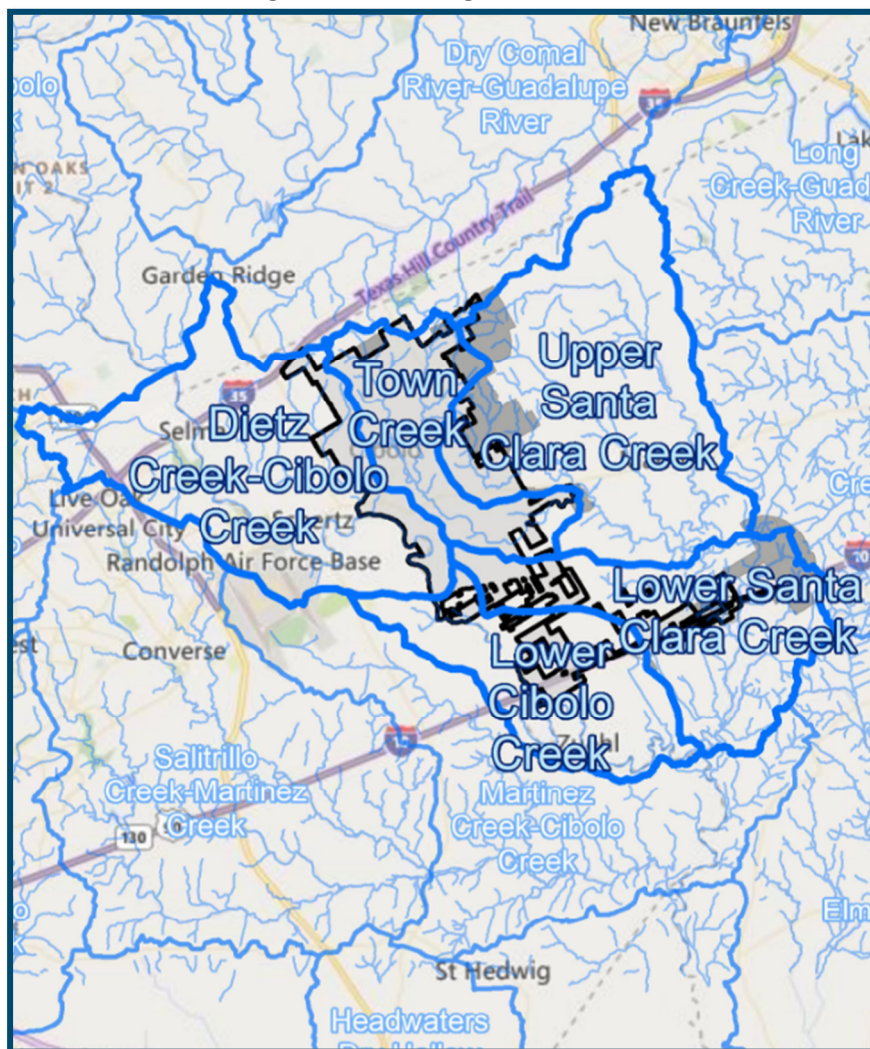
5.1 METHODOLOGY

The development of the drainage impact fee capital improvements plan (CIP) is based on the land use assumptions and forecasted growth presented in **Section 2.0** and the City's current drainage CIP. The recommended improvements will provide adequate capacity to address projected drainage needs through 2031.

5.2 DRAINAGE SERVICE AREAS

The drainage service areas are based on watersheds, which are areas from which runoff resulting from rainfall is collected and drained through a common point. The watersheds were defined by U.S. Geological Survey (USGS) Hydrologic Unit Code (HUC) level 12 watersheds. Five drainage basins span the City of Cibolo ETJ: Dietz Creek-Cibolo Creek, Lower Cibolo Creek, Lower Santa Clara Creek, Town Creek, and Upper Santa Clara Creek, as shown in **Figure 5-1** below.

Figure 5-1: Drainage Service Areas



5.3 DRAINAGE IMPACT FEE SERVICE UNITS

The impacts to drainage and stormwater runoff from development are primarily driven by the increase in impervious surface in each service area. Impervious surface includes any paved areas such as roads, parking lots, and driveways, as well as building rooftops. Increases in impervious surface produce more stormwater runoff, thereby driving the need for additional drainage system capacity. Therefore, the drainage impact fee service units are defined as the amount of impervious area in square feet. The amount of impervious surface area was determined based on the land use type, as shown in **Table 5-1**.

Table 5-1: Percent Impervious Values by Land Use Type

Land Use	Percent Impervious
High Density Residential	70%
Medium Density Residential (1/4 ac.)	47%
Medium Density Residential (1/3 ac.)	41%
Medium Density Residential (1/2 ac.)	25%
Low Density Residential (1 acre)	20%
Low Density Residential (2 acres)	12%
Commercial	90%
Industrial	90%

5.4 DRAINAGE 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 period. For existing or proposed projects, the impact fee eligible cost is calculated as a percentage of the total project cost, based upon the percentage of the project’s capacity required to serve development projected to occur between 2021 and 2031. Capacity serving existing development and development projected to occur more than 10 years in the future cannot be included in the maximum allowable impact fee calculations.

Drainage impact fees are calculated by dividing the eligible CIP costs by the eligible growth in service units (square footage of impervious area). Growth and future development projections were formulated based on assumptions pertaining to the type, location, quantity, and timing of various future land uses within each service area. The 2031 land use was then equated to the amount of project impervious surface area using **Table 5-1**. **Table 5-2** below shows the projected growth in impervious area for the five service areas.

Table 5-2: Projected 10-Year Growth in Service Unit

Service Area (Watershed)	Existing sq.ft. Impervious	10-Year sq.ft. Impervious	10-Year Increase (sq.ft.)	10-Year Increase (%)
Dietz Creek-Cibolo Creek	33,978,767	37,436,820	3,458,054	10%
Lower Cibolo Creek	8,333,200	14,187,595	5,854,396	70%
Lower Santa Clara Creek	17,434,935	17,434,935		0%
Town Creek	63,115,044	76,975,294	13,860,250	22%
Upper Santa Clara Creek	19,251,180	22,245,026	2,993,847	16%

5.5 DRAINAGE CAPITAL IMPROVEMENT PROJECTS

Drainage Capital Improvement Projects (CIP) were provided directly from the City Capital Improvement Plan, FY 2019-2024. Drainage CIPs are only identified in the Dietz Creek-Cibolo Creek, Town Creek, and Upper Santa Clara Creek service areas at this time. The cost for each CIP was adjusted by a 50% credit applied to the cost of the CIP in determining a cost per service unit for each service area in lieu of a credit analysis. The proposed drainage CIPs are shown in **Figure 5-2** and **Table 5-3** below.

Figure 5-2: Drainage Impact Fee CIP

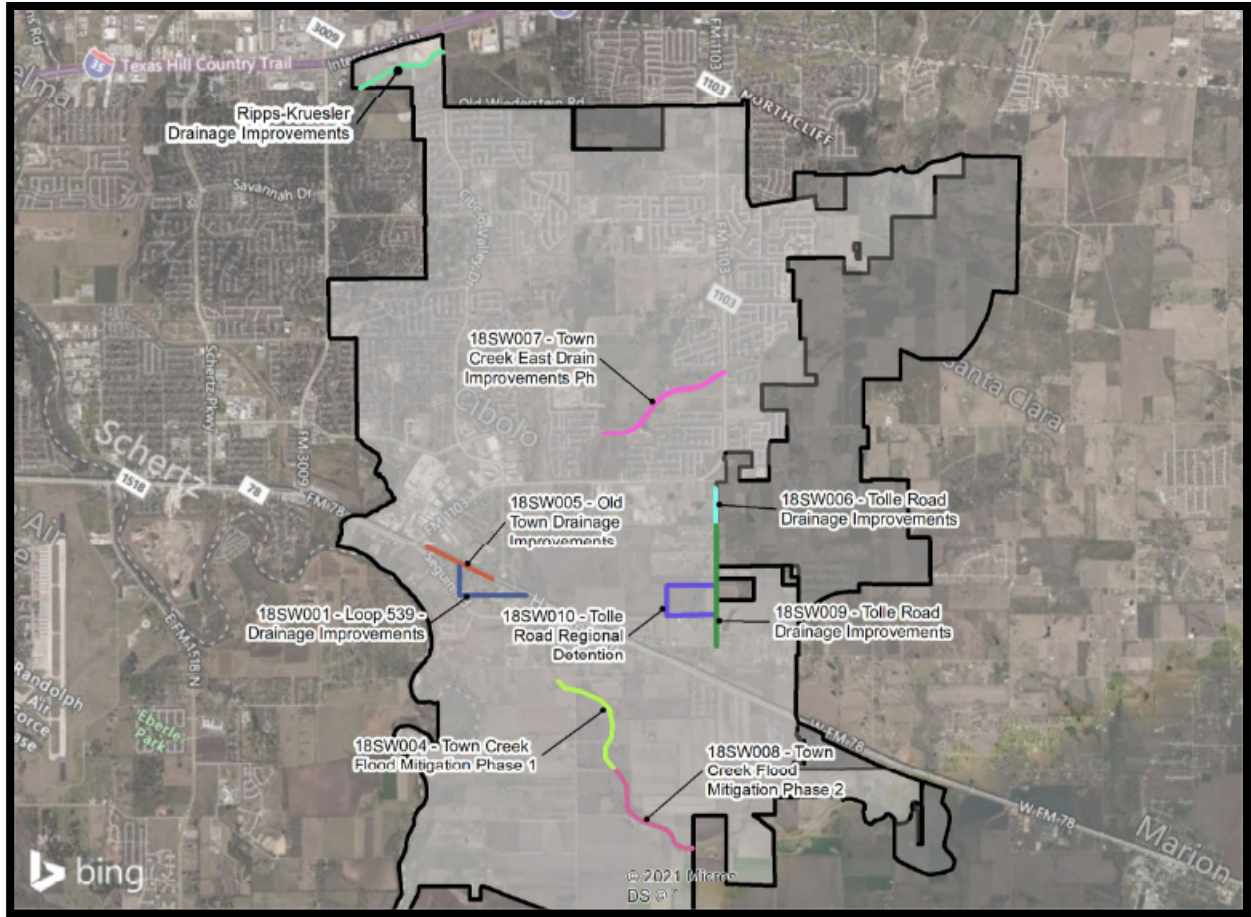


Table 5-3: Service Area CIP Costs

Project ID	Project Name	Full Capital Cost	Credited Cost (50%)
18SW001	Loop 539 - Drainage Improvements	\$2,500,000	\$1,250,000
18SW004	Town Creek Flood Mitigation - Phase 1	10,000,000	\$5,000,000
18SW005	Old Town Drainage Improvements	\$3,600,000	\$1,800,000
18SW006	Tolle Road Drain Improvements (Culvert Crossing on Country Lane.)	\$460,000	\$230,000
18SW007	Town Creek East Drain Improvements Ph 2 - Buffalo Crossing II to FM 1103	\$8,000,000	\$4,000,000
18SW008	Town Creek Flood Mitigation - Phase 2	\$15,000,000	\$7,500,000
18SW009	Tolle Rd Drainage Improvements	\$6,890,000	\$3,445,000
18SW010	Tolle Rd Regional Detention	\$3,600,000	\$1,800,000
	Ripps-Kruesler Drainage Improvements (recoup)	\$1,769,000	\$884,500
	Total Costs	51,819,000	\$25,909,500

5.6 DRAINAGE IMPACT FEE CALCULATIONS

The credited CIP costs for the Dietz Creek-Cibolo Creek, Town Creek, and Upper Santa Clara Creek service areas were adjusted based on the portion attributable to the 10-year growth, and the drainage impact fee was then calculated by dividing the attributable 10-year growth cost by the computed growth in impervious area. The total projected costs include the projected capital improvement costs to serve 10-year development along with the projected finance cost for the capital improvements. A 3.0% interest rate was used to calculate financing costs. The 10-year CIP cost allocation for each service area is shown in **Table 5-4** below.

Table 5-4: 10-Year CIP Cost Allocation by Service Area

Service Area	CIP Projects	Credited Cost	Finance Cost	10-Year % of Fully Developed	10-Year Growth Cost
Dietz Creek-Cibolo Creek	18SW005 (Old Town) 50% of 18SW001 (Loop 539) Ripps-Kruesler (Recoup)	\$3,309,500	\$257,600	65.44%	\$2,423,322
Lower Cibolo Creek	None	\$0	\$0	35.95%	\$0
Lower Santa Clara Creek	None	\$0	\$0	24.17%	\$0
Town Creek	18SW004 (Town Creek Ph 1) 18SW008 (Town Creek Ph 2) 18SW007 (Town Creek East) 50% of 18SW001 (Loop 539)	\$17,125,000	\$1,341,722	65.87%	\$12,621,977
Upper Santa Clara Creek	18SW006 (Tolle Rd.) 18SW009 (Tolle Rd.) 18SW010 (Tolle Rd. Reg. Detention)	\$5,475,000	\$240,297	36.90%	\$2,260,549
	Total Costs	\$25,909,500	\$1,839,620		\$17,305,847

Based on the 50% credit, the drainage impact fees per square foot of impervious area proposed for the Dietz Creek-Cibolo Creek, Town Creek, and Upper Santa Clara Creek service areas are shown in **Table 5-5**.

Table 5-5: Drainage Impact Fee Calculation by Service Area

Service Area	Fee per Square Foot Impervious Surface
Dietz Creek-Cibolo Creek	\$0.70
Lower Cibolo Creek	\$0.00
Lower Santa Clara Creek	\$0.00
Town Creek	\$0.91
Upper Santa Clara Creek	\$0.76

**Appendix A:
Roadway Existing Facilities Inventory**

**Cibolo Roadway Impact Fee Study Update Update
Existing Capital Improvements Analysis**

Serv Area	Shared Svc Area	Roadway	From	To	Length (mi)	No. of Lanes	Type	PM Pk Hr Cap./Lane	Pct. in Serv. Area	Peak Hour Volume			VTM Supply Pk Hr Total	VTM Demand Pk Hr Total	Excess VMT Capacity	Exist. VMT Deficiency
										A	B	Total				
1	X	Dietz Road	Roy Richard Drive	Deer Meadow Blvd	0.28	2	UC	500	50%	0	129	129	139	36	103	0
1	X	Dietz Road	Deer Meadow Blvd	Borgfeld Road	0.70	2	UC	500	50%	129	0	129	349	90	259	0
1		Bentwood Pass Drive	Bentwood Ranch Drive	Town Creek Road	0.21	2	UC	500	100%	50	50	100	212	21	191	0
1		Bentwood Ranch Drive	Cibolo Valley Drive	Borgfeld Road	0.95	2	UC	500	100%	100	100	200	953	191	762	0
1		Buffalo Crossing	Flint Road	FM 1103	0.50	2	DC	550	100%	50	50	100	548	50	499	0
1	X	Sassman Road	Weyel Road	Country Lane	1.28	2	UC	500	50%	0	50	50	639	64	575	0
1		Dean Road	north City Limit	Green Valley Road	1.09	2	UC	500	100%	291	297	588	1,087	639	448	0
1		Main Street	FM 1103	FM 78	0.96	2	UC	500	100%	310	226	536	961	515	446	0
1		Tolle Road	New Road-12	Country Lane	1.01	2	UC	500	100%	75	49	124	1,009	125	884	0
1		Country Lane	Tolle Road	Sassman Road	0.61	2	UC	500	100%	49	75	124	605	75	530	0
1		Green Valley Road	Southern Way	2000 ft west of FM 1103	0.80	2	UC	500	100%	230	196	426	803	342	461	0
1		Green Valley Road	Cibolo Valley Drive	Southern Way	0.34	3	SC	550	100%	291	297	588	378	202	176	0
1		Cibolo Valley Drive	Kove Lane	Borgfeld Rd	1.39	5	SA	675	100%	339	344	683	3,748	948	2,800	0
1		FM 1103	north City Limit	220 ft S. of Green Valley	1.11	3	SA	675	100%	836	952	1,788	1,504	1,992	0	488
1		FM 1103	220 ft south of Green Va	Wiedner Road	0.44	3	SA	675	100%	756	860	1,616	593	709	0	117
1		FM 1103	Wiedner Road	Vista Del Rey	0.95	3	SA	675	100%	675	769	1,444	1,288	1,378	0	90
1		FM 1103	Vista Del Rey	Weil Road	0.25	2	UC	500	100%	595	677	1,272	246	313	0	67
1		Short Weyel Road	Main Street	Rodeo Way	1.08	3	SA	675	100%	996	826	1,822	1,461	1,972	0	511
1		FM 78	FM 1103	New Road-12	2.16	5	SA	675	100%	731	564	1,295	5,845	2,803	3,041	0
Sub-Total Service Area 1					0.00							22,365	12,464	11,173	1,272	
2		Haeckerville Road	FM 78	Shaefer Road	0.36	2	UC	500	100%	133	104	237	360	85	275	*
2		Lower Seguin Road	Haeckerville Road	New Road-12	0.94	2	UC	500	100%	26	36	62	941	58	883	*
2		Haeckerville Road	Lower Seguin Road	Opie Lane	0.73	2	UC	500	100%	50	52	102	735	75	660	*
Sub-Total Service Area 2					12.48							2,036	219	1,818	0	
3		Bolton Road	Haeckerville Road	Santa Clara Road	2.76	2	UC	500	100%	22	18	40	2,761	110	2,651	*
Sub-Total Service Area 3					3.79							2,761	110	2,651	0	
Total												27,162	12,793	15,642	1,272	

DA - Divided Arterial
 UA - Undivided Arterial
 SA - Special Arterial with two-way left turn lane (TWLTL)
 DC - Divided collector
 UC - Undivided Collector
 SC - Special Collector with two-way left turn lane (TWLTL)

**Appendix B:
Roadway Projected 10-Year Growth
(Vehicle-Miles of New Demand)**

Vehicle-Mile Trip Generation by Service Area, Cibolo Impact Fee Update

Based on 2021-2031 Land Use Assumptions dated April 2021

Service Unit Equivalency

Residential	3.37	Service Emp	3.82
Basic Emp	3.82	Retail Emp	2.85

Estimated Residential Growth Vehicle-Mile Trip Generation

Conversion Factor: 3.38 2019 persons/household

Service Area	Added Population	Added Dwelling Units	Vehicle-Miles per DU	Total Vehicle-Miles
1	8,451	2,500	3.37	6,800
2	5,252	1,554	3.37	3,737
3	445	132	3.37	442
Total	14,149	4,186		10,979

Estimated Basic Employment Growth Vehicle-Mile Trip Generation

Conversion Factor: 1,500 square feet/employee

Service Area	Added Employees	Total Square Feet	Vehicle-Miles per 1,000 Sq Ft	Total Vehicle-Miles
1	443	664,500	3.82	2,538
2	0	0	3.82	0
3	1,200	1,800,000	3.82	6,876
Total	1,643	2,464,500		9,414

Estimated Service Employment Growth Vehicle-Mile Trip Generation

Conversion Factor: 500 square feet/employee

Service Area	Added Employees	Total Square Feet	Vehicle-Miles per 1,000 Sq Ft	Total Vehicle-Miles
1	2,112	1,056,000	3.82	4,034
2	13	6,500	3.82	25
3	122	61,000	3.82	233
Total	2,247	1,123,500		4,292

Estimated Retail Employment Growth Vehicle-Mile Trip Generation

Conversion Factor: 1,000 square feet/employee

Service Area	Added Employees	Total Square Feet	Vehicle-Miles per 1,000 Sq Ft	Total Vehicle-Miles
1	504	504,000	2.85	1,436
2	22	22,000	2.85	63
3	123	123,000	2.85	351
Total	649	649,000		1,850

Total Vehicle-Mile Generation Summary

Service Area	Residential Growth Vehicle-Miles	Basic Emp Growth Vehicle-Miles	Service Emp Growth Vehicle-Miles	Retail Emp Growth Vehicle-Miles	Total Growth Vehicle-Miles
1	6,800	2,538	4,034	1,436	14,808
2	3,737	0	25	63	3,825
3	442	6,876	233	351	7,902
Total	10,979	9,414	4,292	1,850	26,535

**Appendix C:
Roadway Project Cost Estimates**

City of Cibolo
Impact Fee Engineer's Opinion of Probable Construction Cost Estimate

Shaeffer Road
west City limit to Main Street

Roadway Information:	
Roadway Type:	3-Lane Undivided Collector
Length (lf):	2,284
Right-of-Way Width (ft.):	80
Median Type:	None
Pavement Width (BOC - BOC):	49
Description:	Widen roadway and construct to thoroughfare standard

Roadway Construction Cost Estimate:					
I. Paving Construction Cost Estimate					
Item No.	Item Description	Quantity	Unit	Unit Cost	Item Cost
1	Right of Way Preparation	23	STA	\$ 8,825.00	\$ 202,975
2	Unclassified Street Excavation	6,300	CY	\$ 9.00	\$ 56,700
3	D-GR HMA TY B SAC-B PG (64-22)	5,300	TON	\$ 72.00	\$ 381,600
4	Flexible Base	5,300	CY	\$ 60.00	\$ 318,000
5	D-GR HMA TY D PG (76-22)	1,400	TON	\$ 125.00	\$ 175,000
6	6" Concrete Sidewalk and Ramps	3,050	SY	\$ 60.00	\$ 183,000
7	Curb & Gutter	4,600	LF	\$ 21.03	\$ 96,738
8	14" Grass median	0	SY	\$ 5.00	\$ -
Paving Estimate Subtotal:					\$ 1,414,013
II. Non-Paving Construction Components					
Item No.	Item Description		Pct. Of Paving		Item Cost
9	Pavement Markings & Signage		2%	\$	28,300
10	Traffic Control		5%	\$	70,800
11	Erosion Control		3%	\$	42,500
12	Landscaping		1%	\$	14,200
13	Illumination		6%	\$	84,900
14	Drainage Improvements (RCP, Inlets, MH, Outfalls)		20%	\$	282,900
Other Components Estimate Subtotal:					\$ 523,600
III. Special Construction Components					
Item No.	Item Description	Notes	Allowance		Item Cost
15	Drainage Structures	None	\$ -	\$	-
16	Bridge Structures	None	\$ -	\$	-
17	Traffic Signals	None	\$ -	\$	-
18	Other	None	\$ -	\$	-
Special Components Estimate Subtotal:					\$ -
I, II, & III Construction Subtotal:					\$ 1,937,613
				Mobilization	5% \$ 96,900
				Contingency	10% \$ 203,500
Construction Cost Estimate Total:					\$ 2,238,100

Impact Fee Cost Estimate Summary					
Item Description	Notes	Allowance			Item Cost
Construction	Assume 30' ROW need	-	\$		2,238,100
Engineering/Survey/Testing		10%	\$		223,810
Right-of-Way Acquisition	Cost per sq. ft.:	\$ 1.00	\$	68,520	\$ 68,520
Impact Fee Project Cost Estimate Total:					\$ 2,530,430

City of Cibolo
Impact Fee Engineer's Opinion of Probable Construction Cost Estimate

Lower Seguin Road-1
west City limit to Haeckerville Rd

Roadway Information:	
Roadway Type:	4-Lane Divided Arterial
Length (lf):	5,123
Right-of-Way Width (ft.):	100
Median Type:	None
Pavement Width (BOC - BOC):	49
Description:	Widen roadway and construct to thoroughfare standard

Roadway Construction Cost Estimate:					
I. Paving Construction Cost Estimate					
Item No.	Item Description	Quantity	Unit	Unit Cost	Item Cost
1	Right of Way Preparation	52	STA	\$ 8,825.00	\$ 458,900
2	Unclassified Street Excavation	14,000	CY	\$ 9.00	\$ 126,000
3	D-GR HMA TY B SAC-B PG (64-22)	11,700	TON	\$ 72.00	\$ 842,400
4	Flexible Base	11,800	CY	\$ 60.00	\$ 708,000
5	D-GR HMA TY D PG (76-22)	3,100	TON	\$ 125.00	\$ 387,500
6	6" Concrete Sidewalk and Ramps	6,840	SY	\$ 60.00	\$ 410,400
7	Curb & Gutter	10,300	LF	\$ 21.03	\$ 216,609
8	14" Grass median	8,000	SY	\$ 5.00	\$ 40,000
Paving Estimate Subtotal:					\$ 3,189,809
II. Non-Paving Construction Components					
Item No.	Item Description		Pct. Of Paving		Item Cost
9	Pavement Markings & Signage		2%	\$	63,800
10	Traffic Control		5%	\$	159,500
11	Erosion Control		3%	\$	95,700
12	Landscaping		1%	\$	31,900
13	Illumination		6%	\$	191,400
14	Drainage Improvements (RCP, Inlets, MH, Outfalls)		20%	\$	638,000
Other Components Estimate Subtotal:					\$ 1,180,300
III. Special Construction Components					
Item No.	Item Description	Notes		Allowance	Item Cost
15	Drainage Structures	None		\$ -	\$ -
16	Bridge Structures	None		\$ -	\$ -
17	Traffic Signals	None		\$ -	\$ -
18	Other	None		\$ -	\$ -
Special Components Estimate Subtotal:					\$ -
I, II, & III Construction Subtotal:					\$ 4,370,109
Mobilization					5% \$ 218,600
Contingency					10% \$ 458,900
Construction Cost Estimate Total:					\$ 5,047,700

Impact Fee Cost Estimate Summary					
Item Description	Notes		Allowance	Item Cost	
Construction	Assume 40' ROW need		-	\$ 5,047,700	
Engineering/Survey/Testing			10%	\$ 504,770	
Right-of-Way Acquisition	Cost per sq. ft.:	\$ 1.00	\$ 204,920	\$ 204,920	
Impact Fee Project Cost Estimate Total:					\$ 5,757,390

City of Cibolo
Impact Fee Engineer's Opinion of Probable Construction Cost Estimate

Lower Seguin Road-2
 Haackerville Rd to FM 1103 Ext

Roadway Information:	
Roadway Type:	4-Lane Divided Arterial
Length (lf):	5,914
Right-of-Way Width (ft.):	100
Median Type:	None
Pavement Width (BOC - BOC):	49
Description:	Widen roadway and construct to thoroughfare standard

Roadway Construction Cost Estimate:					
I. Paving Construction Cost Estimate					
Item No.	Item Description	Quantity	Unit	Unit Cost	Item Cost
1	Right of Way Preparation	60	STA	\$ 8,825.00	\$ 529,500
2	Unclassified Street Excavation	16,100	CY	\$ 9.00	\$ 144,900
3	D-GR HMA TY B SAC-B PG (64-22)	13,500	TON	\$ 72.00	\$ 972,000
4	Flexible Base	13,600	CY	\$ 60.00	\$ 816,000
5	D-GR HMA TY D PG (76-22)	3,600	TON	\$ 125.00	\$ 450,000
6	6" Concrete Sidewalk and Ramps	7,890	SY	\$ 60.00	\$ 473,400
7	Curb & Gutter	11,900	LF	\$ 21.03	\$ 250,257
8	14" Grass median	9,200	SY	\$ 5.00	\$ 46,000
Paving Estimate Subtotal:					\$ 3,682,057
II. Non-Paving Construction Components					
Item No.	Item Description		Pct. Of Paving		Item Cost
8	Pavement Markings & Signage		2%	\$	73,700
9	Traffic Control		5%	\$	184,200
10	Erosion Control		3%	\$	110,500
11	Landscaping		1%	\$	36,900
12	Illumination		6%	\$	221,000
13	Drainage Improvements (RCP, Inlets, MH, Outfalls)		20%	\$	736,500
Other Components Estimate Subtotal:					\$ 1,362,800
III. Special Construction Components					
Item No.	Item Description	Notes	Allowance		Item Cost
14	Drainage Structures	None	\$ -	\$	-
15	Bridge Structures	None	\$ -	\$	-
16	Traffic Signals	None	\$ -	\$	-
17	Other	None	\$ -	\$	-
Special Components Estimate Subtotal:					\$ -
I, II, & III Construction Subtotal:					\$ 5,044,857
				Mobilization	5% \$ 252,300
				Contingency	10% \$ 529,800
Construction Cost Estimate Total:					\$ 5,827,000

Impact Fee Cost Estimate Summary				
Item Description	Notes	Allowance		Item Cost
Construction	Assume 40' ROW need	-	\$	5,827,000
Engineering/Survey/Testing		10%	\$	582,700
Right-of-Way Acquisition	Cost per sq. ft.:	\$ 1.00	\$ 236,560	\$ 236,560
Impact Fee Project Cost Estimate Total:				\$ 6,646,260

City of Cibolo
Impact Fee Engineer's Opinion of Probable Construction Cost Estimate

Lower Seguin Road-3
 FM 1103 Ext to Stolte Rd

Roadway Information:	
Roadway Type:	4-Lane Divided Arterial
Length (lf):	1,279
Right-of-Way Width (ft.):	100
Median Type:	None
Pavement Width (BOC - BOC):	49
Description:	Widen roadway and construct to thoroughfare standard

Roadway Construction Cost Estimate:					
I. Paving Construction Cost Estimate					
Item No.	Item Description	Quantity	Unit	Unit Cost	Item Cost
1	Right of Way Preparation	13	STA	\$ 8,825.00	\$ 114,725
2	Unclassified Street Excavation	3,500	CY	\$ 9.00	\$ 31,500
3	D-GR HMA TY B SAC-B PG (64-22)	3,000	TON	\$ 72.00	\$ 216,000
4	Flexible Base	3,000	CY	\$ 60.00	\$ 180,000
5	D-GR HMA TY D PG (76-22)	800	TON	\$ 125.00	\$ 100,000
6	6" Concrete Sidewalk and Ramps	1,710	SY	\$ 60.00	\$ 102,600
7	Curb & Gutter	2,600	LF	\$ 21.03	\$ 54,678
8	14" Grass median	2,000	SY	\$ 5.00	\$ 10,000
Paving Estimate Subtotal:					\$ 809,503
II. Non-Paving Construction Components					
Item No.	Item Description		Pct. Of Paving		Item Cost
8	Pavement Markings & Signage		2%	\$	16,200
9	Traffic Control		5%	\$	40,500
10	Erosion Control		3%	\$	24,300
11	Landscaping		1%	\$	8,100
12	Illumination		6%	\$	48,600
13	Drainage Improvements (RCP, Inlets, MH, Outfalls)		20%	\$	162,000
Other Components Estimate Subtotal:					\$ 299,700
III. Special Construction Components					
Item No.	Item Description	Notes	Allowance		Item Cost
14	Drainage Structures	None	\$ -	\$	-
15	Bridge Structures	None	\$ -	\$	-
16	Traffic Signals	None	\$ -	\$	-
17	Other	None	\$ -	\$	-
Special Components Estimate Subtotal:					\$ -
I, II, & III Construction Subtotal:					\$ 1,109,203
				Mobilization	5% \$ 55,500
				Contingency	10% \$ 116,500
Construction Cost Estimate Total:					\$ 1,281,300

Impact Fee Cost Estimate Summary				
Item Description	Notes	Allowance		Item Cost
Construction	Assume 40' ROW need	-	\$	1,281,300
Engineering/Survey/Testing		10%	\$	128,130
Right-of-Way Acquisition	Cost per sq. ft.:	\$ 1.00	\$ 51,160	\$ 51,160
Impact Fee Project Cost Estimate Total:				\$ 1,460,590

City of Cibolo
Impact Fee Engineer's Opinion of Probable Construction Cost Estimate

Lower Seguin Road-4
 Stolte Rd to Pfannsteil Lane

Roadway Information:	
Roadway Type:	4-Lane Divided Arterial
Length (lf):	2,019
Right-of-Way Width (ft.):	100
Median Type:	None
Pavement Width (BOC - BOC):	49
Description:	Widen roadway and construct to thoroughfare standard

Roadway Construction Cost Estimate:					
I. Paving Construction Cost Estimate					
Item No.	Item Description	Quantity	Unit	Unit Cost	Item Cost
1	Right of Way Preparation	21	STA	\$ 8,825.00	\$ 185,325
2	Unclassified Street Excavation	5,500	CY	\$ 9.00	\$ 49,500
3	D-GR HMA TY B SAC-B PG (64-22)	4,700	TON	\$ 72.00	\$ 338,400
4	Flexible Base	4,700	CY	\$ 60.00	\$ 282,000
5	D-GR HMA TY D PG (76-22)	1,200	TON	\$ 125.00	\$ 150,000
6	6" Concrete Sidewalk and Ramps	2,700	SY	\$ 60.00	\$ 162,000
7	Curb & Gutter	4,100	LF	\$ 21.03	\$ 86,223
8	14" Grass median	3,200	SY	\$ 5.00	\$ 16,000
Paving Estimate Subtotal:					\$ 1,269,448
II. Non-Paving Construction Components					
Item No.	Item Description		Pct. Of Paving		Item Cost
8	Pavement Markings & Signage		2%	\$	25,400
9	Traffic Control		5%	\$	63,500
10	Erosion Control		3%	\$	38,100
11	Landscaping		1%	\$	12,700
12	Illumination		6%	\$	76,200
13	Drainage Improvements (RCP, Inlets, MH, Outfalls)		20%	\$	253,900
Other Components Estimate Subtotal:					\$ 469,800
III. Special Construction Components					
Item No.	Item Description	Notes		Allowance	Item Cost
14	Drainage Structures	None	\$	-	-
15	Bridge Structures	None	\$	-	-
16	Traffic Signals	None	\$	-	-
17	Other	None	\$	-	-
Special Components Estimate Subtotal:					\$ -
I, II, & III Construction Subtotal:					\$ 1,739,248
Mobilization					5% \$ 87,000
Contingency					10% \$ 182,700
Construction Cost Estimate Total:					\$ 2,009,000

Impact Fee Cost Estimate Summary					
Item Description	Notes		Allowance	Item Cost	
Construction	Assume 40' ROW need		-	\$ 2,009,000	
Engineering/Survey/Testing			10%	\$ 200,900	
Right-of-Way Acquisition	Cost per sq. ft.:	\$ 1.00	\$ 80,760	\$ 80,760	
Impact Fee Project Cost Estimate Total:					\$ 2,290,660

City of Cibolo
Impact Fee Engineer's Opinion of Probable Construction Cost Estimate

Green Valley Road
 2000 ft west of FM 1103 to FM 1103

Roadway Information:	
Roadway Type:	5-Lane Arterial with TWLTL
Length (lf):	2,000
Right-of-Way Width (ft.):	100
Median Type:	None
Pavement Width (BOC - BOC):	63
Description:	Widen roadway and construct to thoroughfare standard

Roadway Construction Cost Estimate:					
I. Paving Construction Cost Estimate					
Item No.	Item Description	Quantity	Unit	Unit Cost	Item Cost
1	Right of Way Preparation	20	STA	\$ 8,825.00	\$ 176,500
2	Unclassified Street Excavation	7,000	CY	\$ 9.00	\$ 63,000
3	D-GR HMA TY B SAC-B PG (64-22)	5,900	TON	\$ 72.00	\$ 424,800
4	Flexible Base	5,800	CY	\$ 60.00	\$ 348,000
5	D-GR HMA TY D PG (76-22)	1,600	TON	\$ 125.00	\$ 200,000
6	6" Concrete Sidewalk and Ramps	2,670	SY	\$ 60.00	\$ 160,200
7	Curb & Gutter	4,000	LF	\$ 21.03	\$ 84,120
8	14" Grass median	0	SY	\$ 5.00	-
Paving Estimate Subtotal:					\$ 1,456,620
II. Non-Paving Construction Components					
Item No.	Item Description		Pct. Of Paving		Item Cost
9	Pavement Markings & Signage		2%	\$	29,200
10	Traffic Control		5%	\$	72,900
11	Erosion Control		3%	\$	43,700
12	Landscaping		1%	\$	14,600
13	Illumination		6%	\$	87,400
14	Drainage Improvements (RCP, Inlets, MH, Outfalls)		20%	\$	291,400
Other Components Estimate Subtotal:					\$ 539,200
III. Special Construction Components					
Item No.	Item Description	Notes		Allowance	Item Cost
15	Drainage Structures	None		\$ -	-
16	Bridge Structures	None		\$ -	-
17	Traffic Signals	None		\$ -	-
18	Other	None		\$ -	-
Special Components Estimate Subtotal:					\$ -
I, II, & III Construction Subtotal:					\$ 1,995,820
Mobilization					5% \$ 99,800
Contingency					10% \$ 209,600
Construction Cost Estimate Total:					\$ 2,305,300

Impact Fee Cost Estimate Summary					
Item Description	Notes		Allowance	Item Cost	
Construction			-	\$ 2,305,300	
Engineering/Survey/Testing			10%	\$ 230,530	
Right-of-Way Acquisition	Cost per sq. ft.:	\$ 1.00	\$ -	\$ -	
Impact Fee Project Cost Estimate Total:					\$ 2,535,830

**Appendix D:
Roadway CIP Service Units of Supply**

ROADWAY IMPROVEMENTS 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 SA = special arterial (arterial with continuous left turn) UC = undivided collector
PK-HR VOLUME	The existing volumes of cars on the roadway segment traveling during the afternoon (P.M.) peak hour of travel.
% 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%.
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.

Cibolo Roadway Impact Fee Update 10 Year Roadway CIP

CIP Origin	Serv Area	Project Type	Roadway	From	To	Length (mi)	Added Lanes	Type	Pct. in Serv. Area	Peak Hour Volume			VMT Supply Pk Hr Total	VMT Demand Pk Hr Total	Excess VMT Capacity	CIP VMT Deficiency
										A	B	Total				
2019	1	R	Ripps-Kreusler Road	West City Limit	Cibolo Valley Drive	0.92	5	SA	100%	0	0	0	2,484	0	2,484	0
2013/2019	1	N	Green Valley Road	end of Southern Way	2000 ft west of FM 1103	0.80	3	SA	100%	230	196	426	1,084	342	742	0
2013	1	R	Green Valley Road	2000 ft west of FM 1103	FM 1103	0.38	5	SA	100%	230	196	426	1,023	161	862	0
2013/2019	1	N	Green Valley Road	FM 1103	Landmark Way	0.49	2	DA	100%	0	0	0	665	0	665	0
2019	1	N	Green Valley Road	Landmark Way	Homestead Parkway	0.22	3	SA	100%	230	196	426	301	95	206	0
2019	1	N	Green Valley Road	Landmark Way	Homestead Parkway	0.22	2	DA	100%	0	0	0	301	0	301	0
2013	1	N	Wiedner Road	Town Creek Road	Hinge Falls	1.14	2	UC	100%	14	56	70	1,140	80	1,060	0
2013	1	N	Wiedner Road	Hinge Falls	FM 1103	0.26	2	UC	100%	50	204	254	261	66	195	0
2019	1	N	FM 1103/Main Street Improvements						100%	0	0	0	0	0	0	0
2019	1	N	FM 1103	Main Street	Rodeo Way	1.08	5	SA	100%	996	826	1822	2,922	1,972	950	0
2019	1	N	Buffalo Tr/Lance Xing	Main Street	Knights Crossing	0.73	2	UC	100%	0	0	0	732	0	732	0
2019	1	N	Buffalo Tr/Lance Xing	Knights Crossing	Tolle Road	0.85	2	UC	100%	0	0	0	853	0	853	0
2013/2019	1	N	Cibolo Valley Road	north City Limit	Old Wiederstein Road	0.56	4	DA	50%		344	344	753	192	561	0
2019	1	N	Dean Road	north City Limit	Green Valley Road	1.09	3	SC	100%	97	90	187	1,195	203	992	0
2019	1	N	Country Club Drive	north City Limit	Green Valley Rd	0.46	3	SC	100%	0	0	0	502	0	502	0
2019	1	N	Knights Crossing	Wiedner Road	FM 1103	1.07	2	UA	100%	0	0	0	1,343	0	1,343	0
2013/2019	1	N	Knights Crossing	FM 1103	Buffalo Tr/Lance Xing	0.56	2	UA	100%	0	0	0	702	0	702	0
2019	1	N	Main Street	FM 1103	FM 78	0.96	3	SC	100%	310	226	536	1,057	515	542	0
2019	1	N	Tolle Road	FM 1103	Country Lane	1.22	2	UC	100%	75	49	124	1,221	152	1,069	0
2013	1	N	FM 1103	North City Limit	Saddle Spoke/Greenwood Bay	1.82	5	SA	100%	836	952	1788	4,916	3,255	1,661	0
2013	1	N	FM 1103	Saddle Spoke/Greenwood Bay	Brite Road	0.76	5	SA	100%	836	952	1788	2,050	1,358	692	0
2019	1	N	FM 1103 Ext	Brite Road	Buffalo Tr/Lance Xing	0.73	3	SA	100%	0	0	0	986	0	986	0
2013/2019	1	N	FM 1103 Ext	Buffalo Tr/Lance Xing	FM 78	0.75	3	SA	100%	0	0	0	1,013	0	1,013	0
2019	1	N	FM 1103 Ext	Brite Road	Buffalo Tr/Lance Xing	0.73	2	DA	100%	0	0	0	986	0	986	0
2013/2019	1	N	FM 1103 Ext	Buffalo Tr/Lance Xing	FM 78	0.75	2	DA	100%	0	0	0	1,013	0	1,013	0
2013	1	N	FM 78 at Main St Traffic Signal						100%				0	0	0	0
Sub-Total Service Area 1						18.57							29,503	8,391	21,114	0

Cibolo Roadway Impact Fee Update 10 Year Roadway CIP

CIP Origin	Serv Area	Project Type	Roadway	From	To	Length (mi)	Added Lanes	Type	Pct. in Serv. Area	Peak Hour Volume			VMT Supply Pk Hr Total	VMT Demand Pk Hr Total	Excess VMT Capacity	CIP VMT Deficiency
										A	B	Total				
2013	2	N	FM 78 at Haeckerville	Traffic Signal		0.00			100%			0	0	0	0	0
2013	2	N	Shaeffer Road	West City limit	Main St	0.43	2	UC	100%	94	96	190	433	83	350	0
2019	2	N	New Road-1	Main St Ext	FM 1103 Ext	1.17	3	SA	100%	0	0	0	1,585	0	1,585	0
2019	2	N	New Road-1	FM 1103 Ext	FM 78	0.78	3	SA	100%	0	0	0	1,048	0	1,048	0
2013	2	N	Lower Seguin Road	west City Limit	Haeckerville Rd	0.97	4	DA	50%	26	36	62	2,620	60	2,560	0
2013	2	N	Lower Seguin Road	Haeckerville Rd	FM 1103 Ext	1.12	4	DA	100%	26	36	62	3,024	69	2,955	0
2013	2	N	Lower Seguin Road	FM 1103 Ext	Stolte Rd	0.24	4	DA	50%	26	36	62	654	15	639	0
2013	2	N	Lower Seguin Road	Stolte Rd	Pfannsteil Lane	0.38	4	DA	100%	26	36	62	1,032	24	1,008	0
2013/2019	2	N	Main Street	FM 78	Shaefer Road	0.37	4	DA	100%	155	113	268	996	99	897	0
2019	2	N	Main Street Ext	Shaefer Road	Lower Seguin Road	2.01	4	DA	100%	0	0	0	5,424	0	5,424	0
2013	2	N	Haeckerville Road	FM 78	Town Creek	0.54	4	DA	100%	133	104	237	1,454	128	1,326	0
2019	2	N	Haeckerville Road	Town Creek	Lower Seguin Road	1.63	4	DA	100%	133	104	237	4,398	386	4,012	0
2019	2	N	Haeckerville Road	Lower Seguin Road	540' S of Haeckerville Road	0.10	4	DA	50%	50	52	102	276	10	266	0
2019	2	N	Haeckerville Road	540' S of Haeckerville road	286' S of Green Meadow Rd	0.11	4	DA	100%	50	52	102	307	12	295	0
2019	2	N	Haeckerville Road	286' S of Green Meadow Road	288' S of Fread Lane	0.11	4	DA	50%	50	52	102	307	12	295	0
2019	2	N	Haeckerville Road	288' S of Fread Lane	DW Lane	0.13	4	DA	100%	50	52	102	361	14	347	0
2013/2019	2	N	FM 1103 Ext	FM 78	Arizpe Road	1.10	3	SA	100%	0	0	0	1,485	0	1,485	0
2013/2019	2	N	FM 1103 Ext	Arizpe Road	Lower Seguin Road	1.13	3	SA	50%	0	0	0	1,525	0	1,525	0
2013/2019	2	N	FM 1103 Ext	Lower Seguin Road	1736' S of Lower Seguin Road	0.33	3	SA	50%	0	0	0	444	0	444	0
2013/2019	2	N	FM 1103 Ext	1736' S of Lower Seguin Road	2400' S of Lower Seguin Road	0.13	3	SA	100%	0	0	0	169	0	169	0
2013/2019	2	N	FM 1103 Ext	Valley View Road	1275' N of Schmoekel Road	0.32	3	SA	100%	0	0	0	435	0	435	0
2013/2019	2	N	FM 1103 Ext	Lower Seguin Road	Schmoekel Road	1.21	3	SA	100%	0	0	0	1,629	0	1,629	0
2013/2019	2	N	FM 1103 Ext	Arizpe Road	Lower Seguin Road	1.13	2	DA	50%	0	0	0	1,525	0	1,525	0
2013/2019	2	N	FM 1103 Ext	Lower Seguin Road	1736' S of Lower Seguin Road	0.33	2	DA	50%	0	0	0	444	0	444	0
2013/2019	2	N	FM 1103 Ext	1736' S of Lower Seguin Road	2400' S of Lower Seguin Road	0.13	2	DA	100%	0	0	0	169	0	169	0
2013/2019	2	N	FM 1103 Ext	Valley View Road	1275' north of Schmoekel Road	0.32	2	DA	100%	0	0	0	435	0	435	0
2013	2	N	Pfannsteil Lane	FM 78	N. of Arizpe Road	0.74	3	SC	100%	0	0	0	813	0	813	0
2013	2	N	Pfannsteil Lane	Arizpe Road	3900' N of Lower Seguin Road	0.41	3	SC	50%	6	6	13	455	6	449	0
2013	2	N	Pfannsteil Lane	2100' N of Lower Seguin Road	Lower Seguin Road	0.40	3	SC	50%	6	6	13	438	6	432	0
Sub-Total Service Area 2						17.77							33,885	924	32,959	0

Cibolo Roadway Impact Fee Update 10 Year Roadway CIP

CIP Origin	Serv Area	Project Type	Roadway	From	To	Length (mi)	Added Lanes	Type	Pct. in Serv. Area	Peak Hour Volume			VMT Supply Pk Hr Total	VMT Demand Pk Hr Total	Excess VMT Capacity	CIP VMT Deficiency
										A	B	Total				
2013/2019	3	N	Bolton Road	Haeckerville Road	2200' E of Haeckerville Road	0.42	3	SC	50%	22	18	40	458	17	441	0
2013/2019	3	N	Bolton Road	2200' E of Haeckerville Road	500' E of Zuehl Road	0.41	3	SC	100%	22	18	40	448	16	432	0
2013/2019	3	N	Bolton Road	500' E of Zuehl Road	1450' E of Zuehl Road	0.18	3	SC	50%	22	18	40	198	7	191	0
2013/2019	3	N	Bolton Road	650' E of Stolte Road	2250' E of Stolte Road	0.30	3	SC	50%	22	18	40	333	12	321	0
2013/2019	3	N	Bolton Road	4708' W of Santa Clara Road	Santa Clara Road	0.89	3	SC	50%	22	18	40	981	36	945	0
2013/2019	3	N	FM 1103 Ext	3200' N of Bolton Road	IH - 10	0.69	3	SA	100%	0	0	0	933	0	933	0
2013/2019	3	N	FM 1103 Ext	3200' N of Bolton Road	IH - 10	0.69	2	DA	100%	0	0	0	933	0	933	0
2019	3	N	Pfannsteil Lane	Bolton Road	IH - 10	0.42	3	SC	100%	0	0	0	464	0	464	0
2019	3	N	Santa Clara Road	Bolton Road	1200' S of Bolton Road	0.23	4	DA	100%	18	22	40	614	9	605	0
2019	3	N	Santa Clara Road	1200' S of Bolton Road	IH - 10	0.28	4	DA	100%	18	22	40	756	11	745	0
2021	3	N	Haeckerville Road	Bolton Road	IH - 10	0.11	4	DA	100%	60	40	100	307	12	295	0
Sub-Total Service Area 3						4.62							6,425	120	6,305	0
Totals:													69,813	9,435	60,378	0

Appendix E:
Roadway Improvement Plan Cost Analysis

Cibolo Roadway Impact Fee Update 10 Year Roadway CIP

CIP Origin	Serv Area	Project Type	Roadway	From	To	Length (mi)	Added Lanes	Roadway Costs				Total Project Cost
								Engineering	ROW	Construction	Finance	
2019	1	R	Ripps-Kreusler Road	West City Limit	Cibolo Valley Drive	0.92	5	\$ -	\$ -	\$ 1,169,700	\$ -	\$ 1,169,700
2013/2019	1	N	Green Valley Road	end of Southern Way	2000 ft west of FM 1103	0.80	3	\$ 720,000	\$ 500,000	\$ 7,620,000	\$ 3,040,221	\$ 11,880,221
2013	1	R	Green Valley Road	2000 ft west of FM 1103	FM 1103	0.38	5	\$ -	\$ -	\$ 2,305,300	\$ 792,830	\$ 3,098,130
2013/2019	1	N	Green Valley Road	FM 1103	Landmark Way	0.49	2	\$ 330,346	\$ 137,644	\$ 3,441,103	\$ 1,344,401	\$ 5,253,494
2019	1	N	Green Valley Road	Landmark Way	Homestead Parkway	0.22	3	\$ 230,000	\$ 110,000	\$ 2,160,000	\$ 859,791	\$ 3,359,791
2019	1	N	Green Valley Road	Landmark Way	Homestead Parkway	0.22	2	\$ 149,654	\$ 62,356	\$ 1,558,897	\$ 609,044	\$ 2,379,951
2013	1	N	Wiedner Road	Town Creek Road	Hinge Falls	1.14	2	\$ 327,120	\$ 872,319	\$ 3,053,116	\$ 1,462,523	\$ 5,715,077
2013	1	N	Wiedner Road	Hinge Falls	FM 1103	0.26	2	\$ 75,000	\$ 200,000	\$ 700,000	\$ 335,318	\$ 1,310,318
2019	1	N	FM 1103/Main Street Improvements					\$ -	\$ -	\$ 2,700,000	\$ 928,574	\$ 3,628,574
2019	1	N	FM 1103	Main Street	Rodeo Way	1.08	5	\$ -	\$ -	\$ 5,000,000	\$ 1,719,582	\$ 6,719,582
2019	1	N	Buffalo Tr/Lance Xing	Main Street	Knights Crossing	0.73	2	\$ 148,500	\$ 132,000	\$ 1,295,250	\$ 541,926	\$ 2,117,676
2019	1	N	Buffalo Tr/Lance Xing	Knights Crossing	Tolle Road	0.85	2	\$ 200,000	\$ 200,000	\$ 2,200,000	\$ 894,183	\$ 3,494,183
2013/2019	1	N	Cibolo Valley Road	north City limit	Old Wiederstein Road	0.56	4	\$ 185,255	\$ 185,000	\$ 1,974,995	\$ 806,570	\$ 3,151,820
2019	1	N	Dean Road	north City Limit	Green Valley Road	1.09	3	\$ 510,000	\$ 360,000	\$ 5,200,000	\$ 2,087,572	\$ 8,157,572
2019	1	N	Country Club Drive	north City Limit	Green Valley Rd	0.46	3	\$ 216,869	\$ 97,941	\$ 2,210,668	\$ 868,553	\$ 3,394,032
2019	1	N	Knights Crossing	Wiedner Road	FM 1103	1.07	2	\$ -	\$ -	\$ 6,900,000	\$ 2,373,023	\$ 9,273,023
2013/2019	1	N	Knights Crossing	FM 1103	Buffalo Tr/Lance Xing	0.56	2	\$ -	\$ -	\$ 3,500,000	\$ 1,203,707	\$ 4,703,707
2019	1	N	Main Street	FM 1103	FM 78	0.96	3	\$ 440,000	\$ -	\$ 4,520,000	\$ 1,705,825	\$ 6,665,825
2019	1	N	Tolle Road	FM 1103	Country Lane	1.22	2	\$ 306,000	\$ 544,000	\$ 4,828,000	\$ 1,952,757	\$ 7,630,757
2013	1	N	FM 1103	North City Limit	Saddle Spoke/Greenwood Bay	1.82	5	\$ 156,967	\$ 448,476	\$ 2,690,859	\$ 1,133,652	\$ 4,429,954
2013	1	N	FM 1103	Saddle Spoke/Greenwood Bay	Brite Road	0.76	5	\$ 65,447	\$ 186,992	\$ 1,121,949	\$ 472,674	\$ 1,847,062
2019	1	N	FM 1103 Ext	Brite Road	Buffalo Tr/Lance Xing	0.73	3	\$ 338,832	\$ -	\$ 3,456,743	\$ 1,305,360	\$ 5,100,936
2013/2019	1	N	FM 1103 Ext	Buffalo Tr/Lance Xing	FM 78	0.75	3	\$ 348,144	\$ -	\$ 3,551,743	\$ 1,341,235	\$ 5,241,122
2019	1	N	FM 1103 Ext	Brite Road	Buffalo Tr/Lance Xing	0.73	2	\$ 446,240	\$ 28,236	\$ 4,558,258	\$ 1,730,840	\$ 6,763,573
2013/2019	1	N	FM 1103 Ext	Buffalo Tr/Lance Xing	FM 78	0.75	2	\$ 458,504	\$ 29,012	\$ 4,683,530	\$ 1,778,407	\$ 6,949,453
2013	1	N	FM 78 at Main St Traffic Signal					\$ 62,500	\$ -	\$ 275,000	\$ 116,072	\$ 453,572
Sub-Total Service Area 1						18.57		\$ 5,715,378	\$ 4,093,976	\$ 82,675,110	\$ 31,404,643	\$ 123,889,107

Cibolo Roadway Impact Fee Update 10 Year Roadway CIP

CIP Origin	Serv Area	Project Type	Roadway	From	To	Length (mi)	Added Lanes	Roadway Costs				Total Project Cost
								Engineering	ROW	Construction	Finance	
2013	2	N	FM 78 at Haeckerville Traffic Signal			0.00		\$ 62,500	\$ -	\$ 275,000	\$ 116,072	\$ 453,572
2013	2	N	Shaeffer Road	West City limit	Main St	0.43	2	\$ 223,810	\$ 68,520	\$ 2,238,100	\$ 870,256	\$ 3,400,686
2019	2	N	New Road-1	Main St Ext	FM 1103 Ext	1.17	3	\$ 870,000	\$ 420,000	\$ 8,920,000	\$ 3,511,386	\$ 13,721,386
2019	2	N	New Road-1	FM 1103 Ext	FM 78	0.78	3	\$ 760,000	\$ 310,000	\$ 7,600,000	\$ 2,981,755	\$ 11,651,755
2013	2	N	Lower Seguin Road	west City Limit	Haeckerville Rd	0.97	4	\$ 252,385	\$ 102,460	\$ 2,523,850	\$ 990,030	\$ 3,868,725
2013	2	N	Lower Seguin Road	Haeckerville Rd	FM 1103 Ext	1.12	4	\$ 582,700	\$ 236,560	\$ 5,827,000	\$ 2,285,758	\$ 8,932,018
2013	2	N	Lower Seguin Road	FM 1103 Ext	Stolte Rd	0.24	4	\$ 64,065	\$ 25,580	\$ 640,650	\$ 251,160	\$ 981,455
2013	2	N	Lower Seguin Road	Stolte Rd	Pfannsteil Lane	0.38	4	\$ 200,900	\$ 80,760	\$ 2,009,000	\$ 787,795	\$ 3,078,455
2013/2019	2	N	Main Street	FM 78	Shaefer Road	0.37	4	\$ 331,720	\$ 106,000	\$ 3,372,880	\$ 1,310,528	\$ 5,121,128
2019	2	N	Main Street Ext	Shaefer Road	Lower Seguin Road	2.01	4	\$ 1,136,315	\$ 755,100	\$ 11,553,760	\$ 4,624,016	\$ 18,069,191
2013	2	N	Haeckerville Road	FM 78	Town Creek	0.54	4	\$ 513,445	\$ 38,030	\$ 5,259,405	\$ 1,998,457	\$ 7,809,336
2019	2	N	Haeckerville Road	Town Creek	Lower Seguin Road	1.63	4	\$ 1,552,610	\$ 115,000	\$ 15,903,966	\$ 6,043,153	\$ 23,614,729
2019	2	N	Haeckerville Road	Lower Seguin Road	540' S of Haeckerville Road	0.10	4	\$ 28,928	\$ 19,223	\$ 294,127	\$ 117,715	\$ 459,993
2019	2	N	Haeckerville Road	540' S of Haeckerville road	286' S of Green Meadow Rd	0.11	4	\$ 64,283	\$ 42,717	\$ 653,616	\$ 261,589	\$ 1,022,206
2019	2	N	Haeckerville Road	286' S of Green Meadow Road	288' S of Fread Lane	0.11	4	\$ 32,142	\$ 21,359	\$ 326,808	\$ 130,794	\$ 511,103
2019	2	N	Haeckerville Road	288' S of Fread Lane	DW Lane	0.13	4	\$ 75,640	\$ 50,264	\$ 769,089	\$ 307,803	\$ 1,202,795
2013/2019	2	N	FM 1103 Ext	FM 78	Arizpe Road	1.10	3	\$ 510,225	\$ -	\$ 5,205,279	\$ 1,965,656	\$ 7,681,160
2013/2019	2	N	FM 1103 Ext	Arizpe Road	Lower Seguin Road	1.13	3	\$ 262,053	\$ -	\$ 2,673,441	\$ 1,009,564	\$ 3,945,058
2013/2019	2	N	FM 1103 Ext	Lower Seguin Road	1736' S of Lower Seguin Road	0.33	3	\$ 76,253	\$ -	\$ 777,924	\$ 293,765	\$ 1,147,942
2013/2019	2	N	FM 1103 Ext	1736' S of Lower Seguin Road	2400' S of Lower Seguin Road	0.13	3	\$ 57,980	\$ -	\$ 591,509	\$ 223,370	\$ 872,859
2013/2019	2	N	FM 1103 Ext	Valley View Road	1275' N of Schmoekel Road	0.32	3	\$ 149,343	\$ -	\$ 1,523,584	\$ 575,347	\$ 2,248,273
2013/2019	2	N	FM 1103 Ext	Lower Seguin Road	Schmoekel Road	1.21	3	\$ 559,650	\$ -	\$ 5,709,501	\$ 2,156,064	\$ 8,425,214
2013/2019	2	N	FM 1103 Ext	Arizpe Road	Lower Seguin Road	1.13	2	\$ 345,121	\$ 21,838	\$ 3,525,352	\$ 1,338,630	\$ 5,230,941
2013/2019	2	N	FM 1103 Ext	Lower Seguin Road	1736' S of Lower Seguin Road	0.33	2	\$ 100,424	\$ 6,354	\$ 1,025,815	\$ 389,517	\$ 1,522,111
2013/2019	2	N	FM 1103 Ext	1736' S of Lower Seguin Road	2400' S of Lower Seguin Road	0.13	2	\$ 76,359	\$ 4,832	\$ 779,997	\$ 296,177	\$ 1,157,365
2013/2019	2	N	FM 1103 Ext	Valley View Road	1275' north of Schmoekel Road	0.32	2	\$ 196,683	\$ 12,445	\$ 2,009,084	\$ 762,880	\$ 2,981,093
2013	2	N	Pfannsteil Lane	FM 78	N. of Arizpe Road	0.74	3	\$ 350,258	\$ 157,616	\$ 3,467,552	\$ 1,367,214	\$ 5,342,640
2013	2	N	Pfannsteil Lane	Arizpe Road	3900' N of Lower Seguin Road	0.41	3	\$ 98,117	\$ 44,153	\$ 971,359	\$ 382,995	\$ 1,496,624
2013	2	N	Pfannsteil Lane	2100' N of Lower Seguin Road	Lower Seguin Road	0.40	3	\$ 94,300	\$ 42,435	\$ 933,572	\$ 368,096	\$ 1,438,403
Sub-Total Service Area 2						17.77		\$ 9,628,209	\$ 2,681,246	\$ 97,361,221	\$ 37,717,542	\$ 147,388,217

Cibolo Roadway Impact Fee Update 10 Year Roadway CIP

CIP Origin	Serv Area	Project Type	Roadway	From	To	Length (mi)	Added Lanes	Roadway Costs				Total Project Cost
								Engineering	ROW	Construction	Finance	
2013/2019	3	N	Bolton Road	Haeckerville Road	2200' E of Haeckerville Road	0.42	3	\$ -	\$ -	\$ 418,374	\$ 143,886	\$ 562,260
2013/2019	3	N	Bolton Road	2200' E of Haeckerville Road	500' E of Zuehl Road	0.41	3	\$ -	\$ -	\$ 817,732	\$ 281,231	\$ 1,098,963
2013/2019	3	N	Bolton Road	500' E of Zuehl Road	1450' E of Zuehl Road	0.18	3	\$ -	\$ -	\$ 180,662	\$ 62,132	\$ 242,794
2013/2019	3	N	Bolton Road	650' E of Stolte Road	2250' E of Stolte Road	0.30	3	\$ -	\$ -	\$ 304,272	\$ 104,644	\$ 408,916
2013/2019	3	N	Bolton Road	4708' W of Santa Clara Road	Santa Clara Road	0.89	3	\$ -	\$ -	\$ 895,321	\$ 307,916	\$ 1,203,237
2013/2019	3	N	FM 1103 Ext	3200' N of Bolton Road	IH - 10	0.69	3	\$ 320,648	\$ 26,721	\$ 3,271,224	\$ 1,244,493	\$ 4,863,085
2013/2019	3	N	FM 1103 Ext	3200' N of Bolton Road	IH - 10	0.69	2	\$ 422,291	\$ -	\$ 4,313,622	\$ 1,628,758	\$ 6,364,671
2019	3	N	Pfannsteil Lane	Bolton Road	IH - 10	0.42	3	\$ 200,000	\$ 90,000	\$ 1,980,000	\$ 780,690	\$ 3,050,690
2019	3	N	Santa Clara Road	Bolton Road	1200' S of Bolton Road	0.23	4	\$ -	\$ -	\$ 1,902,049	\$ 654,146	\$ 2,556,195
2019	3	N	Santa Clara Road	1200' S of Bolton Road	IH - 10	0.28	4	\$ -	\$ -	\$ 772,145	\$ 265,553	\$ 1,037,698
2021	3	N	Haeckerville Road	Bolton Road	IH - 10	0.11	4	\$ 64,283	\$ 42,717	\$ 653,616	\$ 261,589	\$ 1,022,206
Sub-Total Service Area 3						4.62		\$ 1,007,222	\$ 159,438	\$ 15,509,017	\$ 5,735,038	\$ 22,410,716
Totals:								\$ 16,350,809	\$ 6,934,660	\$ 195,545,348	\$ 74,857,223	\$ 293,688,040

Summary:	Engineering Cost	\$ 16,350,809
	Right-of-Way Cost	\$ 6,934,660
	Construction Cost	\$ 195,545,348
	Finance Cost	\$ 74,857,223
	TOTAL NET COST	\$ 293,688,040
	Future IF Study Update Cost	\$ 100,000
	TOTAL IMPLEMENTATION COST	\$ 293,788,040
	50% Percent Credit	\$ 146,894,020

Notes:

- UA - Undivided Arterial
- DC - Divided collector
- UC - Undivided Collector
- SA - Special Arterial with two-way left turn lane (TWLTL)
- SC - Special Collector with two-way left turn lane (TWLTL)

**Appendix F:
Roadway Service Area Analysis Summary**

**2021 Cibolo Roadway Impact Fee Update
 Service Area Analysis Summary - 10 Year CIP**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Service Area	Capacity Supplied by CIP	Existing Utilization	Existing Deficiencies	Net Capacity Supplied by CIP	Percentage Net Capacity Supplied	Total Project Cost of CIP	Cost of Net Capacity	Credited Project Cost of CIP	Credited Cost of Net Capacity	Cost to Meet Existing Utilization	Projected New Development (10-Yr Demand)	Percent of CIP Attributable to New Dev.	Credited Cost Attributable to New Dev.	Credited Cost per Service Unit (Maximum Allowable)
	(veh-mi)	(veh-mi)	(veh-mi)	(veh-mi)		(Full Cost)	(Full Cost)	(50% Credit)	(50% Credit)	(50% Credit)	(veh-miles)		(50% Credit)	(50% Credit)
1	29,503	8,391	0	21,112	71.56%	123,931,367	88,683,829	61,965,683	\$44,341,915	\$17,623,769	14,808	70.1	\$31,101,510	\$2,100.00
2	33,885	924	1,272	31,689	93.52%	147,436,754	137,881,756	73,718,377	\$68,940,878	\$4,777,499	3,825	12.1	\$8,321,464	\$2,175.00
3	6,425	120	0	6,305	98.13%	22,419,919	22,001,181	11,209,959	\$11,000,590	\$209,369	7,902	100.0	\$11,000,590	\$1,392.00
Totals	69,813	9,435	1,272	59,106	84.66%	\$293,788,040	248,730,693	\$146,894,020	\$124,283,383	\$22,610,637	26,535	44.9	\$50,423,564	\$2,071.00
														<i>Weighted Average</i>

**Appendix G:
Water and Wastewater CIP Maps**

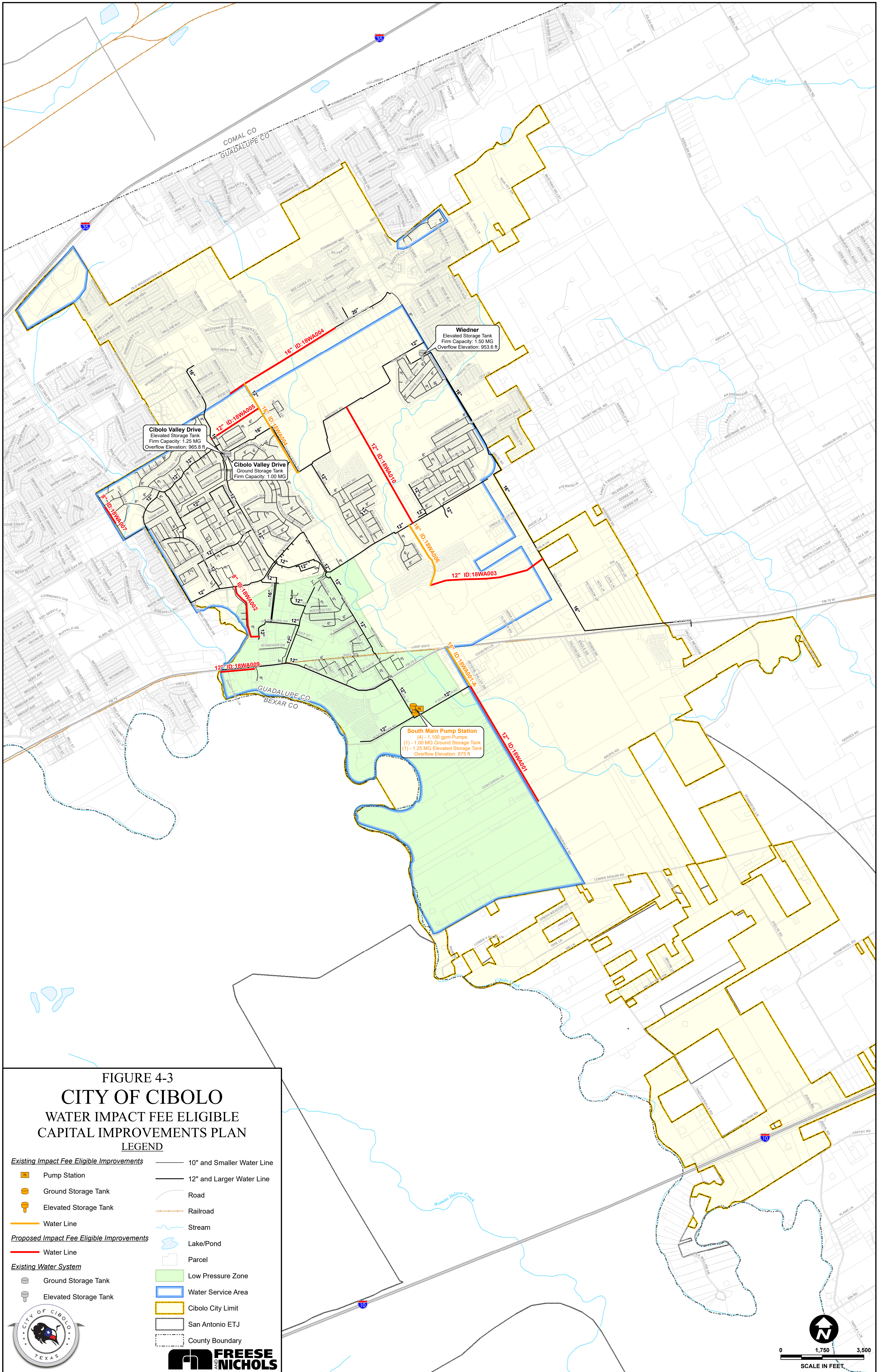
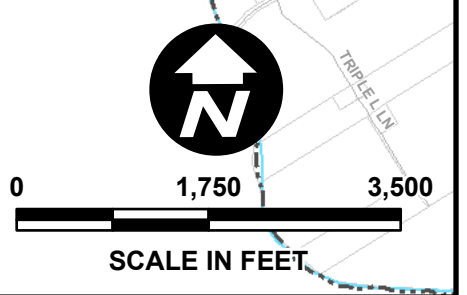


FIGURE 4-3
CITY OF CIBOLO
WATER IMPACT FEE ELIGIBLE
CAPITAL IMPROVEMENTS PLAN
LEGEND

- | | |
|--|------------------------------|
| Existing Impact Fee Eligible Improvements | — 10" and Smaller Water Line |
| Pump Station | — 12" and Larger Water Line |
| Ground Storage Tank | — Road |
| Elevated Storage Tank | — Railroad |
| — Water Line | — Stream |
| Proposed Impact Fee Eligible Improvements | — Lake/Pond |
| — Water Line | — Parcel |
| Existing Water System | — Low Pressure Zone |
| Ground Storage Tank | — Water Service Area |
| Elevated Storage Tank | — Cibolo City Limit |
| | — San Antonio ETJ |
| | — County Boundary |



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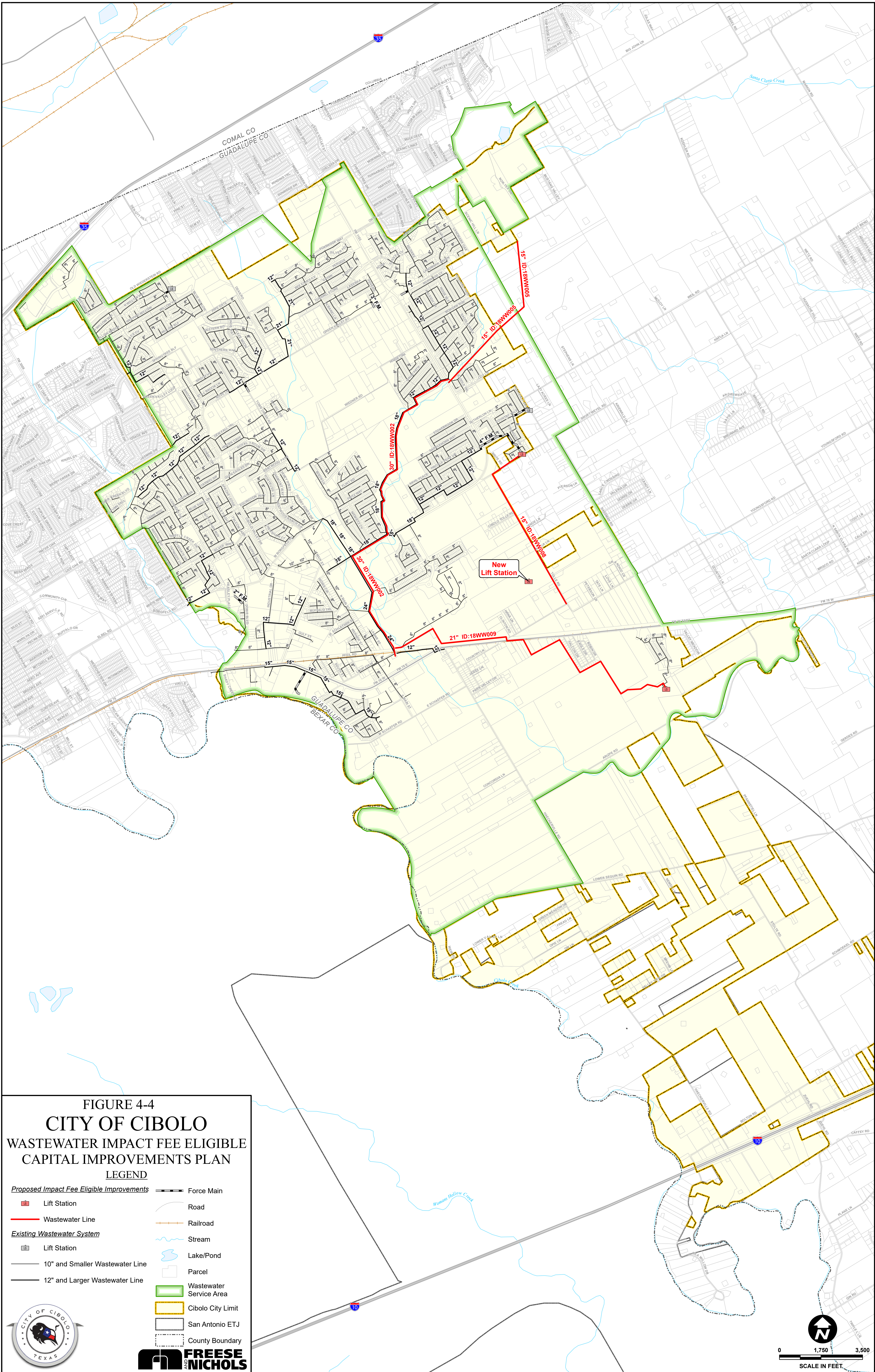
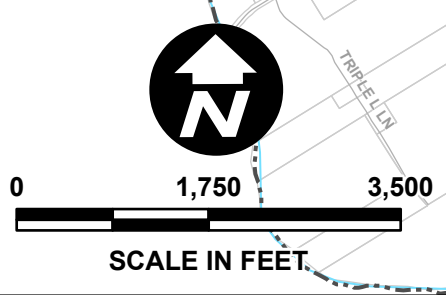


FIGURE 4-4
CITY OF CIBOLO
WASTEWATER IMPACT FEE ELIGIBLE
CAPITAL IMPROVEMENTS PLAN

LEGEND

- Proposed Impact Fee Eligible Improvements**
- Lift Station
 - Wastewater Line
- Existing Wastewater System**
- Lift Station
 - 10" and Smaller Wastewater Line
 - 12" and Larger Wastewater Line
 - Force Main
 - Road
 - Railroad
 - ~ Stream
 - ~ Lake/Pond
 - Parcel
 - Wastewater Service Area
 - Cibolo City Limit
 - San Antonio ETJ
 - County Boundary



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