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TECHNICAL REPORT

Land Use Assumptions and Capital Improvements Plan Report for Water, Wastewater, and Roadway Impact Fees



City of Waco

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Land Use Assumptions and Capital

Improvements Plan Report for Water,

Wastewater, and Roadway Impact Fees

Prepared for: City of Waco





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

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EXECUTIVE SUMMARY

In January 2019, the City of Waco, Texas, authorized Freese and Nichols, Inc. (FNI) to perform an impact fee analysis on the City's water, wastewater, and roadway systems. The purpose of this report is to summarize the methodology used in the development of land use assumptions and impact fee capital improvements plans for the City of Waco.

LAND USE ASSUMPTIONS

Population and land use assumptions are important elements in the analysis of water, wastewater, and roadway systems. 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 projections, are the basis for the preparation of impact fee capital improvements plans for water, wastewater, and roadway facilities.

CAPITAL IMPROVEMENT PLAN

Water, wastewater, and roadway impact fee capital improvements plans (CIP) were developed for the City of Waco based on the land use assumptions, input from City staff, and projects from previous studies. The recommended improvements will provide the required capacity to meet projected water demands, wastewater flows, and roadway demand through year 2030. The projects identified are consistent with the Chapter 395 definition of impact fee eligible projects. The water, wastewater, and roadway CIP projects are summarized in **Tables ES-1**, **ES-2**, and **ES-3** respectively.



| Project Number | Water Project Name | | | | | |
|----------------------------------|---|--|--|--|--|--|
| | Existing Impact Fee Eligible Projects | | | | | |
| А | Riverside to Gholson 30-inch Water Line | | | | | |
| В | Highway 84 Water Line Improvements | | | | | |
| С | Spring Valley Water Lines | | | | | |
| D | Owens Lane 2.0 MG Elevated Storage Tank | | | | | |
| E | Hillcrest Pump Station Expansion | | | | | |
| F | 16-inch Ritchie Road Water Line | | | | | |
| G | China Spring Water Line | | | | | |
| н | McGregor-Waco-Woodway Connection 16" Water Line | | | | | |
| I | Water Transmission Improvements Mt. Carmel to Hillcrest | | | | | |
| J | Peach Street 16-inch Water Line | | | | | |
| К | Elm Street 12-inch Water Line | | | | | |
| L | Impact Fee Study | | | | | |
| Proposed Impact Fee CIP Projects | | | | | | |
| 1 | Riverside Water Treatment Plant Expansion | | | | | |
| 2 | Riverside Pump Station Expansion | | | | | |
| 3 | Downtown Mary Avenue to 5th Street | | | | | |
| 4 | Highway 84 2.0 MG Ground Storage Tanks | | | | | |
| 5 | Chapel Road 16-inch Water Line | | | | | |
| 6 | Old McGregor 3.0 MG Ground Storage Tank | | | | | |
| 7 | Airport 1.0 MG Ground Storage Tank | | | | | |
| 8 | Elm Mott 1,500 gpm Pump Station Expansion | | | | | |
| 9 | West 250,000 gallon Ground Storage Tank | | | | | |
| 10 | 20/24-inch Water Line in Pressure Plane 1 | | | | | |
| 11 | 72-inch Parallel Raw Water Line | | | | | |
| 12 | 16/24-inch Water Line in Pressure Plane 3 | | | | | |
| 13 | Low Head Pump Station at Mt. Carmel WTP | | | | | |

Table ES-1: Water Impact Fee CIP Projects

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| Table ES-2: Wastewater Impact Fee CIP Projects | | | | | |
|--|---|--|--|--|--|
| Project Wastewater Project Name Number | | | | | |
| | Existing Impact Fee Eligible Projects | | | | |
| А | FM 1637 12/15/21/24-inch Wastewater Line | | | | |
| В | China Spring 24-inch Wastewater Line | | | | |
| С | Transfer Lift Station, Force Main, and 66-inch Gravity Line | | | | |
| D | Impact Fee Study | | | | |
| | Proposed Impact Fee CIP Projects | | | | |
| 1 | Bull Hide Wastewater Treatment Plant Expansion to 3.0 MGD | | | | |
| 2 | Brazos Basin Interceptor | | | | |
| 3 | 54-inch Wastewater Line at Lake Brazos Park | | | | |
| 4 | Belmead Interceptor / Lacy Lakeview Interceptor | | | | |
| 5 | TSTC Lift Station Expansion and Force Main | | | | |
| 6 | Cloice Creek and Church Road Lift Stations, Force Mains, and 21-inch Gravity Line | | | | |
| 7 | Highway 84 30-inch Wastewater Line | | | | |
| 8 | Highway 84 24-inch Wastewater Line | | | | |
| 9 | China Spring Wastewater Treatment Plant | | | | |
| 10 | Highway 84 Wastewater Treatment Plant | | | | |
| 11 | New Quest Wastewater Line | | | | |

24-inch Wastewater Line

Bridge 18-inch Wastewater Line

City of Waco

12

13



| Project Number | Roadway | From | То | | | |
|-------------------|---------------------------------------|-----------------------|-----------------------|--|--|--|
| Service Area 1 | | | | | | |
| 1 | Gholson Rd | Herring Ave | 960' S of Herring Ave | | | |
| 2 | Gholson Rd | 960' S of Herring Ave | Waco Dr | | | |
| | | Service Area 2 | | | | |
| 3 | Lake Shore Dr | Mt Carmel Dr | Koehne Park Dr | | | |
| 4 | Valley Mills Dr | Koehne Park Dr | Hillandale Rd | | | |
| 5 | Valley Mills Dr | Hillandale Rd | Ridgewood Dr | | | |
| 6 | Valley Mills Dr | Ridgewood Dr | Bishop Dr | | | |
| | · · · · · · · · · · · · · · · · · · · | Service Area 3 | | | | |
| 7 | Bagby Ave | New Rd | Monte Vista St | | | |
| 8 | Bagby Ave | Monte Vista St | Richter Ave | | | |
| 9 | Bagby Ave | Richter Ave | Valley Mills Dr | | | |
| 10 | S New Rd | Bagby Ave | I-35 | | | |
| 11 | Garden Dr | Robinson Rd | 16th St | | | |
| 12 | 18th St | La Salle | Gurley Ln | | | |
| 13 | 16th | Gurley Ln | Garden Dr | | | |
| 14 | 12th | Garden Dr | TX-340 | | | |
| 15 | University Parks Dr | La Salle Ave | Garden Dr | | | |
| | | Service Area 4 | | | | |
| 16 | Martin Luther King Jr Blvd | BUS 77 | SH 484 | | | |
| | | Service Area 6 | | | | |
| 1 | Gholson Rd | 960' S of Herring Ave | Herring Ave | | | |
| 17 | Gholson Rd | Herring Ave | Lakeshore Dr | | | |
| | | Service Area 7 | | | | |
| 18 | North River Crossing | End of bridge | 580' NE of Curry Ln | | | |
| 19 | North River Crossing | 580' NE of Curry Ln | Yankie Rd | | | |
| 20 | Flat Rock Rd | Yankie Rd | Tree Lake Rd | | | |
| 21 | Flat Rock Rd | Tree Lake Rd | China Spring Rd | | | |
| 22 | Yankie Rd | North River Crossing | Flat Rock Rd | | | |
| 23 | Tree Lake Dr | China Spring Rd | Flat Rock Rd | | | |
| 24 | Wortham Bend | North City Limit | China Spring Rd | | | |
| | | Service Area 9 | | | | |
| 25 | Mars Dr | Hewitt Dr | Texas Central Pkwy | | | |
| 26 | Beverly Dr | W Loop 340 | 4128' NE of Loop 340 | | | |
| 27 | Beverly Dr | 4128' NE of Loop 340 | New Road | | | |
| 28 | Hewitt Dr | Woodway Dr | Old McGregor Dr | | | |
| 29 | Hewitt Dr | Old McGregor Dr | Imperial Dr | | | |

Table ES-3: Roadway Impact Fee CIP Projects

City of Waco



| Project Number | Roadway | From | То |
|-------------------|--------------------|--|--------------------------|
| 30 | Hewitt Dr | Imperial Dr | Mars Dr |
| 31 | Texas Central Pkwy | Railroad | Imperial Dr |
| 10 | S New Rd | Bagby Ave | I-35 |
| 32 | Bagby Ave. | New Road | TX 340 |
| | | Service Area 10 | |
| 33 | Warren Rd | City Limit | Ritchie Rd |
| 34 | Warren Rd | Ritchie Rd | 3700' east of Ritchie Rd |
| 35 | Farmiller Rd | 1300' south of Chapel Rd 2100' north of Wa | |
| 29 | Hewitt Dr | Old McGregor Dr | Imperial Dr |
| 30 | Hewitt Dr | Imperial Dr | Mars Dr |
| 36 | Chapel Rd | Meadow Mountain Dr | Ritchie Rd |
| 37 | Ritchie Rd | Panther Way | Warren St |
| | | Service Area 11 | |
| 38 | Val Verde Rd | Fossil Rim Rd | US 84 |
| 39 | Harris Creek Rd | US 84 | Walking Horse Ln |
| 40 | Speegleville Rd | Pecan Creek | Oak Rd |
| 41 | Speegleville Rd | Oak Rd | US 84 |
| 42 | Old Lorena Rd | US 84 EBFR | South Bosque River |



1.0 PURPOSE

Chapter 395 of the Texas Local Government Code prescribes the process by which cities in Texas must formulate impact fees. An initial step in the process is the establishment of land use assumptions and a capital improvements plan to address growth and development for a 10-year planning period (TLGC Section 395.001(5)) for the years 2020-2030. The land use assumptions, which include population and employment projections, will become the basis for the preparation of impact fee capital improvements plans for water, wastewater, and roadway facilities. This report details the development of the land use assumptions and the impact fee CIPs.

This report contains the following components:

- **Methodology** Explanation of the general methodology used to prepare the land use assumptions and CIPs.
- Land Use Assumptions
 - Service Area Structure Explanation of data collection zones (traffic analysis zones), and the division of the City into impact fee service areas for roadway, water, and wastewater facilities.
 - Base Year Data Historical population trends for Waco and information on population, employment, and land use for Waco as of 2020 for each capital service area.
 - **Existing Conditions Analysis** Analysis of the existing roadway system including its carrying capacity, current utilization, and deficiencies.
 - Growth Projections Population and employment growth assumptions for 10 years by service areas.
- **Capital Improvements Plans** Description of identified capital improvement to address growth for roads, water, and wastewater.



2.0 METHODOLOGY

Based upon the growth assumptions and the capital improvements needed to support growth, it is possible to develop an impact fee structure which fairly allocates improvement costs to growth areas in relationship to their impact upon the entire infrastructure system. The data in this report has been formulated using reasonable and generally accepted planning principles for the preparation of impact fee systems in Texas and meets the requirements of the Texas Local Government Code Section 395 for the establishment of impact fees.

For the formulation of the land use assumptions and the capital improvements plans, a series of work tasks were undertaken and are described below.

- A kick-off meeting was held to describe the general methodological approach in the study. Service areas were defined for roadway, water, and wastewater impact fee systems.
- Data from the metropolitan planning organization (MPO) was used as an initial database for this study. Population and employment data for 2010, 2015, and 2040 (MPO projections) by TAZ were collected.
- A compound annual growth rate (CAGR) of 1.2% was recommended for population and employment in the City Limits based on historical growth trends.
- The compound annual growth rates in the ETJ are higher than the City Limits due to the high amount of vacant land within the ETJ. This development potential in the ETJ area results in a 4.9% 5% CAGR for 2030 and 2040 population projection. In terms of employment, the CAGR for the 2030 projection is 4.06% and the CAGR for the 2040 projection is 5.74%.
- Vehicle-miles of travel (VMT) in the PM peak hour was identified as the service unit of measure for analyses and impact fee calculations.
- A roadway inventory was conducted to document lane geometrics, roadway functional classification, and system capacity. Traffic volume count data were collected in May 2019 to determine roadway utilization and if any capacity deficiencies exist within each impact fee service area. Traffic volume counts were conducted at 30 locations throughout the city.
- Base and 10-year demographics were prepared for the respective service areas for water, wastewater, and roadway.



- Water demands and wastewater flow projections were developed based on the population projections.
- Projected 10-year growth was calculated for service areas based on land use assumptions (projections
 of population and employment growth) and translated into residential, office, commercial and
 industrial VMT using service unit equivalencies. Trip rate data was obtained from Trip Generation,
 Tenth Edition by the Institute of Transportation Engineers, and trip length statistics for Waco were
 obtained from the Waco MPO travel demand model and the National Household Workplace Survey.
- Water, wastewater, and roadway capital improvements plans were developed.



3.0 LAND USE ASSUMPTIONS

3.1 Data Collection Zones and Service Area Maps

3.1.1 Traffic Analysis Zones (TAZ)

Data collection zones used for land use assumptions are based upon small geographic areas known as traffic analysis zones (TAZs). These zones, established by Waco Metropolitan Planning Organization (MPO), serve as the basis for socio-demographic data used in the regional travel forecast model. The TAZs were originally formulated on the basis of homogeneity and traffic generation potential using major arterials, creeks, railroad lines and other physical boundaries for delineation. A total of 322 TAZs have been analyzed for this process.

3.1.2 Study Areas

Chapter 395 requires that service areas be defined for impact fees to ensure that facility improvements are located in close proximity to areas generating needs. The water and wastewater service areas were developed using the Extraterritorial Jurisdiction (ETJ). **Figure 3-1** illustrates the water service area for the Waco Impact Fee study, and **Figure 3-2** shows the wastewater service area.

Legislative requirements stipulate that roadway service areas be limited to a 6-mile maximum and must be located within the current city limits. Transportation 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 defined level of utilization from residents 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. The service areas for roadways are illustrated on **Figure 3-3**.





Figure 3-1: Water Service Area

Figure 3-2: Wastewater Service Area







Figure 3-3: Roadway Service Area

Note: Service Area 8 is not included on this map as it is situated outside of the city limits.



3.1.3 Data Format

The existing database, as well as the future projections, were formulated according to the following format and categories:

| Service Area | Correlates to the City Limits and ETJ. | |
|-------------------------|--|--|
| Traffic Analysis Zone | Geographic areas established by the MPO Traffic Model that are used for | |
| | data collection purposes and termed TAZs within this report. | |
| Population (2020) | Existing population for the base year (2020). | |
| Population (2030, 2040) | Projected population by service zone for the year 2030 and 2040 (10-year | |
| | and 20-year growth projections). | |
| Employment (2020-2040) | Current employment population and future employment projections | |
| | based on historical employment to population ratio. | |

3.1.4 Land Use Methodology

These land use assumptions and future growth projections take into consideration several factors influencing development patterns, including the following

- The character, type, density, and quantity of existing development,
- Anticipated future land use derived from the City's current land use trend, Waco 2040 (the City's Comprehensive Plan presented on Figure 3-4)
- Availability of land for future expansion,
- Current and historical growth trends of population and development within the City,
- Location and configuration of vacant land, and
- Known or anticipated development projects as defined by City Staff.





Figure 3-4: Future Land Use Map

A series of work tasks were undertaken in the development of this report and are described below: <u>Step 1: Scope of the Study and Data Collection</u>

A kick-off meeting was held to discuss the general methodological approach in the study. Data from MPO was used as an initial database for this study. Population and employment data for 2010, 2015, and 2040 (MPO projections) by TAZ were collected. The datasets were joined and examined thoroughly with spatial data using ArcGIS.

Step 2: Estimation of 2020 Population and Employment

Although TAZs were used as a basis for the data analysis purpose, it is important to note that TAZ boundaries do not follow the City Limits or ETJ in various locations. In order to calculate data for the study area, the base population and employment data for each TAZ were reviewed and adjustments were made where necessary. There were a few different scenarios to consider for the adjustments (also shown on **Figure 3-5**):

- a) A TAZ is geographically located completely within the City Limits
- b) A TAZ is geographically located completely within the ETJ
- c) A TAZ is split between City Limits and ETJ
- d) A TAZ is split between the City Limits and another city
- e) A TAZ is split between the ETJ and another city





Figure 3-5: Land Use Assumption Scenarios

With scenario a) and b), the 2015 population and employment estimates were slightly adjusted to reflect 2020 base year estimates, as received from the MPO. However, with scenarios c), d), and e), detailed spatial and geographical analysis of that TAZ were conducted to adjust and estimate 2020 population and employment numbers proportionately. The 2020 total population and employment numbers were calculated by aggregating the numbers of all applicable TAZs.

Step 3: Projection of 2030 and 2040 Population and Employment

Each TAZ was evaluated from the perspective of its current development condition and anticipated future development trends. In general, past growth rates and the anticipated development trends were analyzed. Aerial images were used extensively to gain proper understanding of the future development potential for each TAZ. For example, for a TAZ that is built-out and no redevelopment projects are anticipated for that TAZ, the 2020 numbers remained the same or similar for 2030 and 2040. On the other hand, for a TAZ that was only partially developed or completely vacant, the City's anticipated future land use pattern was analyzed for that area to determine what type of development that TAZ was likely to host by 2030 and 2040. **Figure 3-6** illustrates these examples. Population and employment for 2030 and 2040 were also projected based on that analysis. Where it was anticipated that redevelopment would occur within portions of the study area, adjustments were also made. The 2030 and 2040 total population and employment numbers were calculated by aggregating the numbers for all applicable TAZs.





Figure 3-6: TAZ Developmental Potential

3.2 Base Year Data

This section documents the City's historical growth trends and data used to derive the 2020 base year population estimate for the City of Waco. This "benchmark" information provides a starting basis of data for the 10-year and 20-year growth assumptions that will be presented within the following section.

3.2.1 Historical Growth

In order to attain an appropriate understanding of the City's growth pattern, recent and historical population trends were analyzed. Waco has experienced significant population growth since 1970, there were years or decades with significant growth, whereas some years or decades grew in a more moderate manner. The Compound Annual Growth Rate (CAGR) between 1960 and 2010 was 0.49% and the CAGR between 2010 and 2020 was 1.11%, indicating a trend that Waco's CAGR may increase in the approaching years.

| Year | Population | Population Change | Percent Change | CAGR |
|------|------------|-------------------|-------------------|-------|
| 1960 | 97,808 | - | - | |
| 1970 | 95,326 | -2,482 | -2.54% | |
| 1980 | 101,261 | 5,935 | 6.23% | 0.40% |
| 1990 | 103,590 | 2,329 | 2.30% | 0.49% |
| 2000 | 113,726 | 10,136 | 9.78% | |
| 2010 | 124,805 | 11,079 | 9.74% | |

Table 3-1: Population Trend by Decade (City Limits Only)

Table 3-2: Population Trend in Recent Years (City Limits Only)

| Year | Population | Population Change | Percent Change | CAGR |
|------|------------|-------------------|-------------------|----------|
| 2010 | 122,212 | - | - | |
| 2011 | 123,584 | 1,372 | 1.12% | |
| 2012 | 124,843 | 1,259 | 1.02% | |
| 2013 | 126,406 | 1,563 | 1.25% | 1 1 1 0/ |
| 2014 | 127,796 | 1,390 | 1.10% | 1.1170 |
| 2015 | 129,193 | 1,397 | 1.09% | |
| 2016 | 130,659 | 1,466 | 1.13% | |
| 2020 | 131,996 | 1,337 | 1.02% | |

3.2.2 Estimated City Limit Population Projections

Based on the historical growth trends of Waco, a series of projection alternatives using a 2020 base year population of **140,951** were developed. In order to develop an estimated population projection for 2030 and 2040, multiple compound annual growth rate (CAGR) scenarios in **Table 3-3** were calculated. The recommended CAGR for population projection in this land use assumption process is 1.2%.



| CAGR (%) | 1.00% | 1.20% | 1.25% | 1.50% |
|----------|------------|------------|------------|------------|
| Year | Population | Population | Population | Population |
| 2020 | 140,951 | 140,951 | 140,951 | 140,951 |
| 2021 | 142,361 | 142,642 | 142,713 | 143,065 |
| 2022 | 143,784 | 144,354 | 144,497 | 145,211 |
| 2023 | 145,222 | 146,086 | 146,303 | 147,389 |
| 2024 | 146,674 | 147,839 | 148,132 | 149,600 |
| 2025 | 148,141 | 149,613 | 149,983 | 151,844 |
| 2026 | 149,622 | 151,409 | 151,858 | 154,122 |
| 2027 | 151,119 | 153,226 | 153,756 | 156,434 |
| 2028 | 152,630 | 155,064 | 155,678 | 158,780 |
| 2029 | 154,156 | 156,925 | 157,624 | 161,162 |
| 2030 | 155,698 | 158,808 | 159,595 | 163,579 |
| 2031 | 157,255 | 160,714 | 161,590 | 166,033 |
| 2032 | 158,827 | 162,643 | 163,610 | 168,524 |
| 2033 | 160,415 | 164,594 | 165,655 | 171,051 |
| 2034 | 162,020 | 166,569 | 167,725 | 173,617 |
| 2035 | 163,640 | 168,568 | 169,822 | 176,221 |
| 2036 | 165,276 | 170,591 | 171,945 | 178,865 |
| 2037 | 166,929 | 172,638 | 174,094 | 181,548 |
| 2038 | 168,598 | 174,710 | 176,270 | 184,271 |
| 2039 | 170,284 | 176,806 | 178,474 | 187,035 |
| 2040 | 171,987 | 178,928 | 180,704 | 189,841 |

Table 3-3: Population Projection Scenario (City Limits Only)

3.2.3 Estimated City Limit Population Projections

In terms of employment, Waco's employment has historically been between 45% – 48% of its total population. Applying that ratio and other demographic information available for the MPO, a 2020 base year employment of **67,297** was incorporated in order to serve as a basis for the land use assumption process. In order to develop an estimated employment projection for 2030 and 2040, multiple compound annual growth rate (CAGR) scenarios in **Table 3-4** were calculated. The recommended CAGR for employment projection in this land use assumption process is approximately 1.2%.



| CAGR (%) | 1.00% | 1.20% | 1.25% | 1.50% |
|----------|------------|------------|------------|------------|
| Year | Employment | Employment | Employment | Employment |
| 2020 | 67,297 | 67,297 | 67,297 | 67,297 |
| 2021 | 67,970 | 68,105 | 68,138 | 68,306 |
| 2022 | 68,650 | 68,922 | 68,990 | 69,331 |
| 2023 | 69,336 | 69,749 | 69,852 | 70,371 |
| 2024 | 70,030 | 70,586 | 70,725 | 71,427 |
| 2025 | 70,730 | 71,433 | 71,610 | 72,498 |
| 2026 | 71,437 | 72,290 | 72,505 | 73,585 |
| 2027 | 72,151 | 73,158 | 73,411 | 74,689 |
| 2028 | 72,873 | 74,035 | 74,329 | 75,810 |
| 2029 | 73,602 | 74,924 | 75,258 | 76,947 |
| 2030 | 74,338 | 75,823 | 76,198 | 78,101 |
| 2031 | 75,081 | 76,733 | 77,151 | 79,272 |
| 2032 | 75,832 | 77,654 | 78,115 | 80,462 |
| 2033 | 76,590 | 78,585 | 79,092 | 81,668 |
| 2034 | 77,356 | 79,529 | 80,080 | 82,893 |
| 2035 | 78,130 | 80,483 | 81,081 | 84,137 |
| 2036 | 78,911 | 81,449 | 82,095 | 85,399 |
| 2037 | 79,700 | 82,426 | 83,121 | 86,680 |
| 2038 | 80,497 | 83,415 | 84,160 | 87,980 |
| 2039 | 81,302 | 84,416 | 85,212 | 89,300 |
| 2040 | 82,115 | 85,429 | 86,277 | 90,639 |

Table 3-4: Population Projection Scenario (City Limits Only)

3.2.4 Population and Employment Projections in the ETJ

In the ETJ, the 2020 base population is estimated to be 18,546 and the 2020 base employment is estimated to be 4,372, as indicated in the TAZ analysis. The CAGRs for the 2030 and 2040 projections for the ETJ area are higher than the CAGRs within the City Limits. The primary reason is the high amount of vacant land within the ETJ, as compared to the City Limits. Within the City Limits, many areas are already built-out with little development potential in the future, adding little significant new population and employment to those areas. On the other hand, the majority of the ETJ areas are either partially developed or completely vacant, making those areas ideal to add new population and employment. For example, it is anticipated that one development with 500 residential lots will be added in TAZ 239 alone in near future, which is in the ETJ area.



This development potential in the ETJ area results in a 4.9% - 5% CAGR for 2030 and 2040 population projection. In terms of employment, the CAGR for the 2030 projection is 4.06% and the CAGR for the 2040 projection is 5.74%.

3.2.5 Building Permit Analysis

Analyzing the building permits issued by the City in the recent years is helpful to obtain a perspective about future projection. For example, the City of Waco issued 536 residential building permits in 2018 and 514 residential building permits in 2017. However, the number of building permits issued were less than 400 in the year of 2015. The increase in building permits is also an indicator of upcoming growth and reflects emerging trends for projection purposes. In order to achieve a CAGR of 1.2%, more than 600 dwelling units per year will need to be permitted.

3.2.6 2020 Population and Employment

For the land use assumptions process, 2020 base population and employment data was calculated using data from the Waco MPO. This information provided a breakout of population and employment by TAZ. For assumption purposes, and to be consistent with the population totals, an interpolation of the population and employment numbers was calculated to derive the 2020 population and employment estimates by TAZ. Adjustments were also made based on discussions with City staff. It is important to note that the TAZs do not follow City limits or water and wastewater service areas in some locations, so adjustments were made based on the locations of existing land uses and upon the percentage of each TAZ located within City limits. **Figure 3-7** presents the TAZ boundaries. Since water, wastewater, and roadway have different service areas, three sets of assumptions were used, each tailored to its own service area. **Tables 3-5** and **3-6** summarize the population and employment for 2020.





Figure 3-7: Traffic Analysis Zone Boundaries



| Service Area | Population |
|-----------------|------------|
| Water | 159,497 |
| Wastewater | 159,497 |
| Roadway | 140,951 |

Table 3-5: Summary of Base Year (2020) Population

Table 3-6: Summary of Base Year (2020) Roadway Population

| | Employment | Population |
|-----------------|------------|------------|
| Service Area 1 | 23,939 | 76,420 |
| Service Area 2 | 17,162 | 19,903 |
| Service Area 3 | 3,003 | 14,789 |
| Service Area 4 | 290 | 1,224 |
| Service Area 5 | 1,315 | 1,304 |
| Service Area 6 | 1,307 | 2,911 |
| Service Area 7 | 956 | 6,886 |
| Service Area 9 | 17,862 | 3,439 |
| Service Area 10 | 1,261 | 8,710 |
| Service Area 11 | 202 | 5,365 |
| Total | 67,297 | 140,951 |

3.3 Ten-Year and Twenty-Year Growth Assumptions

Projected growth has been characterized in two forms: population and employment acreage. A series of assumptions were made to arrive at reasonable growth rates for population and employment. For description of the projection methodology, please see **Section 3.1.4**. Generally, the following assumptions were made as a basis from which ten-year and twenty-year projections could be initiated.

• Future land uses will occur based on similar trends of the past and will conform with the anticipated future development and redevelopment opportunities as forecasted in the Comprehensive Plan and other special area plan, and



• The City will be able to finance the necessary improvements to accommodate continued growth.

The roadway population and employment are presented in **Table 3-7. Table 3-8** summarizes the population and employment projections for both roadway and water/wastewater from 2020-2040. **Table 3-9** summarizes the change in population and employment by planning year for both roadway and water/wastewater. A full list of population and employment by TAZ is included in **Appendix A**.

| | | Population | | Employment | | | |
|--------------------|---------|------------|---------|------------|--------|--------|--|
| | 2020 | 2030 | 2040 | 2020 | 2030 | 2040 | |
| Service Area 1 | 76,420 | 82,294 | 87,665 | 23,939 | 26,843 | 30,062 | |
| Service Area 2 | 19,903 | 21,043 | 22,373 | 17,162 | 18,280 | 19,277 | |
| Service Area 3 | 14,789 | 17,063 | 18,789 | 3,003 | 3,460 | 4,164 | |
| Service Area 4 | 1,224 | 1,649 | 2,212 | 290 | 330 | 524 | |
| Service Area 5 | 1,304 | 1,348 | 1,455 | 1,315 | 1,723 | 3,438 | |
| Service Area 6 | 2,911 | 3,905 | 8,495 | 1,307 | 1,561 | 1,956 | |
| Service Area 7 | 6,886 | 9,043 | 10,485 | 956 | 1,329 | 1,756 | |
| Service Area 9 | 3,439 | 4,982 | 5,648 | 17,862 | 20,345 | 21,881 | |
| Service Area 10 | 8,710 | 10,549 | 12,079 | 1,261 | 1,379 | 1,475 | |
| Service Area 11 | 5,365 | 6,589 | 8,157 | 202 | 370 | 456 | |
| Total | 140,951 | 158,465 | 177,358 | 67,297 | 75,620 | 84,989 | |

Table 3-7: Population and Employment Projections for Roadway Service Area



| | Population | | | Employment | | |
|--|----------------|---------|---------|------------|--------|--------|
| | 2020 2030 2040 | | 2020 | 2030 | 2040 | |
| Water and Wastewater Service Area (City Limits and ETJ) | 159,497 | 188,433 | 226,443 | 71,669 | 82,132 | 98,329 |
| Roadway Service Area (City Limits minus TAZs 163, 166, 401) | 140,951 | 158,465 | 177,358 | 67,297 | 75,620 | 84,989 |

Table 3-9: Projected Change in Population and Employment

| | Рор | ulation | Employment | | |
|---|---------------------|---------------------|---------------------|---------------------|--|
| | 2020-2030 Change | 2020-2040 Change | 2020-2030 Change | 2020-2040 Change | |
| Water and Wastewater Service Area (City Limits and ETJ) | 28,936 | 66,946 | 10,463 | 26,660 | |
| Roadway Service Area (City Limits minus TAZs 163, 166, 401) | 17,514 | 36,407 | 8,323 | 17,692 | |

It is important to visually depict the changes projected by the land use assumption process. **Figure 3-8** presents the population change by each TAZ from 2020 to 2030, likewise **Figure 3-9** presents changes in population from 2020 - 2040. These two maps show that all ETJ areas are likely to grow significantly more between 2030 - 2040, whereas only the southwest part of the ETJ will grow significantly the decade between 2020 to 2030. **Figure 3-10** and **3-11**, respectively show the employment change by each TAZ between 2020-2030 timeframe and 2020-2040 timeframe.





Figure 3-8: 2020-2030 Population Change

Figure 3-9: 2020-2040 Population Change







Figure 3-10: 2020-2030 Employment Change







4.0 WATER AND WASTEWATER CAPITAL IMPROVEMENTS PLAN

4.1 Existing Water and Wastewater Systems

The City of Waco's water distribution system includes six pressure planes, two water treatment plants with high service pump stations, six elevated storage tanks, the Airport ground storage tank and pump station, the Gholson ground storage tank and pump station, the Hillcrest ground storage tank and pump station, the Westview ground storage tank and pump station, and the Old McGregor ground storage tank and pump station. The existing water system is shown on **Figure 4-1**.

The City of Waco's wastewater collection system includes two wastewater treatment plants, approximately 4,682,000 linear feet of gravity and force main lines ranging in size from 2-inches to 72-inches, and 73 lift stations. The existing 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 Demand and Wastewater Load Projections

4.2.1 Water Demands

A water utility must be able to supply water at rates that fluctuate over time. Yearly, monthly, daily, and hourly variations in water use occur, with higher use during dry years and in hot months. Also, water use typically follows a diurnal pattern, being low at night and peaking in the early morning and late afternoon. Flow rates most important to the hydraulic design and operation of a water treatment plant and distribution system are average day and maximum day demands. Average day use is the total annual water use divided by the number of days in the year and is typically used in water supply planning. The average day demand is also typically used as a basis for estimating maximum day demands. Maximum day demand is the maximum quantity of water used on any one day of the year. Water supply facilities, such as treatment plants and pump stations, are typically designed based on the maximum day demand. Therefore, estimating future water demands directly impacts the projects needed to serve future growth.

Future water demands were developed by utilizing per-capita usage rates applied to the projected population and employment. A maximum day to average day peaking factor was then used to estimate future maximum day demands. **Table 4-1** presents the population and employment by water pressure plane, and **Table 4-2** presents the resulting projected water demands.

| Pressure Plane | 2020 Population | 2030 Population | 2040 Population | 2020 Employment | 2030 Employment | 2040 Employment |
|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 1 | 71,387 | 81,102 | 98,827 | 25,409 | 29,141 | 36,835 |
| 2 | 39,301 | 41,540 | 43,860 | 11,523 | 12,141 | 12,225 |
| 3 | 18,480 | 19,970 | 21,522 | 23,790 | 25,862 | 25,957 |
| 4 | 12,132 | 17,920 | 21,615 | 4,580 | 5,409 | 5,822 |
| 5 | 9,998 | 15,500 | 20,633 | 987 | 1,517 | 2,006 |
| 6 | 8,199 | 12,402 | 19,985 | 1,007 | 1,550 | 2,144 |
| Total | 159,497 | 188,433 | 226,443 | 67,297 | 75,620 | 84,989 |

| Table 1 1. De | nulation and | Employmon | t hu Watan Drac | Danna Dlana |
|----------------|----------------|-----------|-----------------|-------------|
| 1 able 4-1; PO | DUIALIOII AIIU | cmblovmen | l DV water Pres | sure Plane |
| | P | | | |



| Planning Year | Pressure Plane | Average Day Residential Demand (MGD) ⁽¹⁾ | Average Day Employment Demand (MGD) ⁽²⁾ | Top Water Users Average Day Demand (MGD) ⁽³⁾ | Total Average Day Water Demand (MGD) | Top Water Users Maximum Day Demand (MGD) ⁽³⁾ | Total Maximum Day Water Demand (MGD) ⁽⁴⁾ |
|------------------|-------------------|--|---|--|--|--|---|
| | PP1 | 9.64 | 2.92 | 0.18 | 12.74 | 0.29 | 21.77 |
| | PP2 | 5.31 | 1.33 | - | 6.63 | - | 11.27 |
| | PP3 | 2.49 | 2.74 | 1.10 | 6.33 | 1.39 | 11.05 |
| 2020 | PP4 | 1.64 | 0.53 | 1.72 | 3.89 | 2.12 | 7.01 |
| | PP5 | 1.35 | 0.11 | - | 1.46 | - | 2.49 |
| | PP6 | 1.11 | 0.12 | - | 1.22 | - | 2.08 |
| | Total | 21.53 | 7.74 | 3.00 | 32.27 | 3.81 | 55.67 |
| | PP1 | 10.95 | 3.35 | 0.18 | 14.48 | 0.29 | 24.73 |
| | PP2 | 5.61 | 1.40 | - | 7.00 | - | 11.91 |
| | PP3 | 2.70 | 2.97 | 1.10 | 6.77 | 1.39 | 11.80 |
| 2030 | PP4 | 2.42 | 0.62 | 1.72 | 4.77 | 2.12 | 8.50 |
| | PP5 | 2.09 | 0.17 | - | 2.27 | - | 3.85 |
| | PP6 | 1.67 | 0.18 | - | 1.85 | - | 3.15 |
| | Total | 25.44 | 8.70 | 3.00 | 37.14 | 3.81 | 63.94 |
| | PP1 | 13.34 | 4.24 | 0.18 | 17.76 | 0.29 | 30.30 |
| | PP2 | 5.92 | 1.41 | - | 7.33 | - | 12.46 |
| | PP3 | 2.91 | 2.99 | 1.10 | 6.99 | 1.39 | 12.18 |
| 2040 | PP4 | 2.92 | 0.67 | 1.72 | 5.31 | 2.12 | 9.43 |
| | PP5 | 2.79 | 0.23 | - | 3.02 | - | 5.13 |
| | PP6 | 2.70 | 0.25 | - | 2.94 | - | 5.01 |
| | Total | 30.57 | 9.77 | 3.00 | 43.34 | 3.81 | 74.49 |

Table 4-2: Projected Water Demands

⁽²⁾ 115 gallons per employee per day was assumed for Employment Demand

⁽³⁾ Demands assumed from Water Master Plan

⁽⁴⁾ A maximum day to average day peaking factor of 1.70 was used based the Water Master Plan

4.2.2 Wastewater Flows

Wastewater flows in a municipal collection system vary by time of day, wastewater discharge source and weather conditions. Average daily flow is defined as the total wastewater flow over a one-year period divided by the number of days in that year. Wastewater treatment plants are typically sized in terms of average daily flow. Peak wastewater flow consists of the peak dry weather flow plus infiltration and inflow (I/I). Infiltration is the seepage of groundwater into the sewer pipe and appurtenances. Inflow is the measurement of storm water runoff that enters the wastewater collection system during wet weather

rain events. I/I is typically expressed in terms of a wet weather peaking factor for the purposes of estimating future wastewater flows. The collection system is sized to convey peak wastewater flows. Therefore, developing future wastewater flows directly impacts the projects needed to serve future growth. **Table 4-5** presents the population and employment by WWTP basin and **Table 4-6** presents the projected wastewater flows for the City of Waco.

Table 4-3: Population and Employment by Wastewater Treatment Plant Basin

| Pacin | | Population | | Employment | | | |
|-----------------|---------|------------|---------|------------|--------|--------|--|
| DdSIII | 2020 | 2030 | 2040 | 2020 | 2030 | 2040 | |
| WMARSS | 140,228 | 157,140 | 180,110 | 69,369 | 78,591 | 92,941 | |
| Bull Hide Creek | 9,618 | 16,007 | 26,868 | 1,250 | 1,961 | 3,159 | |
| China Spring | 9,650 | 15,282 | 19,471 | 1,064 | 1,580 | 2,240 | |
| Total | 159,496 | 188,429 | 226,449 | 71,683 | 82,132 | 98,340 | |

Table 4-4: Projected Wastewater Flows

| Planning Year | Major Basin | Residential Average Annual Daily Flow (MGD) ⁽¹⁾ | Employment Average Annual Daily Flow (MGD) ⁽²⁾ | Total Average Annual Daily Flow (MGD) | Peak Wet Weather Flow (MGD) ⁽³⁾ |
|------------------|-----------------|---|--|---|--|
| | WMARSS | 11.92 | 4.51 | 16.43 | 93.64 |
| 2020 | Bull Hide Creek | 0.82 | 0.08 | 0.90 | 5.12 |
| | China Spring | 0.82 | 0.07 | 0.89 | 5.07 |
| | Total | 13.56 | 4.66 | 18.22 | 103.83 |
| | WMARSS | 13.36 | 5.11 | 18.47 | 105.25 |
| 2020 | Bull Hide Creek | 1.36 | 0.13 | 1.49 | 8.48 |
| 2030 | China Spring | 1.30 | 0.10 | 1.40 | 7.99 |
| | Total | 16.02 | 5.34 | 21.36 | 121.72 |
| | WMARSS | 15.31 | 6.04 | 21.35 | 121.70 |
| 2040 | Bull Hide Creek | 2.28 | 0.21 | 2.49 | 14.19 |
| | China Spring | 1.66 | 0.15 | 1.80 | 10.26 |
| | Total | 19.25 | 6.39 | 25.64 | 146.15 |
| (| | | | | |

⁽¹⁾ 85 gallons per person per day was assumed for residential wastewater flows

⁽²⁾ 65 gallons per employee per day was assumed for employment flows

⁽³⁾ A wet weather peaking factor of 5.7 was assumed based on the Wastewater Collection System Master Plan


4.3 Water and Wastewater System Improvements

Proposed water and wastewater system improvement projects were developed based on input from City staff and projects identified in recent studies conducted by the City, including:

- Highway 84 Corridor Wastewater Improvements Facility Plan, July 2019 prepared by CDM
 Smith
- Waco Metropolitan Area Regional Sewerage System Large Diameter Interceptor Improvements Report, February 2013 prepared by Burgess and Niple/Walker Partners
- Draft China Spring Wastewater Capacity Evaluation, September 2019 prepared by HDR Engineering, Inc.
- *City of Waco Water Master Plan*, October 2015 prepared by Wallace Group/Freese and Nichols, Inc.
- Wastewater Collection System Master Plan, July 2015 prepared by Walker Partners/HDR

The proposed 10-year impact fee eligible water system projects are shown on **Figure 4-3** and summarized in **Table 4-7**. Proposed impact fee eligible wastewater projects are shown on **Figure 4-4** and summarized in **Table 4-8**. Full sized maps are provided in **Appendix B**.



| Project Number | Water Project Name | | | | | | | | |
|----------------------------------|---|--|--|--|--|--|--|--|--|
| | Existing Impact Fee Eligible Projects | | | | | | | | |
| А | Riverside to Gholson 30-inch Water Line | | | | | | | | |
| В | Highway 84 Water Line Improvements | | | | | | | | |
| С | Spring Valley Water Lines | | | | | | | | |
| D | Owens Lane 2.0 MG Elevated Storage Tank | | | | | | | | |
| Е | Hillcrest Pump Station Expansion | | | | | | | | |
| F | 16-inch Ritchie Road Water Line | | | | | | | | |
| G | China Spring Water Line | | | | | | | | |
| Н | McGregor-Waco-Woodway Connection 16" Water Line | | | | | | | | |
| I | Water Transmission Improvements Mt. Carmel to Hillcrest | | | | | | | | |
| J | Peach Street 16-inch Water Line | | | | | | | | |
| К | Elm Street 12-inch Water Line | | | | | | | | |
| L | Impact Fee Study | | | | | | | | |
| Proposed Impact Fee CIP Projects | | | | | | | | | |
| 1 | Riverside Water Treatment Plant Expansion | | | | | | | | |
| 2 | Riverside Pump Station Expansion | | | | | | | | |
| 3 | Downtown Mary Avenue to 5th Street | | | | | | | | |
| 4 | Highway 84 2.0 MG Ground Storage Tanks | | | | | | | | |
| 5 | Chapel Road 16-inch Water Line | | | | | | | | |
| 6 | Old McGregor 3.0 MG Ground Storage Tank | | | | | | | | |
| 7 | Airport 1.0 MG Ground Storage Tank | | | | | | | | |
| 8 | Elm Mott 1,500 gpm Pump Station Expansion | | | | | | | | |
| 9 | West 250,000 gallon Ground Storage Tank | | | | | | | | |
| 10 | 20/24-inch Water Line in Pressure Plane 1 | | | | | | | | |
| 11 | 72-inch Parallel Raw Water Line | | | | | | | | |
| 12 | 16/24-inch Water Line in Pressure Plane 3 | | | | | | | | |
| 13 | Low Head Pump Station at Mt. Carmel WTP | | | | | | | | |

Table 4-5: Water Impact Fee CIP Projects



| Project Number | Wastewater Project Name | | | | | | | | |
|-------------------|---|--|--|--|--|--|--|--|--|
| | Existing Impact Fee Eligible Projects | | | | | | | | |
| А | FM 1637 12/15/21/24-inch Wastewater Line | | | | | | | | |
| В | China Spring 24-inch Wastewater Line | | | | | | | | |
| C | Transfer Lift Station, Force Main, and 66-inch Gravity Line | | | | | | | | |
| D | Impact Fee Study | | | | | | | | |
| | Proposed Impact Fee CIP Projects | | | | | | | | |
| 1 | Bull Hide Wastewater Treatment Plant Expansion to 3.0 MGD | | | | | | | | |
| 2 | Brazos Basin Interceptor | | | | | | | | |
| 3 | 54-inch Wastewater Line at Lake Brazos Park | | | | | | | | |
| 4 | Belmead Interceptor / Lacy Lakeview Interceptor | | | | | | | | |
| 5 | TSTC Lift Station Expansion and Force Main | | | | | | | | |
| 6 | Cloice Creek and Church Road Lift Stations, Force Mains, and 21-inch Gravity Line | | | | | | | | |
| 7 | Highway 84 30-inch Wastewater Line | | | | | | | | |
| 8 | Highway 84 24-inch Wastewater Line | | | | | | | | |
| 9 | China Spring Wastewater Treatment Plant | | | | | | | | |
| 10 | Highway 84 Wastewater Treatment Plant | | | | | | | | |
| 11 | New Quest Wastewater Line | | | | | | | | |
| 12 | 24-inch Wastewater Line | | | | | | | | |
| 13 | Bridge 18-inch Wastewater Line | | | | | | | | |

Table 4-6: Wastewater Impact Fee CIP Projects





Figure 4-3: Water Impact Fee Capital Improvements Plan





Figure 4-4: Wastewater Impact Fee Capital Improvements Plan



5.0 ROADWAY CAPITAL IMPROVEMENTS PLAN

5.1 Existing Conditions Analysis

An inventory of major roadways that are designated as arterial and/or collector facilities on the 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 from capacity made available by the CIP). Data for the inventory was obtained from the Thoroughfare Plan, field reconnaissance, and peak hour traffic volume count data.

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 and type of cross-section, as listed in **Table 5-1**. Roadway hourly volume capacities are based on general carrying capacity values consistent with the MPO regional travel demand model and reflect level-of-service (LOS) "D" operation, which has been identified as the minimum acceptable peak hour traffic operational condition by the city.

| Roadway Facility Functional Classification | Designation | Hourly Vehicle-mile Capacity per Lane Mile of Roadway Facility | | | | |
|---|-------------|--|--|--|--|--|
| Divided Arterial* | DA or SA | 665 | | | | |
| Divided Collector* | DC or SC | 565 | | | | |
| Undivided Arterial | UA | 590 | | | | |
| Undivided Collector | UC | 510 | | | | |
| *Facilities with a two-way left turn lane (TWLTL) are considered for this assessment as a divided facility for capacity allocation and marked as Special Arterial (SA) or Special Collector (SC) designation. | | | | | | |

Table 5-1: Roadway Facility Vehicle-Mile Lane Capacities

5.1.1 Existing Volumes

Existing directional PM peak hour volumes were obtained from automated traffic counts conducted in May 2019. Automated traffic counts at 30 separate locations were collected on major roadways throughout the city. In an effort 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 volume count data from the MPO and TxDOT were used or estimates were developed based on data from adjoining roadway counts.

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

5.1.2 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:

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

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:

Vehicle-Miles of Demand = PM peak hour volume x Length of segment (miles)

5.1.3 Vehicle-Miles of Existing Excess Capacity and Deficiencies

For each roadway segment, the existing vehicle-miles of excess capacity and/or deficiencies were calculated and are listed in **Table 5-2**. 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 C**.



| Service Area | Capacity | Demand | Excess Capacity | Existing Deficiencies |
|--------------|----------|--------|--------------------|--------------------------|
| 1 | 11,045 | 3,394 | 7,651 | 0 |
| 2 | 23,746 | 11,686 | 12,167 | 0 |
| 3 | 20,207 | 7,553 | 12,744 | 89 |
| 4 | 4,960 | 1,666 | 3,295 | 0 |
| 5 | 2,664 | 999 | 1,664 | 0 |
| 6 | 13,294 | 6,740 | 6,554 | 0 |
| 7 | 7,154 | 5,541 | 2,351 | 737 |
| 8 | 5,281 | 946 | 4,335 | 0 |
| 9 | 26,930 | 14,215 | 12,714 | 0 |
| 10 | 7,428 | 3,074 | 4,566 | 212 |
| 11 | 2,897 | 771 | 2,126 | 0 |
| Total | 125,606 | 56,585 | 70,167 | 1,145 |

Table 5-2: Existing Roadway Analysis by Service Area

5.2 Growth Projections

The projected growth for the roadway service area is represented by the increase in the number of new vehicle-miles of demand generated over the 10-year planning period. The basis for the calculation of new demand is the population and employment projections that were prepared as part of the Waco Land Use Assumptions (LUA) Report for Impact Fees dated June 2019 by Freese and Nichols. Estimates of population and employment were prepared for the years 2020 and 2030.

Population data was provided in terms of the number of dwelling units and persons. Employment data was broken into three classes of employees that include basic, retail, and service, comprising a variety of employment groupings. Basic employment generally encompasses the industrial and manufacturing uses, retail employment includes commercial and retail uses, and service employment generally encompasses government and office uses. A summary of the projected growth is summarized in **Table 5-3 and 5-4**.



| | Population | | | | | |
|---------------------|------------|---------|---------------|--|--|--|
| Service Area | 2020 2030 | | Net Growth | | | |
| 1 | 76,420 | 82,294 | 5,874 | | | |
| 2 | 19,903 | 21,043 | 1,140 | | | |
| 3 | 14,789 | 17,063 | 2,274 | | | |
| 4 | 1,224 | 1,649 | 425 | | | |
| 5 | 1,304 | 1,348 | 44 | | | |
| 6 | 2,911 | 3,905 | 994 | | | |
| 7 | 6,886 | 9,043 | 2,157 | | | |
| 8 | 0 | 0 | 0 | | | |
| 9 | 3,439 | 4,982 | 1,543 | | | |
| 10 | 8,710 | 10,549 | 1,839 | | | |
| 11 | 5,365 | 6,589 | 1,224 | | | |
| Total Population | 140,951 | 158,465 | 17,514 | | | |

Table 5-3: Projected 10-Year Growth Summary Population

 Table 5-4: Projected 10-Year Growth Summary Employment

| | Employment | | | | | | | | | | | | |
|---------------------|------------|--------|---------|--------|--------|--------|---------|--------|-------|------------|---------|-------|--|
| Service Area | | 2020 | | | | 2030 | | | | Net Growth | | | |
| | Basic | Retail | Service | Total | Basic | Retail | Service | Total | Basic | Retail | Service | Total | |
| 1 | 2,277 | 7,882 | 13,780 | 23,940 | 2,592 | 8,690 | 15,563 | 26,845 | 315 | 808 | 1,783 | 2,905 | |
| 2 | 1,588 | 5,430 | 10,143 | 17,162 | 1,649 | 5,735 | 10,896 | 18,280 | 61 | 305 | 753 | 1,118 | |
| 3 | 668 | 1,159 | 1,176 | 3,003 | 764 | 1,320 | 1,375 | 3,460 | 96 | 162 | 199 | 457 | |
| 4 | 154 | 5 | 131 | 290 | 162 | 17 | 150 | 330 | 8 | 12 | 19 | 40 | |
| 5 | 410 | 174 | 731 | 1,315 | 774 | 180 | 769 | 1,723 | 364 | 6 | 38 | 408 | |
| 6 | 910 | 40 | 357 | 1,307 | 983 | 64 | 514 | 1,561 | 73 | 24 | 157 | 253 | |
| 7 | 458 | 187 | 312 | 956 | 545 | 310 | 473 | 1,329 | 87 | 124 | 161 | 373 | |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 9 | 8,299 | 5,137 | 4,425 | 17,862 | 9,772 | 5,601 | 4,972 | 20,345 | 1,472 | 464 | 547 | 2,483 | |
| 10 | 277 | 430 | 553 | 1,261 | 307 | 452 | 620 | 1,379 | 30 | 21 | 67 | 117 | |
| 11 | 54 | 57 | 91 | 202 | 141 | 76 | 153 | 370 | 88 | 20 | 61 | 168 | |
| Total Employment | 15,095 | 20,501 | 31,701 | 67,297 | 17,688 | 22,446 | 35,486 | 75,620 | 2,593 | 1,945 | 3,785 | 8,323 | |



5.2.1 Projected Vehicle-Miles of New Demand

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 the number of employees and then converted to square footage of building space using estimates of square footage per employee for industrial, office, and retail uses. The 10-year projected vehicle-miles of demand by service area are summarized in **Table 5-5**. Appendix D contains the development of 10-year projected demand.

| Service Area | Projected 10-Year Growth (Vehicle-Miles) |
|--------------|---|
| 1 | 15,947 |
| 2 | 4,650 |
| 3 | 4,293 |
| 4 | 650 |
| 5 | 1,650 |
| 6 | 2,002 |
| 7 | 3,879 |
| 8 | 0 |
| 9 | 10,967 |
| 10 | 2,636 |
| 11 | 2,094 |
| Total | 48,768 |

Table 5-5: 10-Year Projected Service Units of Demand

5.3 Capital Improvements Plan

The impact fee CIP is aimed at facilitating anticipated long-term growth in Waco. The CIP, which consists of only new capacity additions, were identified as needed to address the anticipated projected growth within the City. Arterial and collector class facilities identified in the current official Thoroughfare Plan served as a basis for the impact fee CIP.

Subsequent to this report on the development of the impact fee CIP, the final report will detail project cost per service unit, the cost attributable to new development, and service area cost per service unit.



5.3.1 Impact Fee CIP

The proposed CIP consists of 42 project segments over nine of the eleven service areas (no projects identified in service areas 4 and 8) and advance the implementation of the Thoroughfare Plan network, as seen on **Figure 5-1**. The added capacity and net capacity that would be provided by the proposed CIP is summarized below in **Table 5-6**. Net capacity to be provided by the proposed CIP takes into consideration any deficiencies from the existing conditions analysis described in **Section 5.1** of this report. A detailed listing by project of capacity supplied can be found in **Appendix E**.

| Service Area | Capacity Supplied by CIP (veh-mi) | Existing Utilization (veh-mi) | Existing Deficiencies (veh-mi) | Net Capacity Supplied by CIP (veh-mi) |
|--------------|---|-------------------------------------|--------------------------------------|--|
| 1 | 502 | 0 | 0 | 502 |
| 2 | 3,105 | 0 | 107 | 2,998 |
| 3 | 8,682 | 0 | 89 | 8,593 |
| 4 | 1,551 | 0 | 0 | 1,551 |
| 5 | 0 | 0 | 0 | 0 |
| 6 | 1,699 | 0 | 0 | 1,699 |
| 7 | 12,014 | 0 | 737 | 11,277 |
| 8 | 0 | 0 | 0 | 0 |
| 9 | 2,712 | 0 | 0 | 2,712 |
| 10 | 3,883 | 0 | 212 | 3,671 |
| 11 | 6,081 | 0 | 0 | 6,081 |
| Total | 40,229 | 0 | 1,145 | 39,084 |

Table 5-6: Capacity and Net Capacity to be Provided by the Proposed CIP

A comparison of net capacity to be provided by the proposed CIP compared to 10-year needs (developed in **Table 5-5**) is listed below in **Table 5-7**. An analysis reveals an adequately matched overall impact fee CIP program to address growth attributable to new development.

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, is some service areas project growth will exceed the projected capacity supplied. The ultimate net effect is that the cost per service unit will be lower as the cost of the specified CIP (by service area) is spread out over the 10-year growth.



| Service Area | Projected 10-Year Growth (Vehicle-Miles) | Net Capacity Supplied by CIP (veh-mi) | Pcnt. of CIP Attributable to New Dev. (10-Yr.) |
|--------------|--|---|---|
| 1 | 15,947 | 502 | 100.0 |
| 2 | 4,650 | 2,998 | 100.0 |
| 3 | 4,293 | 8,593 | 50.0 |
| 4 | 650 | 1,551 | 41.9 |
| 5 | 1,650 | 0 | 100.0 |
| 6 | 2,002 | 1,699 | 100.0 |
| 7 | 3,879 | 11,277 | 34.4 |
| 8 | 0 | 0 | 100.0 |
| 9 | 10,967 | 2,712 | 100.0 |
| 10 | 2,636 | 3,671 | 71.8 |
| 11 | 2,094 | 6,081 | 34.4 |
| System Total | 48,768 | 39,084 | 100.0 |

| Table 5-7: Projected Demand and Net Ca | pacity Provided by the Proposed CIP |
|--|-------------------------------------|
|--|-------------------------------------|

Figure 5-1 and **Table 5-8** illustrate and list the capital improvements projects and associated description as part of the impact fee program.





Figure 5-1: Roadway Impact Fee Capital Improvements Plan



| Proj No | Serv Area | Shared | Roadway | From | То | Length (mi) | No. of Lanes | Thoroughfare Section | Rdwy Type | Pct. in Serv. Area |
|------------|--------------|-----------|---------------------------|--------------------------|--------------------------|----------------|-----------------|-------------------------|--------------|-----------------------|
| 1 | 1 | 6 | Gholson Rd | Herring Ave | 960' S of Herring Ave | 0.18 | 2 | Minor Art-4U Sec | UA | 50% |
| 2 | 1 | | Gholson Rd | 960' S of Herring Ave | Waco Dr | 0.33 | 2 | Minor Art-4U Sec | UA | 100% |
| | Sub-To | tal Servi | ce Area 1 | Ū | | 20.18 | | | | |
| 3 | 2 | | Lake Shore Dr | Mt Carmel Dr | Koehne Park Dr | 0.62 | 4 | Major Art-6D Sec | DA | 100% |
| 4 | 2 | | Valley Mills Dr | Koehne Park Dr | Hillandale Rd | 0.15 | 4 | Major Art-6D Sec | DA | 100% |
| 5 | 2 | | Valley Mills Dr | Hillandale Rd | Ridgewood Dr | 0.26 | 4 | Major Art-6D Sec | DA | 100% |
| 6 | 2 | | Valley Mills Dr | Ridgewood Dr | Bishop Dr | 0.18 | 3 | Major Art-6D Sec | DA | 100% |
| | Sub-To | tal Servi | ce Area 2 | | | 2.34 | | | | |
| 7 | 3 | | Bagby Ave | New Rd | Monte Vista St | 0.27 | 2 | Minor Art-4D Sec | DA | 100% |
| 8 | 3 | | Bagby Ave | Monte Vista St | Richter Ave | 0.68 | 2 | Minor Art-4D Sec | DA | |
| 9 | з | | Bagby Ave | Richter Ave | Valley Mills Dr | 0.59 | 2 | Minor Art-4D Sec | DA | 100% |
| 10 | 3 | 9 | S New Rd | Bagby Ave | I-35 | 0.80 | 1 | Minor Art-6D Sec | DA | 50% |
| 11 | 3 | | Garden Dr | Robinson Rd | 16th St | 1.34 | 2 | Minor Art-4U Sec | UA | 100% |
| 12 | 3 | | 18th St | La Salle | Gurley Ln | 0.45 | 2 | Major Art-6D Sec | DA | 100% |
| 13 | 3 | | 16th | Gurley Ln | Garden Dr | 0.42 | 4 | Major Art-6D Sec | DA | 100% |
| 14 | 3 | | 12th | Garden Dr | TX-340 | 1.08 | 4 | Major Art-6D Sec | DA | 100% |
| 15 | 3 | | University Parks Dr | La Salle Ave | Garden Dr | 0.84 | 2 | Minor Art-4D Sec | DA | 100% |
| | Sub-To | tal Servi | ce Area 3 | | | 11.09 | | | | |
| 16 | 4 | | Martin Luther King Jr Blv | d BUS 77 | SH 484 | 0.39 | 6 | Major Art-6D Sec | DA | 100% |
| | Sub-To | tal Servi | ce Area 4 | | | 4.24 | | | | |
| | Cub T- | t - 1 C | No Projects in Service Ai | rea | | | | | | |
| | Sub-10 | tai servi | Chalaan Dd | | Line and an a first | 1.56 | 2 | Min on Arth 411 Colo | | E 00/ |
| 17 | 6 | 1 | Gholson Rd | 960 S of Herring Ave | Herring Ave | 0.18 | 2 | Minor Art-40 Sec | UA | 100% |
| 1/ | Sub-To | tal Sonvi | Giloison ku | Herring Ave | Lakeshore Di | 11.55 | 2 | WINDI AIT-40 Sec | UA | 100% |
| 18 | 7 | tai servi | North River Crossing | End of bridge | 580' NE of Curry I n | 1 38 | Λ | Major Art-6D Sec | DA | 100% |
| 10 | 7 | | North River Crossing | 580' NE of Curry In | Yankie Rd | 0.47 | 4 | Major Art-6D Sec | DA | 100% |
| 20 | 7 | | Flat Bock Bd | Yankie Rd | Tree Lake Rd | 1.01 | 2 | Major Col-4U Sec | UC | 100% |
| 21 | 7 | | Flat Rock Rd | Tree Lake Rd | China Spring Rd | 1.66 | 2 | Major Col-4U Sec | UC | 100% |
| 22 | 7 | | Yankie Rd | North River Crossing | Flat Rock Rd | 1.89 | 2 | Major Col-4U Sec | UC | 100% |
| 23 | 7 | | Tree Lake Dr | China Spring Rd | Flat Rock Rd | 1.57 | 2 | Major Col-4U Sec | UC | 100% |
| 24 | 7 | | Wortham Bend | North City Limit | China Spring Rd | 0.82 | 2 | Major Col-4U Sec | UC | 100% |
| | Sub-To | tal Servi | ce Area 7 | | | 15.45 | | | | |
| | | | No Projects in Service A | · · · · | | | | | | |
| | Sub-To | tal Servi | A Area 8 | ea | | 6.05 | | | | |
| 25 | 305-10 | | Mars Dr | Hewitt Dr | Texas Central Pkwy | 0.03 | 2 | Minor Art-/III Sec | 114 | 100% |
| 25 | 9 | | Beverly Dr | W Loop 340 | 4128' NE of Loon 340 | 0.78 | 2 | Minor Art-4U Sec | | 100% |
| 27 | 9 | × | Beverly Dr | 4128' NF of Loop 340 | New Road | 0.31 | 2 | Minor Art-4U Sec | UA | 50% |
| 28 | 9 | x | Hewitt Dr | Woodway Dr | Old McGregor Dr | 0.19 | 1 | Maior Art-6D Sec | DA | 50% |
| 29 | 9 | 10 | Hewitt Dr | Old McGregor Dr | Imperial Dr | 0.45 | 1 | Major Art-6D Sec | DA | 50% |
| 30 | 9 | 10 | Hewitt Dr | Imperial Dr | Mars Dr | 0.62 | 1 | Major Art-6D Sec | DA | 50% |
| 31 | 9 | | Texas Central Pkwy | Railroad | Imperial Dr | 0.34 | 2 | Minor Art-4U Sec | UA | 100% |
| 10 | 9 | 3 | S New Rd | Bagby Ave | 1-35 | 0.80 | 1 | Major Art-6D Sec | UA | 50% |
| 32 | 9 | | Bagby Ave. | New Road | TX 340 | 0.83 | 1 | or Art-4D Sec* (4U to | DA | 100% |
| | Sub-To | tal Servi | ce Area 9 | | | 4.32 | | | | |
| 33 | 10 | | Warren Rd | City Limit | Ritchie Rd | 0.38 | 3 | Minor Col-3S Sec | SC | 100% |
| 34 | 10 | x | Warren Rd | Ritchie Rd | 3700' east of Ritchie Rd | 0.70 | 1 | Minor Col-3S Sec | SC | 50% |
| 35 | 10 | x | Farmiller Rd | 1300' south of Chapel Rd | 2100' north of Warren Rd | 1.13 | 2 | Minor Col-3S Sec | SA | 50% |
| 29 | 10 | 9 | Hewitt Dr | Old McGregor Dr | Imperial Dr | 0.45 | 1 | Major Art-6D Sec | DA | 50% |
| 30 | 10 | 9 | Hewitt Dr | Imperial Dr | Mars Dr | 0.62 | 1 | Major Art-6D Sec | DA | 50% |
| 36 | 10 | | Chapel Rd | Meadow Mountain Dr | Ritchie Rd | 1.15 | 3 | Minor Art-5S Sec | SA | 100% |
| 37 | 10 | | Ritchie Rd | Panther Way | Warren St | 1.01 | 2 | Minor Art-4U Sec | UA | 100% |
| | Sub-To | tal Servi | ce Area 10 | | | 7.44 | | | | |
| 38 | 11 | | Val Verde Rd | Fossil Rim Rd | US 84 | 0.89 | 1 | Minor Col-3S Sec | SC | 100% |
| 39 | 11 | | Harris Creek Rd | US 84 | Walking Horse Ln | 0.66 | 1 | Minor Col-3S Sec | SC | 100% |
| 40 | 11 | | Speegleville Rd | Pecan Creek | Oak Rd | 0.54 | 4 | Major Art-6D Sec | DA | 100% |
| 41 | 11 | | Speegleville Rd | Oak Rd | US 84 | 0.85 | 4 | Major Art-6D Sec | DA | 100% |
| 42 | 11 | | Old Lorena Rd | US 84 EBFR | South Bosque River | 0.90 | 4 | Major Art-6D Sec | DA | 100% |
| | Sub-To | tal Servi | ce Area 11 | | | 2.61 | | | | |

Table 5-8: Impact Fee CIP Listing

Note: DA = Divided Arterial, UA = Undivided Arterial, SA = Special Arterial (with center dual left turn lane), SC = Special Collector (with center dual left turn lane), Recoup = Recoupment Project, New = New Project



Appendix A

Population & Employment by TAZ

Appendix A Population and Employment by TAZ

| TAZ | Pop 2020 | Pop 2030 | Pop 2040 | Emp 2020 | Emp 2030 | Emp 2040 | Pop Change 2020-2030 | Pop Change 2020-2040 | Emp Change 2020 - 2030 | Emp Change 2020 - 2040 |
|-----|----------|----------|----------|----------|----------|----------|-------------------------|-------------------------|---------------------------|---------------------------|
| 1 | 432 | 685 | 801 | 605 | 700 | 702 | 253 | 369 | 96 | 98 |
| 2 | 918 | 1,193 | 1,400 | 2,883 | 3,034 | 3,104 | 275 | 482 | 151 | 221 |
| 3 | 324 | 497 | 664 | 512 | 625 | 844 | 173 | 340 | 113 | 332 |
| 4 | 594 | 774 | 918 | 690 | 715 | 728 | 180 | 324 | 25 | 37 |
| 5 | 324 | 442 | 553 | 1,628 | 1,781 | 1,843 | 118 | 229 | 153 | 216 |
| 6 | 108 | 276 | 553 | 525 | 552 | 558 | 168 | 445 | 27 | 32 |
| 7 | 1,458 | 1,547 | 1,604 | 260 | 346 | 407 | 89 | 146 | 85 | 147 |
| 8 | 2,052 | 2,155 | 2,212 | 112 | 125 | 194 | 103 | 160 | 13 | 82 |
| 9 | 0 | 424 | 425 | 3 | 7 | 24 | 424 | 425 | 4 | 21 |
| 10 | 0 | 0 | 0 | 326 | 432 | 485 | 0 | 0 | 107 | 160 |
| 11 | 0 | 0 | 0 | 70 | 72 | 49 | 0 | 0 | 2 | -21 |
| 12 | 4,428 | 4,586 | 4,667 | 2,539 | 2,688 | 2,769 | 158 | 239 | 149 | 230 |
| 13 | 1,026 | 1,105 | 1,134 | 465 | 576 | 669 | 79 | 108 | 111 | 204 |
| 14 | 400 | 497 | 553 | 56 | 96 | 126 | 98 | 153 | 40 | 70 |
| 15 | 2,592 | 2,431 | 2,112 | 205 | 288 | 369 | -161 | -480 | 83 | 164 |
| 16 | 1,296 | 1,414 | 1,493 | 335 | 336 | 291 | 118 | 197 | 1 | -44 |
| 17 | 0 | 0 | 0 | 409 | 451 | 480 | 0 | 0 | 42 | 71 |
| 18 | 1,944 | 2,077 | 2,135 | 223 | 254 | 276 | 133 | 191 | 31 | 53 |
| 19 | 923 | 945 | 1,388 | 302 | 329 | 369 | 21 | 465 | 27 | 66 |
| 20 | 1,685 | 1,823 | 1,880 | 172 | 192 | 301 | 138 | 195 | 20 | 129 |
| 21 | 461 | 506 | 541 | 9 | 10 | 10 | 45 | 80 | 0 | 0 |
| 22 | 378 | 497 | 608 | 484 | 490 | 485 | 119 | 230 | 6 | 1 |
| 23 | 471 | 497 | 498 | 279 | 288 | 291 | 26 | 27 | 9 | 12 |
| 24 | 562 | 608 | 665 | 1,070 | 1,123 | 1,154 | 46 | 103 | 54 | 85 |
| 25 | 389 | 414 | 442 | 465 | 576 | 689 | 26 | 54 | 111 | 224 |
| 26 | 378 | 392 | 415 | 70 | 77 | 78 | 14 | 37 | 7 | 8 |
| 27 | 1,323 | 1,354 | 1,360 | 84 | 101 | 116 | 31 | 37 | 17 | 33 |
| 28 | 864 | 900 | 910 | 191 | 199 | 204 | 36 | 46 | 8 | 13 |
| 29 | 1,091 | 1,116 | 1,123 | 28 | 34 | 49 | 25 | 32 | 6 | 21 |
| 30 | 2,214 | 2,245 | 2,260 | 70 | 77 | 92 | 31 | 46 | 7 | 22 |
| 31 | 2,203 | 2,230 | 2,240 | 37 | 43 | 44 | 27 | 37 | 6 | 6 |
| 32 | 1,415 | 1,448 | 1,460 | 698 | 705 | 710 | 33 | 45 | 8 | 13 |
| 33 | 2,128 | 2,182 | 2,190 | 74 | 96 | 116 | 55 | 62 | 22 | 42 |
| 34 | 540 | 580 | 585 | 349 | 384 | 398 | 40 | 45 | 35 | 49 |
| 35 | 2,300 | 2,403 | 2,500 | 84 | 100 | 105 | 103 | 199 | 16 | 21 |
| 36 | 1,501 | 1,520 | 1,530 | 70 | 86 | 97 | 19 | 29 | 17 | 27 |
| 37 | 724 | 774 | 820 | 7 | 8 | 8 | 50 | 96 | 0 | 0 |
| 38 | 518 | 560 | 565 | 65 | 74 | 82 | 42 | 47 | 9 | 17 |
| 39 | 1,944 | 1,960 | 1,975 | 140 | 148 | 160 | 16 | 31 | 9 | 21 |
| 40 | 778 | 801 | 807 | 37 | 43 | 53 | 24 | 30 | 6 | 16 |
| 41 | 1,566 | 1,601 | 1,610 | 195 | 211 | 228 | 35 | 44 | 16 | 33 |
| 42 | 1,944 | 2,100 | 2,212 | 112 | 192 | 238 | 156 | 268 | 80 | 126 |
| 43 | 1,512 | 1,602 | 1,659 | 200 | 288 | 359 | 90 | 147 | 88 | 159 |
| 44 | 572 | 630 | 664 | 23 | 43 | 53 | 57 | 91 | 20 | 30 |

Appendix A Population and Employment by TAZ

| TAZ | Pop 2020 | Pop 2030 | Pop 2040 | Emp 2020 | Emp 2030 | Emp 2040 | Pop Change 2020-2030 | Pop Change 2020-2040 | Emp Change 2020 - 2030 | Emp Change 2020 - 2040 |
|-----|----------|----------|----------|----------|----------|----------|-------------------------|-------------------------|---------------------------|---------------------------|
| 45 | 65 | 72 | 77 | 11 | 19 | 39 | 7 | 13 | 8 | 28 |
| 46 | 153 | 157 | 664 | 284 | 293 | 301 | 4 | 510 | 9 | 17 |
| 47 | 243 | 245 | 559 | 0 | 0 | 0 | 2 | 316 | 0 | 0 |
| 48 | 529 | 538 | 553 | 353 | 350 | 340 | 9 | 24 | -3 | -14 |
| 49 | 137 | 222 | 304 | 113 | 142 | 175 | 85 | 167 | 29 | 61 |
| 50 | 265 | 304 | 332 | 498 | 533 | 543 | 39 | 67 | 35 | 46 |
| 51 | 0 | 0 | 0 | 19 | 20 | 22 | 0 | 0 | 2 | 4 |
| 52 | 0 | 0 | 0 | 112 | 122 | 131 | 0 | 0 | 10 | 19 |
| 53 | 0 | 0 | 0 | 561 | 588 | 605 | 0 | 0 | 28 | 44 |
| 54 | 1,600 | 1,730 | 4,424 | 268 | 303 | 340 | 130 | 2,824 | 35 | 71 |
| 55 | 591 | 630 | 664 | 89 | 99 | 126 | 39 | 73 | 10 | 37 |
| 56 | 218 | 277 | 332 | 2 | 5 | 5 | 59 | 113 | 3 | 3 |
| 57 | 1,086 | 1,080 | 1,051 | 213 | 223 | 534 | -5 | -35 | 10 | 321 |
| 58 | 971 | 1,055 | 1,117 | 68 | 86 | 107 | 84 | 146 | 18 | 38 |
| 59 | 508 | 619 | 719 | 77 | 87 | 97 | 111 | 211 | 10 | 20 |
| 60 | 1,340 | 1,434 | 1,499 | 97 | 135 | 184 | 94 | 158 | 38 | 88 |
| 61 | 732 | 844 | 940 | 132 | 177 | 233 | 112 | 208 | 45 | 101 |
| 62 | 567 | 710 | 841 | 115 | 162 | 223 | 143 | 273 | 47 | 108 |
| 63 | 43 | 22 | 0 | 28 | 78 | 213 | -21 | -43 | 50 | 186 |
| 64 | 364 | 578 | 785 | 108 | 160 | 233 | 215 | 421 | 52 | 125 |
| 65 | 121 | 173 | 221 | 61 | 95 | 145 | 51 | 100 | 34 | 85 |
| 66 | 999 | 1,061 | 1,106 | 45 | 67 | 97 | 62 | 107 | 22 | 52 |
| 67 | 0 | 88 | 254 | 30 | 90 | 267 | 88 | 254 | 60 | 237 |
| 75 | 0 | 0 | 0 | 37 | 47 | 63 | 0 | 0 | 10 | 26 |
| 77 | 45 | 46 | 46 | 21 | 62 | 179 | 1 | 1 | 41 | 158 |
| 78 | 0 | 0 | 0 | 30 | 32 | 37 | 0 | 0 | 2 | 7 |
| 79 | 0 | 0 | 0 | 169 | 200 | 230 | 0 | 0 | 31 | 61 |
| 87 | 103 | 497 | 664 | 0 | 0 | 10 | 395 | 561 | 0 | 10 |
| 88 | 0 | 0 | 0 | 47 | 48 | 49 | 0 | 0 | 2 | 2 |
| 90 | 847 | 884 | 940 | 65 | 82 | 112 | 37 | 93 | 17 | 46 |
| 91 | 207 | 240 | 442 | 19 | 20 | 49 | 32 | 235 | 2 | 30 |
| 92 | 27 | 28 | 166 | 93 | 96 | 194 | 1 | 139 | 3 | 101 |
| 95 | 2,916 | 2,984 | 2,986 | 166 | 188 | 209 | 68 | 70 | 22 | 42 |
| 96 | 529 | 553 | 619 | 112 | 120 | 126 | 23 | 90 | 8 | 15 |
| 97 | 1,529 | 1,597 | 1,631 | 112 | 120 | 131 | 68 | 102 | 8 | 19 |
| 98 | 565 | 787 | 1,106 | 60 | 168 | 262 | 222 | 541 | 108 | 201 |
| 101 | 0 | 0 | 0 | 22 | 30 | 49 | 0 | 0 | 7 | 26 |
| 110 | 0 | 0 | 0 | 62 | 101 | 160 | 0 | 0 | 38 | 98 |
| 111 | 8 | 7 | 0 | 279 | 316 | 335 | -1 | -8 | 37 | 56 |
| 112 | 972 | 1,326 | 1,493 | 219 | 240 | 388 | 354 | 521 | 21 | 169 |
| 113 | 278 | 308 | 332 | 42 | 58 | 68 | 31 | 54 | 16 | 26 |
| 114 | /5/ | /85 | 802 | 56 | /5 | /6 | 27 | 45 | 19 | 20 |
| 115 | 168 | 1/3 | 1// | 14 | 16 | 19 | 5 | 8 | 2 | 5 |
| 116 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Appendix A Population and Employment by TAZ

| TAZ | Pop 2020 | Pop 2030 | Pop 2040 | Emp 2020 | Emp 2030 | Emp 2040 | Pop Change 2020-2030 | Pop Change 2020-2040 | Emp Change 2020 - 2030 | Emp Change 2020 - 2040 |
|-----|----------|----------|----------|----------|----------|----------|-------------------------|-------------------------|---------------------------|---------------------------|
| 117 | 160 | 138 | 112 | 985 | 1,032 | 1,043 | -22 | -48 | 47 | 58 |
| 118 | 1,527 | 1,770 | 1,825 | 246 | 327 | 437 | 243 | 298 | 81 | 190 |
| 119 | 448 | 475 | 498 | 222 | 241 | 243 | 27 | 50 | 19 | 20 |
| 120 | 1,100 | 1,150 | 1,300 | 185 | 190 | 215 | 50 | 200 | 5 | 30 |
| 121 | 1,863 | 2,059 | 2,212 | 328 | 389 | 441 | 196 | 349 | 61 | 113 |
| 122 | 926 | 1,437 | 1,770 | 284 | 384 | 490 | 511 | 844 | 100 | 206 |
| 124 | 0 | 0 | 0 | 600 | 620 | 840 | 0 | 0 | 20 | 240 |
| 125 | 0 | 0 | 0 | 977 | 1,032 | 1,043 | 0 | 0 | 56 | 66 |
| 126 | 0 | 111 | 166 | 791 | 830 | 839 | 111 | 166 | 40 | 49 |
| 127 | 0 | 0 | 0 | 614 | 634 | 640 | 0 | 0 | 20 | 26 |
| 128 | 0 | 0 | 0 | 1,033 | 1,078 | 1,101 | 0 | 0 | 45 | 68 |
| 129 | 0 | 0 | 0 | 1,322 | 1,384 | 1,408 | 0 | 0 | 62 | 86 |
| 130 | 1,750 | 1,823 | 1,880 | 1,462 | 1,527 | 1,562 | 74 | 131 | 65 | 100 |
| 131 | 906 | 934 | 940 | 534 | 568 | 592 | 28 | 34 | 34 | 58 |
| 132 | 720 | 782 | 830 | 466 | 504 | 534 | 62 | 109 | 38 | 68 |
| 133 | 0 | 0 | 0 | 614 | 634 | 640 | 0 | 0 | 20 | 26 |
| 134 | 1,059 | 1,095 | 1,106 | 653 | 694 | 723 | 36 | 47 | 41 | 70 |
| 135 | 1,848 | 1,878 | 1,896 | 248 | 278 | 306 | 30 | 48 | 30 | 57 |
| 136 | 924 | 950 | 970 | 248 | 278 | 306 | 26 | 46 | 30 | 57 |
| 137 | 1,350 | 1,403 | 1,438 | 461 | 496 | 524 | 53 | 88 | 35 | 63 |
| 139 | 0 | 0 | 22 | 424 | 485 | 543 | 0 | 22 | 61 | 119 |
| 140 | 856 | 918 | 929 | 316 | 338 | 341 | 62 | 73 | 22 | 25 |
| 141 | 548 | 583 | 719 | 1,056 | 1,151 | 1,310 | 36 | 171 | 95 | 254 |
| 142 | 1,881 | 1,928 | 1,930 | 904 | 968 | 1,014 | 47 | 49 | 64 | 110 |
| 143 | 590 | 650 | 697 | 694 | 744 | 781 | 60 | 107 | 50 | 87 |
| 144 | 300 | 300 | 315 | 77 | 86 | 97 | 0 | 15 | 9 | 20 |
| 145 | 60 | 60 | 70 | 100 | 120 | 125 | 0 | 10 | 20 | 25 |
| 146 | 20 | 100 | 150 | 190 | 201 | 215 | 80 | 130 | 11 | 25 |
| 150 | 778 | 810 | 830 | 119 | 123 | 124 | 32 | 52 | 4 | 5 |
| 151 | 1,039 | 1,066 | 1,073 | 1 | 1 | 1 | 27 | 34 | 0 | 0 |
| 152 | 529 | 547 | 553 | 186 | 192 | 194 | 18 | 24 | 6 | 8 |
| 153 | 571 | 600 | 610 | 521 | 542 | 621 | 29 | 39 | 22 | 100 |
| 154 | 648 | 690 | 695 | 800 | 845 | 868 | 42 | 47 | 45 | 68 |
| 155 | 1,199 | 1,240 | 1,245 | 19 | 24 | 29 | 41 | 46 | 5 | 11 |
| 156 | 972 | 999 | 1,018 | 112 | 115 | 116 | 27 | 46 | 4 | 5 |
| 157 | 1,549 | 1,580 | 1,595 | 206 | 216 | 228 | 31 | 46 | 10 | 21 |
| 158 | 2,546 | 2,565 | 2,590 | 70 | 96 | 108 | 19 | 44 | 26 | 38 |
| 159 | 0 | 0 | 0 | 604 | 677 | 742 | 0 | 0 | 73 | 138 |
| 160 | 2,570 | 2,641 | 2,654 | 56 | 75 | 100 | 71 | 84 | 19 | 44 |
| 161 | 933 | 975 | 995 | 214 | 234 | 291 | 41 | 62 | 20 | 77 |
| 162 | 518 | 556 | 581 | 14 | 16 | 19 | 37 | 62 | 2 | 5 |
| 163 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 166 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 167 | 259 | 351 | 1,051 | 4 | 4 | 15 | 92 | 792 | 0 | 11 |

Appendix A Population and Employment by TAZ

| TAZ | Pop 2020 | Pop 2030 | Pop 2040 | Emp 2020 | Emp 2030 | Emp 2040 | Pop Change 2020-2030 | Pop Change 2020-2040 | Emp Change 2020 - 2030 | Emp Change 2020 - 2040 |
|-----|----------|----------|----------|----------|----------|----------|-------------------------|-------------------------|---------------------------|---------------------------|
| 168 | 0 | 0 | 332 | 30 | 82 | 194 | 0 | 332 | 52 | 164 |
| 169 | 0 | 0 | 387 | 0 | 29 | 97 | 0 | 387 | 29 | 97 |
| 170 | 41 | 49 | 66 | 7 | 7 | 0 | 8 | 25 | 0 | -7 |
| 171 | 702 | 1,063 | 1,327 | 428 | 515 | 616 | 361 | 625 | 87 | 188 |
| 172 | 1,863 | 1,937 | 2,046 | 358 | 384 | 417 | 74 | 183 | 26 | 59 |
| 173 | 1,253 | 1,332 | 1,383 | 86 | 91 | 97 | 79 | 130 | 6 | 11 |
| 174 | 215 | 308 | 398 | 1,079 | 1,123 | 1,193 | 93 | 183 | 44 | 114 |
| 175 | 41 | 242 | 442 | 121 | 140 | 165 | 201 | 401 | 19 | 44 |
| 176 | 76 | 120 | 300 | 47 | 48 | 49 | 44 | 224 | 2 | 2 |
| 177 | 0 | 287 | 288 | 37 | 68 | 89 | 287 | 288 | 31 | 52 |
| 178 | 65 | 166 | 442 | 7 | 30 | 39 | 101 | 378 | 22 | 31 |
| 179 | 65 | 72 | 77 | 2 | 3 | 3 | 7 | 13 | 1 | 1 |
| 180 | 864 | 995 | 1,383 | 47 | 62 | 126 | 131 | 519 | 15 | 79 |
| 181 | 53 | 54 | 133 | 28 | 34 | 49 | 1 | 80 | 6 | 21 |
| 182 | 0 | 0 | 0 | 240 | 259 | 291 | 0 | 0 | 19 | 51 |
| 183 | 108 | 112 | 133 | 9 | 12 | 15 | 4 | 25 | 2 | 5 |
| 184 | 459 | 538 | 719 | 349 | 420 | 582 | 79 | 260 | 71 | 233 |
| 185 | 551 | 564 | 575 | 22 | 23 | 24 | 13 | 24 | 1 | 2 |
| 192 | 0 | 0 | 0 | 186 | 480 | 2,030 0 | | 0 | 294 | 1,844 |
| 193 | 8 | 8 | 111 | 1 | 1 | 5 0 | | 103 | 0 | 4 |
| 208 | 0 | 295 | 332 | 0 | 150 | 291 | 295 | 332 | 150 | 291 |
| 214 | 0 | 0 | 0 | 14 | 26 | 29 | 0 | 0 | 12 | 15 |
| 215 | 0 | 0 | 0 | 814 | 854 | 863 | 0 | 0 | 41 | 50 |
| 216 | 0 | 0 | 0 | 873 | 1,390 | 1,528 | 0 | 0 | 517 | 654 |
| 217 | 825 | 864 | 885 | 1,082 | 1,159 | 1,214 | 39 | 60 | 77 | 133 |
| 218 | 0 | 0 | 0 | 1,267 | 1,365 | 1,455 | 0 | 0 | 98 | 188 |
| 219 | 0 | 0 | 0 | 1,721 | 1,882 | 1,940 | 0 | 0 | 161 | 220 |
| 221 | 224 | 309 | 389 | 84 | 86 | 87 | 86 | 166 | 3 | 4 |
| 222 | 2,908 | 3,174 | 3,373 | 142 | 178 | 218 | 265 | 465 | 35 | 76 |
| 226 | 540 | 1,658 | 2,212 | 1 | 4 | 10 | 1,118 | 1,672 | 3 | 9 |
| 228 | 283 | 335 | 385 | 1,035 | 1,040 | 1,163 | 52 | 102 | 5 | 128 |
| 229 | 0 | 0 | 0 | 597 | 869 | 960 | 0 | 0 | 272 | 363 |
| 230 | 0 | 0 | 0 | 265 | 428 | 526 | 0 | 0 | 163 | 261 |
| 235 | 446 | 1,425 | 1,659 | 67 | 211 | 247 | 979 | 1,213 | 144 | 180 |
| 236 | 24 | 66 | /2 | 0 | 0 | 0 | 43 | 48 | 0 | 0 |
| 237 | 3,888 | 4,199 | 4,424 | 209 | 264 | 310 | 311 | 536 | 55 | 101 |
| 238 | 513 | 674 | 824 | 18 | 26 | 97 | 161 | 311 | 8 | 79 |
| 239 | 50 | 221 | 553 | 2 | 14 | 29 | 105 | 497 | 13 | 27 |
| 240 | 133 | 28/ | 288 | 0 | 0 | 0 | 154 | 155 | 0 | 0 |
| 241 | 54 | 138 | 221 | 0 | 0 | U | 84 | 167 | 0 | U |
| 242 | 059 | 662 | 912 | / | 9 | 15 | 220 | 254 | 2 | <u>ک</u> |
| 247 | 324 | 663 | 1,106 | 5 | 5 | 10 | 339 | /82 | U 1 | 5 |
| 252 | 0 | 0 | 0 | 28 | 29 | 29 | 0 | 0 | 1 | 1 |
| 253 | U | U | U | 651 | b/2 | 689 | U | U | 21 | 38 |

Appendix A Population and Employment by TAZ

| TAZ | Pop 2020 | Pop 2030 | Pop 2040 | Emp 2020 | Emp 2030 | Emp 2040 | Pop Change 2020-2030 | Pop Change 2020-2040 | Emp Change 2020 - 2030 | Emp Change 2020 - 2040 |
|------------|-----------|----------|-------------|----------|----------|-------------|-------------------------|-------------------------|---------------------------|---------------------------|
| 255 | 1,780 | 1,865 | 1,880 | 259 | 291 | 315 | 85 | 100 | 32 | 57 |
| 256 | 779 | 813 | 830 | 530 | 552 | 558 | 35 | 51 | 22 | 28 |
| 257 | 579 | 610 | 629 | 244 | 263 | 277 | 31 | 50 | 19 | 34 |
| 258 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 259 | 0 | 0 | 0 | 380 | 526 | 558 | 0 | 0 | 146 | 177 |
| 260 | 0 | 0 | 0 | 385 | 438 | 478 | 0 | 0 | 53 | 93 |
| 261 | 1,245 | 1,471 | 1,668 | 1,545 | 1,824 | 1,964 | 226 | 423 | 279 | 420 |
| 265 | 1,901 | 2,120 | 2,765 | 2 | 5 | 10 | 220 | 864 | 3 | 8 |
| 304 | 59 | 61 | 111 | 1 | 53 | 102 | 1 | 51 | 52 | 101 |
| 320 | 68 | 135 | 199 | 42 | 50 | 58 | 67 | 131 | 8 | 16 |
| 345 | 1,296 | 1,340 | 1,344 | 884 | 912 | 1,023 | 44 | 48 | 29 | 140 |
| 346 | 0 | 0 | 0 | 75 | 130 | 150 | 0 | 0 | 55 | 75 |
| 349 | 91 | 129 | 166 | 28 | 45 | 58 | 39 | 75 | 17 | 30 |
| 350 | 259 | 326 | 387 | 9 | 10 | 15 | 67 | 128 | 0 | 5 |
| 351 | 16 | 62 | 83 | 20 | 20 | 34 | 46 | 67 | 1 | 14 |
| 352 | 443 | 470 | 476 | 9 | 14 | 49 | 27 | 33 | 5 | 39 |
| 353 | 248 | 265 | 265 | 4 | 5 | 5 | 17 | 17 | 1 | 1 |
| 354 | 138 | 152 | 210 | 2 | 2 | 10 | 14 | 72 | 0 | 8 |
| 355 | 173 | 193 | 221 | 14 | 14 | 15 21 | | 48 | 0 | 1 |
| 356 | 0 | 0 | 0 | 812 | 872 | 917 0 | | 0 | 60 | 105 |
| 357 | 0 | 0 | 0 | 198 | 224 | 247 0 | | 0 | 26 | 49 |
| 358 | 0 | 0 | 0 | 22 | 30 | 39 | 0 | 0 | 7 | 16 |
| 359 | 1,377 | 1,450 | 1,465 | 558 | 595 | 635 | 73 | 88 | 37 | 77 |
| 360 | 648 | 845 | 885 | 2,566 | 2,730 | 2,842 | 197 | 237 | 164 | 276 |
| 361 | 0 | 0 | 0 | 525 | 567 | 601 | 0 | 0 | 43 | 77 |
| 362 | 0 | 0 | 0 | 751 | 790 | 815 | 0 | 0 | 40 | 64 |
| 363 | 616 | 630 | 630 | 9 | 12 | 13 | 14 | 15 | 3 | 3 |
| 364 | 0 | 127 | 221 | 233 | 221 | 218 | 127 | 221 | -12 | -14 |
| 365 | 323 | 413 | 498 | 186 | 192 | 209 | 90 | 1/5 | 6 | 23 |
| 366 | 254 | 334 | 465 | 98 | 108 | 131 | 80 | 211 | 11 | 33 |
| 367 | 0 | 332 | 332 | 381 | 446 | 500 | 332 | 332 | 65 | 118 |
| 271 | 247 | 262 | 277 | 207 | 279 | 282 | 15 | 20 | 12 | 15 |
| 272 | 247 | 202 | 277 | 0 | 0 | 0 | 2 | 29 | 0 | 0 |
| 272 | 1 052 | 1 096 | 32 1 217 | 20 | 21 | 20 | 22 22 | 4 | 1 | 0 |
| 274 | 622 | 1,060 | 920 | 11 | 12 | 29 | 22 | 206 | 1 2 | 9 |
| 276 | 025 | 1 120 | 1 244 | 159 | 15 | 201 | 45 | 200 | 15 | 20 |
| 370 | 994 0 | 1,150 | 1,244 | 275 | 208 | 201 | 137 | 231 | 22 | 43 |
| 372 | 367 | 376 | 380 | 213 | 250 | 63 | Q Q | 12 | 1 | 30 |
| 370 | 0 | 370 | 142 | 33 | 282 | 03 //6 | 0 3/16 | 13 | ± | 126 |
| 373 | 201 | 540 | 77/ | 179 | 202 | -++0 276 | 17/ | 202 | 12 | 00 |
| 20U 201 | 5J 22T | 505 | 22 | 1/0 | 0 | 270 | 21/4 | 505 | 42 | 99 |
| 387 | 651 | 678 | 747 | 11 | 12 | 15 | 23 | 95 | 0 | ् २ |
| 401 | 0 | 0 | 0 0 | 0 | 0 | 0 | | 0 | 0 | 0 |
| 401 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Appendix A Population and Employment by TAZ

| TAZ | Pop 2020 | Pop 2030 | Pop 2040 | Emp 2020 | Emp 2030 | Emp 2040 | Pop Change 2020-2030 | Pop Change 2020-2040 | Emp Change 2020 - 2030 | Emp Change 2020 - 2040 |
|-----|----------|----------|----------|----------|----------|----------|-------------------------|-------------------------|---------------------------|---------------------------|
| 404 | 167 | 221 | 221 | 152 | 186 | 243 | 54 | 54 | 35 | 91 |
| 405 | 0 | 0 | 0 | 2 | 14 | 29 | 0 | 0 | 13 | 27 |
| 406 | 0 | 0 | 0 | 77 | 85 | 92 | 0 | 0 | 8 | 15 |
| 407 | 40 | 0 | 0 | 65 | 70 | 82 | -40 | -40 | 5 | 17 |
| 411 | 1,048 | 1,216 | 1,272 | 47 | 96 | 102 | 168 | 224 | 50 | 55 |
| 412 | 1,579 | 1,692 | 1,991 | 89 | 109 | 146 | 113 | 412 | 20 | 56 |
| 413 | 1,504 | 1,989 | 1,991 | 47 | 144 | 170 | 485 | 486 | 98 | 123 |
| 424 | 0 | 0 | 442 | 1,043 | 1,125 | 1,188 | 0 | 442 | 82 | 145 |
| 426 | 1,481 | 1,519 | 1,526 | 123 | 146 | 170 | 39 | 46 | 23 | 47 |
| 427 | 501 | 519 | 525 | 76 | 98 | 121 | 18 | 24 | 22 | 45 |
| 428 | 0 | 0 | 221 | 549 | 480 | 432 | 0 | 221 | -69 | -117 |
| 9 | 0 | 0 | 140 | 0 | 0 | 0 | 0 | 140 | 0 | 0 |
| 53 | 0 | 100 | 150 | 710 | 710 | 710 | 100 | 150 | 0 | 0 |
| 79 | 9 | 9 | 500 | 0 | 300 | 500 | 0 | 491 | 300 | 500 |
| 83 | 121 | 125 | 340 | 0 | 0 | 50 | 4 | 219 | 0 | 50 |
| 84 | 25 | 30 | 200 | 15 | 15 | 50 | 5 | 175 | 0 | 35 |
| 88 | 25 | 25 | 75 | 0 | 20 | 50 | 0 | 50 | 20 | 50 |
| 89 | 149 | 150 | 300 | 20 | 20 | 100 | 1 | 151 | 0 | 80 |
| 91 | 20 | 20 | 400 | 5 | 5 | 100 | 0 | 380 | 0 | 95 |
| 92 | 0 | 0 | 0 | 0 | 100 | 300 | 0 | 0 | 100 | 300 |
| 93 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 94 | 0 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 | 10 |
| 99 | 2 | 2 | 100 | 20 | 25 | 60 | 0 | 98 | 5 | 40 |
| 100 | 0 | 0 | 0 | 0 | 10 | 40 | 0 | 0 | 10 | 40 |
| 163 | 260 | 261 | 900 | 56 | 82 | 100 | 1 | 640 | 26 | 44 |
| 164 | 350 | 400 | 800 | 200 | 210 | 350 | 50 | 450 | 10 | 150 |
| 165 | 1,570 | 2,000 | 2,500 | 350 | 370 | 420 | 430 | 930 | 20 | 70 |
| 166 | 30 | 30 | 550 | 10 | 10 | 40 | 0 | 520 | 0 | 30 |
| 167 | 150 | 160 | 950 | 5 | 7 | 50 | 10 | 800 | 2 | 45 |
| 179 | 50 | 90 | 150 | 55 | 62 | 80 | 40 | 100 | 7 | 25 |
| 183 | 23 | 25 | 25 | 13 | 15 | 40 | 2 | 2 | 2 | 27 |
| 186 | 150 | 200 | 350 | 5 | 10 | 70 | 50 | 200 | 5 | 65 |
| 191 | 0 | 0 | 250 | 15 | 15 | 55 | 0 | 250 | 0 | 40 |
| 192 | 30 | 30 | 90 | 15 | 15 | 3,190 | 0 | 60 | 0 | 3,175 |
| 193 | 300 | 315 | 500 | 45 | 100 | 150 | 15 | 200 | 55 | 105 |
| 194 | 290 | 320 | 340 | 30 | 30 | 70 | 30 | 50 | 0 | 40 |
| 195 | 260 | 275 | 300 | 15 | 15 | 50 | 15 | 40 | 0 | 35 |
| 196 | 750 | 800 | 1,200 | 30 | 35 | 55 | 50 | 450 | 5 | 25 |
| 197 | 530 | 550 | 900 | 50 | 58 | 90 | 20 | 370 | 8 | 40 |
| 198 | 990 | 1,000 | 1,450 | 90 | 100 | 150 | 10 | 460 | 10 | 60 |
| 199 | 905 | 910 | 1,200 | 12 | 15 | 15 | 5 | 295 | 3 | 3 |
| 200 | 90 | 95 | 290 | 27 | 27 | 50 | 5 | 200 | 0 | 23 |
| 201 | 305 | 310 | 400 | 21 | 21 | 45 | 5 | 95 | 0 | 24 |
| 202 | 260 | 265 | 365 | 60 | 65 | 80 | 5 | 105 | 5 | 20 |

Appendix A Population and Employment by TAZ

| TAZ | Pop 2020 | Pop 2030 | Pop 2040 | Emp 2020 | Emp 2030 | Emp 2040 | Pop Change 2020-2030 | Pop Change 2020-2040 | Emp Change 2020 - 2030 | Emp Change 2020 - 2040 |
|-----|----------|----------|----------|----------|----------|----------|-------------------------|-------------------------|---------------------------|---------------------------|
| 203 | 80 | 80 | 80 | 6 | 6 | 6 | 0 | 0 | 0 | 0 |
| 204 | 30 | 40 | 50 | 2 | 5 | 15 | 10 | 20 | 3 | 13 |
| 205 | 24 | 30 | 90 | 6 | 6 | 10 | 6 | 66 | 0 | 4 |
| 211 | 0 | 0 | 400 | 0 | 0 | 50 | 0 | 400 | 0 | 50 |
| 213 | 60 | 75 | 200 | 2 | 5 | 40 | 15 | 140 | 3 | 38 |
| 216 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 225 | 30 | 240 | 240 | 4 | 4 | 40 | 210 | 210 | 0 | 36 |
| 226 | 60 | 450 | 700 | 2 | 2 | 50 | 390 | 640 | 0 | 48 |
| 227 | 0 | 0 | 30 | 0 | 0 | 5 | 0 | 30 | 0 | 5 |
| 230 | 0 | 0 | 0 | 100 | 100 | 100 | 0 | 0 | 0 | 0 |
| 234 | 30 | 40 | 500 | 3 | 5 | 50 | 10 | 470 | 2 | 47 |
| 235 | 0 | 1,500 | 1,600 | 0 | 50 | 100 | 1,500 | 1,600 | 50 | 100 |
| 236 | 30 | 150 | 150 | 1 | 10 | 10 | 120 | 120 | 9 | 9 |
| 238 | 0 | 100 | 200 | 0 | 5 | 30 | 100 | 200 | 5 | 30 |
| 239 | 120 | 1,500 | 1,700 | 5 | 10 | 30 | 1,380 | 1,580 | 5 | 25 |
| 240 | 100 | 115 | 240 | 20 | 75 | 80 | 15 | 140 | 55 | 60 |
| 243 | 30 | 260 | 600 | 0 | 80 | 120 | 230 | 570 | 80 | 120 |
| 247 | 12 | 12 | 2,000 | 0 | 100 | 300 | 0 | 1,988 | 100 | 300 |
| 248 | 593 | 1,400 | 1,650 | 5 | 5 | 10 | 807 | 1,057 | 0 | 5 |
| 249 | 30 | 40 | 250 | 0 | 0 | 20 | 10 | 220 | 0 | 20 |
| 250 | 40 | 400 | 450 | 10 | 150 | 175 | 360 | 410 | 140 | 165 |
| 259 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 260 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 261 | 0 | 0 | 0 | 100 | 100 | 100 | 0 | 0 | 0 | 0 |
| 262 | 0 | 256 | 375 | 100 | 271 | 435 | 256 | 375 | 171 | 335 |
| 266 | 0 | 0 | 120 | 0 | 0 | 0 | 0 | 120 | 0 | 0 |
| 268 | 80 | 85 | 150 | 120 | 120 | 150 | 5 | 70 | 0 | 30 |
| 269 | 18 | 20 | 60 | 0 | 0 | 2 | 2 | 42 | 0 | 2 |
| 271 | 45 | 50 | 250 | 1 | 1 | 50 | 5 | 205 | 0 | 49 |
| 284 | 0 | 0 | 0 | 10 | 12 | 20 | 0 | 0 | 2 | 10 |
| 286 | 20 | 25 | 120 | 0 | 0 | 15 | 5 | 100 | 0 | 15 |
| 295 | 75 | 80 | 160 | 0 | 0 | 20 | 5 | 85 | 0 | 20 |
| 296 | 200 | 400 | 800 | 25 | 70 | 100 | 200 | 600 | 45 | 75 |
| 298 | 100 | 130 | 430 | 2 | 5 | 10 | 30 | 330 | 3 | 8 |
| 299 | 200 | 250 | 550 | 2 | 2 | 10 | 50 | 350 | 0 | 8 |
| 300 | 80 | 100 | 200 | 120 | 122 | 145 | 20 | 120 | 2 | 25 |
| 301 | 120 | 150 | 300 | 2 | 5 | 15 | 30 | 180 | 3 | 13 |
| 302 | 100 | 110 | 430 | 2 | 2 | 5 | 10 | 330 | 0 | 3 |
| 303 | 250 | 260 | 320 | 2 | 3 | 10 | 10 | 70 | 1 | 8 |
| 304 | 500 | 550 | 850 | 160 | 220 | 275 | 50 | 350 | 60 | 115 |
| 305 | 300 | 330 | 630 | 20 | 25 | 30 | 30 | 330 | 5 | 10 |
| 306 | 250 | 275 | 350 | 2 | 4 | 10 | 25 | 100 | 2 | 8 |
| 307 | 700 | 800 | 1,100 | 50 | 55 | 70 | 100 | 400 | 5 | 20 |
| 308 | 0 | 0 | 100 | 65 | 100 | 110 | 0 | 100 | 35 | 45 |

Appendix A Population and Employment by TAZ

| TAZ | Pop 2020 | Pop 2030 | Pop 2040 | Emp 2020 | Emp 2030 | Emp 2040 | Pop Change 2020-2030 | Pop Change 2020-2040 | Emp Change 2020 - 2030 | Emp Change 2020 - 2040 |
|-------|----------|----------|----------|----------|----------|----------|-------------------------|-------------------------|---------------------------|---------------------------|
| 311 | 24 | 30 | 30 | 0 | 0 | 15 | 6 | 6 | 0 | 15 |
| 318 | 400 | 410 | 850 | 50 | 55 | 95 | 10 | 450 | 5 | 45 |
| 319 | 33 | 35 | 120 | 0 | 0 | 0 | 2 | 87 | 0 | 0 |
| 323 | 180 | 190 | 300 | 20 | 25 | 30 | 10 | 120 | 5 | 10 |
| 324 | 300 | 400 | 600 | 30 | 35 | 100 | 100 | 300 | 5 | 70 |
| 327 | 30 | 35 | 50 | 0 | 0 | 10 | 5 | 20 | 0 | 10 |
| 328 | 20 | 25 | 100 | 0 | 0 | 5 | 5 | 80 | 0 | 5 |
| 339 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 342 | 150 | 200 | 330 | 0 | 0 | 5 | 50 | 180 | 0 | 5 |
| 343 | 40 | 45 | 45 | 0 | 0 | 0 | 5 | 5 | 0 | 0 |
| 369 | 0 | 0 | 20 | 0 | 0 | 10 | 0 | 20 | 0 | 10 |
| 370 | 12 | 12 | 65 | 0 | 0 | 15 | 0 | 53 | 0 | 15 |
| 384 | 140 | 170 | 200 | 20 | 25 | 45 | 30 | 60 | 5 | 25 |
| 385 | 200 | 220 | 230 | 170 | 250 | 270 | 20 | 30 | 80 | 100 |
| 391 | 0 | 0 | 0 | 38 | 40 | 45 | 0 | 0 | 2 | 7 |
| 392 | 425 | 450 | 550 | 75 | 80 | 90 | 25 | 125 | 5 | 15 |
| 393 | 31 | 31 | 70 | 60 | 75 | 90 | 0 | 39 | 15 | 30 |
| 394 | 35 | 40 | 75 | 155 | 285 | 390 | 5 | 40 | 130 | 235 |
| 395 | 350 | 360 | 440 | 100 | 110 | 145 | 10 | 90 | 10 | 45 |
| 396 | 45 | 45 | 75 | 160 | 170 | 180 | 0 | 30 | 10 | 20 |
| 397 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 398 | 0 | 0 | 50 | 0 | 0 | 10 | 0 | 50 | 0 | 10 |
| 399 | 20 | 20 | 100 | 2 | 2 | 15 | 0 | 80 | 0 | 13 |
| 401 | 455 | 460 | 800 | 19 | 19 | 40 | 5 | 345 | 0 | 21 |
| 403 | 300 | 300 | 910 | 120 | 120 | 210 | 0 | 610 | 0 | 90 |
| 408 | 90 | 90 | 195 | 10 | 10 | 50 | 0 | 105 | 0 | 40 |
| 411 | 0 | 1,900 | 2,000 | 130 | 235 | 250 | 1,900 | 2,000 | 105 | 120 |
| 413 | 30 | 100 | 300 | 30 | 175 | 330 | 70 | 270 | 145 | 300 |
| 415 | 430 | 700 | 700 | 10 | 12 | 30 | 270 | 270 | 2 | 20 |
| 416 | 1,200 | 1,600 | 1,750 | 70 | 160 | 200 | 400 | 550 | 90 | 130 |
| 417 | 300 | 1,200 | 1,200 | 55 | 100 | 75 | 900 | 900 | 45 | 20 |
| 418 | 500 | 1,050 | 1,100 | 100 | 200 | 355 | 550 | 600 | 100 | 255 |
| 419 | 0 | 0 | 130 | 0 | 0 | 22 | 0 | 130 | 0 | 22 |
| 429 | 805 | 1,000 | 1,350 | 115 | 115 | 200 | 195 | 545 | 0 | 85 |
| 432 | 50 | 50 | 210 | 10 | 12 | 70 | 0 | 160 | 2 | 60 |
| Total | 159,497 | 188,433 | 226,443 | 71,669 | 82,132 | 98,329 | 28,936 | 66,946 | 10,463 | 26,660 |



Appendix B

Water and Wastewater Capital Improvements

Plans



Created By Freese and Nichols, Inc. Job No: WAC19122 Location: H'W WW_PLANNINGI01_DELIVERABLES\03_LUA_CIP\(Figure_4-3)-Water_System_CIP.mxd Updated: Wednesday, February 5, 2020 10:51:59 AM User Name: 02818





Job No: WAC19122 Location: H:W_WW_PLANNING\01_DELIVERABLES\03_LUA_CIP\(Figure_4-4)-Wastewater_System_CIP.mxd Updated: Wednesday, February 5, 2020 10:51:06 AM User Name: 02818



Appendix C

Roadway Existing Conditions Analysis



Waco Roadway Capital Recovery Fee Study Existing Capital Improvements Analysis

| Serv S Area S | Shared vc Area | Roadway | From | То | Length (mi) | No. of Lanes | Type | PM Peak Hr Capacity/Lane | Pct. in Serv. Area | VMT Supply Pk Hr Total | VMT Demand Pk Hr Total | Excess VMT Capacity | Exist. VMT Deficiencv |
|------------------|-------------------|---------------------|--|---------------------------------|----------------|-----------------|----------|-----------------------------|-----------------------|---------------------------|---------------------------|------------------------|--------------------------|
| 1 | 2 | Lake Shore Dr | Hillgroot Dr. | Bark Jako Dr | 1.05 | E | 5 A | copucity conc | E0%/ | 1 207 | ECA | 922 | 0 |
| 1 | 2 | Lake Shore Dr | Park Lake Dr | Macarthur Dr | 0.40 | 5 | SA | 665 | 50% | 536 | 254 | 283 | 0 |
| 1 | 2 | Lake Shore Dr | Macarthur Dr | 550' SE of Airport Rd | 0.56 | 5 | SA | 665 | 50% | 741 | 390 | 351 | 0 |
| 1 | 6 | Lake Shore Dr | 550' SE of Airport Rd | Airport Rd | 0.10 | 5 | SA | 665 | 50% | 139 | 74 | 65 | 0 |
| 1 | 6 | Lake Shore Dr | Airport Rd | N 19th St | 0.60 | 5 | SA | 665 | 50% | 803 | 435 | 368 | 0 |
| 1 | 6 | Lake Shore Dr | N 19th St | College Dr | 0.65 | 4 | DA | 665 | 50% | 871 | 314 | 557 | 0 |
| 1 | 6 | Lake Shore Dr | College Dr | Bosque River | 0.27 | 4 | DA | 665 | 50% | 360 | 127 | 233 | 0 |
| 1 | | Park Lake Dr | MacArthur Dr | 25th St | 0.22 | 2 | SA SA | 590 | 100% | 203 | 45 | 627 | 0 |
| 1 | | Park Lake Dr | 25th St | 19th St | 0.46 | 3 | SA | 665 | 100% | 609 | 92 | 518 | 0 |
| 1 | 2 | Hillcrest Dr | Lake Shore Dr | Lake Air Dr | 0.31 | 2 | UA | 590 | 50% | 182 | 123 | 59 | 0 |
| 1 | 2 | Hillcrest Dr | Lake Air Dr | Glendale Dr | 0.53 | 2 | UA | 590 | 50% | 310 | 210 | 100 | 0 |
| 1 | | Hillcrest Dr | Glendale Dr | 41st St | 0.06 | 2 | UA | 590 | 100% | 68 | 46 | 22 | 0 |
| 1 | | Hillcrest Dr | 41st St | Landon Branch Rd | 0.34 | 4 | UA | 590 | 100% | 791 | 268 | 523 | 0 |
| 1 | | Hillcrest Dr | Landon Branch Rd | MacArthur Dr | 0.20 | 5 | SA | 665 | 100% | 525 | 158 | 367 | 0 |
| 1 | | Hillcrest Dr | MacArthur Dr | 31st St | 0.21 | 5 | SA | 665 | 100% | 568 | 1/1 | 397 | 0 |
| 1 | | Lyle/Herring | 25th St | 25th 5t | 0.47 | 4 | DA | 665 | 100% | 1,249 | 370 | 1 015 | 0 |
| 1 | | Lyle/Herring | 18th St | 12th St | 0.42 | 4 | DA | 665 | 100% | 1.107 | 375 | 733 | 0 |
| 1 | | Herring | 12th St | 4th St | 0.41 | 5 | SA | 665 | 100% | 1,086 | 368 | 719 | 0 |
| 1 | | Herring | 4th St | Brazos River | 0.31 | 4 | DA | 665 | 100% | 813 | 275 | 538 | 0 |
| 1 | 6 | Herring | Brazos River | N Martin Luther King Jr. Blvc | 0.13 | 4 | DA | 665 | 50% | 178 | 60 | 118 | 0 |
| 1 | 6 | Herring | N Martin Luther King Jr. Blvd | J J Flewellen Rd | 0.72 | 4 | DA | 665 | 50% | 961 | 325 | 636 | 0 |
| 1 | 6 | Herring | J J Flewellen Rd | 1035' SW of Gholson Rd | 0.49 | 4 | DA | 665 | 50% | 649 | 219 | 429 | 0 |
| 1 | 6 | Herring | 1035' SW of Gholson Rd | Gholson Rd | 0.20 | 5 | SA | 665 | 50% | 261 | 88 | 173 | 0 |
| 1 | | Colcord Ave | 18th St | 4th St | 0.99 | 2 | UA | 590 | 100% | 1,169 | 198 | 9/1 | 0 |
| 1 | | Bosque Blvd | 20th St | 39th St | 0.21 | 5 | SA SA | 665 | 100% | 1 206 | 510 | 249 | 0 |
| 1 | | Bosque Blvd | 34th St | 31st St | 0.45 | 5 | SA | 665 | 100% | 703 | 389 | 313 | 0 |
| 1 | | Bosque/Homan | 31st St | 25th St | 0.45 | 4 | DA | 665 | 100% | 1.185 | 657 | 529 | 0 |
| 1 | | Bosque/Homan | 25th St | 17th St | 0.63 | 4 | DA | 665 | 100% | 1,680 | 931 | 749 | 0 |
| 1 | | Waco Dr | Valley Mills Dr | Austin Ave | 0.12 | 4 | DA | 665 | 100% | 316 | 266 | 50 | 0 |
| 1 | | Waco Dr | Austin Ave | 38th St | 0.28 | 4 | DA | 665 | 100% | 735 | 618 | 117 | 0 |
| 1 | | Waco Dr | 38th St | 25th St | 1.03 | 4 | DA | 665 | 100% | 2,740 | 2,297 | 443 | 0 |
| 1 | | Waco Dr | 25th St | 17th St | 0.65 | 4 | DA | 665 | 100% | 1,738 | 1,457 | 281 | 0 |
| 1 | | Waco Dr | 17th St | 11th St | 0.49 | 4 | DA | 665 | 100% | 1,291 | 1,082 | 209 | 0 |
| 1 | | Waco Dr | 11th St | 4th St | 0.54 | 4 | DA | 665 | 100% | 1,430 | 1,289 | 141 | 0 |
| 1 | | Waco Dr | 4tri St Martin Luther King Ir. Blvd | Dallas St | 0.35 | 4 | DA | 665 | 100% | 745 | 708 | 112 | 0 |
| 1 | | Waco Dr | Dallas St | Garrison St | 0.28 | | DA | 665 | 100% | 1 963 | 1 142 | 820 | 0 |
| 1 | | Waco Dr | Garrison St | Clifton St | 0.43 | 6 | DA | 665 | 100% | 1,505 | 989 | 711 | 0 |
| 1 | | Waco Dr | Clifton St | BUS 77 | 0.35 | 6 | DA | 665 | 100% | 1,384 | 524 | 859 | 0 |
| 1 | | Waco Dr | BUS 77 | 1-35 | 0.36 | 6 | DA | 665 | 100% | 1,456 | 552 | 904 | 0 |
| 1 | | Washington Ave | 26th St | 18th St | 0.63 | 3 | SA | 665 | 100% | 840 | 126 | 714 | 0 |
| 1 | | Franklin Ave | Valley Mills Dr | 26th St | 1.07 | 5 | SA | 665 | 100% | 2,846 | 1,764 | 1,082 | 0 |
| 1 | | Franklin Ave | 26th St | 18th St | 0.63 | 5 | SA | 665 | 100% | 1,663 | 1,031 | 632 | 0 |
| 1 | | Franklin/Washington | 18th St | 17th St | 0.08 | 6 | DA | 665 | 100% | 321 | 133 | 188 | 0 |
| 1 | | Franklin/Washington | 1/th St | 12th St | 0.39 | 6 | UA | 590 | 100% | 1,393 | 649 | /44 | 0 |
| 1 | | Washington Ave | 12th St | 401 St University Parks Dr | 0.01 | 3 | SA | 590 | 100% | 2,154 | 1,003 | 1,151 | 0 |
| 1 | | Washington Ave | University Parks Dr | MIK Ir Blyd | 0.18 | 2 | UA | 590 | 100% | 216 | 183 | 33 | 0 |
| 1 | | Washington Ave | MLK Jr Blvd | Garrison St | 0.73 | 2 | UA | 590 | 100% | 864 | 732 | 132 | 0 |
| 1 | | Washington Ave | Garrison St | I-35 SBFR | 0.38 | 3 | SA | 665 | 100% | 509 | 383 | 126 | 0 |
| 1 | | Franklin Ave | 4th St | University Parks Dr | 0.24 | 3 | SA | 665 | 100% | 317 | 394 | 0 | 76 |
| 1 | | Franklin Ave | University Parks Dr | MLK Jr Blvd | 0.22 | 3 | SA | 665 | 100% | 297 | 368 | 0 | 71 |
| 1 | | Orchard Ln | MLK Jr Blvd | Garrison St | 0.30 | 2 | UA | 590 | 100% | 357 | 151 | 206 | 0 |
| 1 | | Orchard Ln | Garrison St | BUS 77 | 0.40 | 2 | UA | 590 | 100% | 471 | 120 | 351 | 0 |
| 1 | × | Dutton Ave | valley Mills Dr | 29th St | 0.39 | 4 | UA | 590 | 100% | 450 | 193 | 263 | 0 |
| 1 | | Dutton Ave | 26th St | 17th St | 0.25 | 4 | UA | 590 | 100% | 1.547 | 655 | 891 | 0 |
| 1 | | Dutton Ave | 17th St | Waco Creek | 0.35 | 2 | UA | 590 | 100% | 416 | 352 | 63 | 0 |
| 1 | | Dutton Ave | Waco Creek | 11th St | 0.12 | 2 | UA | 590 | 100% | 139 | 118 | 21 | 0 |
| 1 | | Speight Ave | Valley Mills Dr | 26th St | 0.37 | 2 | UA | 590 | 100% | 439 | 372 | 67 | 0 |
| 1 | | Speight Ave | 26th St | 18th St | 0.57 | 2 | UA | 590 | 100% | 676 | 573 | 103 | 0 |
| 1 | 2 | Valley Mills | N New Rd | Waco Dr | 0.21 | 6 | DA | 665 | 50% | 412 | 169 | 242 | 0 |
| 1 | 9 | Valley Mills | Waco Dr | Railroad | 0.78 | 6 | DA | 665 | 50% | 1,560 | 696 | 864 | 0 |
| 1 | 3 | Valley Mills | Bagby Ave | JH Kultgen Expy | 0.23 | 8 | DA | 665 | 50% | 622 | 166 | 456 | 0 |
| 1 | 3 | La Salle | 10th St | 12(1) St University Parks Dr | 0.40 | 6 | DA | 665 | 50% | 924 2 214 | 362 | 1 307 | 0 |
| 1 | | N 41st St | Hillcrest Dr | Glendale Dr | 0.21 | 4 | UA | 590 | 100% | 493 | 308 | 185 | 0 |
| 1 | 2 | N 41st St | Glendale Dr | Cobbs Dr | 0.13 | 4 | UA | 590 | 50% | 154 | 106 | 48 | 0 |
| 1 | 2 | N New Rd | Cobbs Dr | Bosque Blvd | 0.75 | 5 | SA | 665 | 50% | 991 | 606 | 384 | 0 |
| 1 | 2 | N New Rd | Bosque Blvd | Watt Ave | 0.70 | 5 | SA | 665 | 50% | 925 | 566 | 359 | 0 |
| 1 | 2 | N New Rd | Watt Ave | N Valley Mills Dr | 0.13 | 4 | DA | 665 | 50% | 167 | 102 | 65 | 0 |
| 1 | | MacArthur Dr | Lake Shore Dr | Park Lake Dr | 0.30 | 2 | UA | 590 | 100% | 351 | 298 | 54 | 0 |
| 1 | | MacArthur Dr | Park Lake Dr | McFerrin Ave | 0.58 | 4 | UA | 590 | 100% | 1,361 | 577 | 784 | 0 |
| 1 | | WacArthur Dr | Nicherrin Ave | Hillcrest Dr | 0.63 | 4 | UA | 590 | 100% | 1,475 | 625 | 850 | 0 |
| 1 | | 34th St | minutest Dr Manle Δve | Rosque Rlud | 0.44 | 2 | | 590 | 100% | 514 677 | 220 | 340 | 0 |
| 1 | | 34th St | Bosque Blvd | Morrow Ave | 0.57 | 2 | | 590 | 100% | 616 | 229 | 447 | 0 |
| 1 | | 36th St | Morrow Ave | Waco Dr | 0.32 | 2 | UA | 590 | 100% | 331 | 112 | 219 | 0 |
| 1 | | 25th St | Park Lake Dr | McFerrin Ave | 0.58 | 2 | UA | 590 | 100% | 686 | 233 | 453 | 0 |
| 1 | | 25th St | McFerrin Ave | Herring Ave | 0.54 | 2 | UA | 590 | 100% | 643 | 218 | 425 | 0 |
| 1 | | 25th St | Herring Ave | Maple Ave | 0.47 | 4 | UA | 590 | 100% | 1,117 | 473 | 644 | 0 |
| 1 | | 25th/26th | Maple Ave | Bosque Blvd | 0.57 | 6 | DA | 665 | 100% | 2,290 | 574 | 1,716 | 0 |
| 1 | | 25th/26th | Bosque Blvd | Waco Dr | 0.64 | 6 | DA | 665 | 100% | 2,560 | 642 | 1,919 | 0 |
| 1 | | 25th/26th | waco Dr | Franklin Ave | 0.32 | 6 | DA | 665 | 100% | 1,286 | 322 | 964 | 0 |



| Waco Roadway Capital Recovery Fee Study | |
|---|--|
| Existing Capital Improvements Analysis | |

| Serv Area | Shared Svc Area | Roadway | From | То | Length (mi) | No. of Lanes | Туре | PM Peak Hr Capacity/Lane | Pct. in Serv. Area | VMT Supply Pk Hr Total | VMT Demand Pk Hr Total | Excess VMT Capacity | Exist. VMT Deficiency |
|--------------|--------------------|-----------------------------|-------------------------|---------------------------|----------------|-----------------|------|-----------------------------|-----------------------|---------------------------|---------------------------|------------------------|--------------------------|
| 1 | | 26th St | Franklin Ave | Clay Ave | 0.33 | 4 | 114 | 590 | 100% | 780 | 330 | 449 | 0 |
| 1 | | 26th St | Clay Ave | Dutton Ave | 0.36 | 4 | UA | 590 | 100% | 849 | 360 | 489 | 0 |
| 1 | | 26th St | Dutton Ave | Speight Ave | 0.35 | 4 | UA | 590 | 100% | 824 | 349 | 475 | 0 |
| 1 | | 26th St | Speight Ave | Bagby Ave | 0.18 | 4 | UA | 590 | 100% | 430 | 182 | 248 | 0 |
| 1 | | N 19th St | Lake Shore Dr | College Dr | 0.55 | 5 | SA | 665 | 100% | 1,472 | 611 | 861 | 0 |
| 1 | | N 19th St | College Dr | Park Lake Dr | 0.59 | 5 | SA | 665 | 100% | 1,557 | 646 | 911 | 0 |
| 1 | | N 19th St | Park Lake Dr | 215' SE of Vivian Ave | 0.25 | 5 | SA | 665 | 100% | 672 | 279 | 393 | 0 |
| 1 | | N 19th St | 215' SE of Vivian Ave | Wilson Ave | 0.20 | 4 | UA | 590 | 100% | 470 | 220 | 250 | 0 |
| 1 | | N 18th St | Wilson Ave | Herring Ave | 0.70 | 4 | UA | 590 | 100% | 1,647 | 771 | 877 | 0 |
| 1 | | N 18th St | Herring Ave | Pine Ave | 0.16 | 4 | UA | 590 | 100% | 366 | 171 | 195 | 0 |
| 1 | | N 18th St | Pine Ave | Maple Ave | 0.32 | 3 | SA | 665 | 100% | 419 | 348 | 83 | 12 |
| 1 | | N 18th St | Maple Ave | Colcord Ave | 0.33 | 3 | SA | 665 | 100% | 440 | 365 | 87 | 12 |
| 1 | | N 18th St | Colcord Ave | Homan Ave | 0.18 | 3 | SA | 665 | 100% | 242 | 201 | 48 | / |
| 1 | | 18th/17th | Homan Ave | Waco Dr Wachington Avo | 0.51 | | DA | 665 | 100% | 2,035 | 202 | 1,4/3 | 0 |
| 1 | | 18th/17th | Washington Ave | Franklin Ave | 0.20 | 8 | DA | 665 | 100% | 1,007 | 323 | 505 | 0 |
| 1 | | 18th/17th | Franklin Ave | Clay Ave | 0.10 | 8 | DA | 665 | 100% | 1 711 | 522 | 1 189 | 0 |
| 1 | | 18th/17th | Clay Ave | Dutton Ave | 0.37 | 8 | DA | 665 | 100% | 1,957 | 470 | 1,487 | 0 |
| 1 | | 18th/17th | Dutton Ave | 1-35 | 0.37 | 8 | DA | 665 | 100% | 1,977 | 475 | 1,502 | 0 |
| 1 | | 18th/17th | 1-35 | Griffin Ave | 0.39 | 6 | DA | 665 | 100% | 1,551 | 288 | 1,264 | 0 |
| 1 | | 18th St | Griffin Ave | La Salle Ave | 0.07 | 6 | DA | 665 | 100% | 272 | 50 | 222 | 0 |
| 1 | | 12th St | Waco Dr | Washington Ave | 0.31 | 2 | UA | 590 | 100% | 368 | 125 | 243 | 0 |
| 1 | | 11th St | Waco Dr | Washington Ave | 0.31 | 2 | UA | 590 | 100% | 369 | 125 | 244 | 0 |
| 1 | | 11th St | Washington Ave | Franklin Ave | 0.16 | 2 | UA | 590 | 100% | 192 | 65 | 127 | 0 |
| 1 | | 11th St | Franklin Ave | Clay Ave | 0.32 | 2 | UA | 590 | 100% | 381 | 129 | 252 | 0 |
| 1 | | 11th St | Clay Ave | Dutton Ave | 0.37 | 2 | UA | 590 | 100% | 434 | 147 | 287 | 0 |
| 1 | | 11th St | Dutton Ave | Baylor Ave | 0.23 | 4 | DA | 665 | 100% | 625 | 94 | 531 | 0 |
| 1 | | 11th St | Baylor Ave | Bagby Ave | 0.28 | 2 | UA | 590 | 100% | 335 | 113 | 221 | 0 |
| 1 | | 11th St | Bagby Ave | La Salle Ave | 0.32 | 2 | UA | 590 | 100% | 379 | 129 | 251 | 0 |
| 1 | | 5th/4th St | Herring Ave | Colcord Ave | 0.68 | 4 | DA | 665 | 100% | 1,807 | 679 | 1,128 | 0 |
| 1 | | 5th/4th St | Colcord Ave | Waco Dr | 0.36 | 4 | DA | 665 | 100% | 951 | 357 | 593 | 0 |
| 1 | | 5th/4th St | Waco Dr | Washington Ave | 0.38 | 5 | SA | 665 | 100% | 1,006 | 378 | 628 | 0 |
| 1 | | 5th/4th St | Washington Ave | Franklin Ave | 0.16 | 5 | SA | 665 | 100% | 428 | 161 | 267 | 0 |
| 1 | | 5th/4th St | Franklin Ave | I-35 | 0.61 | 5 | SA | 665 | 100% | 1,612 | 606 | 1,006 | 0 |
| 1 | | 5th/4th St | I-35 | Dutton Ave | 0.08 | 4 | DA | 665 | 100% | 214 | 80 | 134 | 0 |
| 1 | | Dutton Ave | 4th St | University Parks Dr | 0.24 | 4 | DA | 665 | 100% | 642 | 241 | 401 | 0 |
| 1 | | University Parks Dr | Washington Ave | Franklin Ave | 0.17 | 4 | DA | 665 | 100% | 441 | 166 | 275 | 0 |
| 1 | | University Parks Dr | Franklin Ave | Jackson Ave | 0.24 | 5 | SA | 665 | 100% | 635 | 239 | 396 | 0 |
| 1 | | University Parks Dr | Jackson Ave | 1-35 | 0.27 | 6 | DA | 665 | 100% | 1,059 | 266 | 794 | 0 |
| 1 | | University Parks Dr | 1-35 | Dutton Ave | 0.16 | 6 | DA | 665 | 100% | 657 | 208 | 449 | 0 |
| 1 | | University Parks Dr | Dutton Ave | Bagby Ave | 0.59 | 6 | DA | 665 | 100% | 2,355 | 817 | 1,538 | 0 |
| 1 | | University Parks Dr | Bagby Ave | La Salle | 0.33 | 6 | DA | 665 | 100% | 1,322 | 459 | 864 | 0 |
| 1 | | Martin Luther King Jr. Blvd | Herring Ave | Faulkner Ln | 0.39 | 4 | DA | 665 | 100% | 1,045 | 409 | 636 | 0 |
| 1 | | Martin Luther King Jr. Blvd | Faulkner Ln | Waco Dr | 0.64 | 4 | DA | 665 | 100% | 1,706 | 668 | 1,038 | 0 |
| 1 | | Martin Luther King Jr. Blvd | Waco Dr | EIIII AVE | 0.45 | 4 | DA | 005 | 100% | 1,152 | 451 | 701 | 0 |
| 1 | | Martin Luther King Jr. Blvd | EIM AVe | Franklin Ave | 0.15 | 4 | DA | 665 | 100% | 396 | 155 | 241 | 0 |
| 1 | | Martin Luther King Jr. Blvd | FIGHKIIII AVE | I-30 Orchard I n | 0.45 | 0 | DA | 665 | 100% | 1,720 | 451 | 1,2/5 | 0 |
| 1 | | Martin Luther King Jr. Blvd | Orchard In | F 7th St | 0.15 | - | SA | 665 | 100% | 970 | 163 | 238 | 0 |
| 1 | | Martin Luther King Jr. Blvd | | DIIC 77 | 0.30 | 4 | DA | 665 | 100% | 1 1 9 1 | 103 | 000 | 0 |
| 1 | 6 | Gholson Rd | Herring Ave | 960'S of Herring Ave | 0.18 | 2 | | 590 | 50% | 1,101 | 51 | 56 | 0 |
| 1 | Ŭ | Gholson Rd | 960' S of Herring Ave | Faulkner In | 0.10 | 2 | | 590 | 100% | 395 | 190 | 206 | 0 |
| 1 | | Clifton St | Faulknerin | Waco Dr | 0.12 | 2 | UA | 590 | 100% | 144 | 69 | 75 | 0 |
| 1 | | BUS 77 | 700' NE of Saley Ave | Waco Dr | 0.46 | 6 | DA | 665 | 100% | 1.830 | 435 | 1.395 | 0 |
| | | | | | | | | | | , | | , | |
| Sub-Tot | al Servio | ce Area 1 | | | 4.10 | | | | | 11,045 | 3,394 | 7,651 | 0 |
| 2 | 1 | Hillcrest Dr | Lake Shore Dr | Lake Air Dr | 0.31 | 2 | ĮΙΔ | 590 | 50% | 182 | 123 | 59 | 0 |
| 2 | 1 | Hillcrest Dr | Lake Air Dr | Glendale Dr | 0.51 | 2 | (IΔ | 590 | 50% | 310 | 210 | 100 | 0 |
| 2 | - | Cobbs Dr | Bosque Blvd | Fish Pond Rd | 0.15 | 4 | UA | 590 | 100% | 358 | 152 | 206 | 0 |
| 2 | | Cobbs Dr | Fish Pond Rd | N Valley Mills Dr | 0.20 | 4 | [1Δ | 590 | 100% | 484 | 205 | 279 | 0 |
| 2 | | Cobbs Dr | N Valley Mills Dr | Wooded Acres Dr | 0.58 | 5 | SA | 665 | 100% | 1 549 | 582 | 966 | 0 |
| 2 | | Cobbs Dr | Wooded Acres Dr | lake Air Dr | 0.46 | 5 | SA | 665 | 100% | 1,222 | 459 | 762 | 0 |
| 2 | | Cobbs Dr | Lake Air Dr | 41st St | 0.51 | 5 | SA | 665 | 100% | 1,348 | 507 | 841 | 0 |
| 2 | | Bosque Blvd | 325' NF of Southwood Dr | SH 6 | 0.21 | 5 | SA | 665 | 100% | 561 | 291 | 270 | 0 |
| 2 | | Bosque Blvd | SH 6 | Ridge Oak Pkwy | 0.19 | 4 | UA | 590 | 100% | 458 | 268 | 190 | 0 |
| 2 | | Bosque Blvd | Ridge Oak Pkwy | Rambler Dr | 0.30 | 5 | SA | 665 | 100% | 793 | 412 | 382 | 0 |
| 2 | | Bosque Blvd | Rambler Dr | Cobb Dr | 0.29 | 4 | UA | 590 | 100% | 676 | 395 | 281 | 0 |
| 2 | | Bosque Blvd | Cobb Dr | N Valley Mills Dr | 0.52 | 4 | UA | 590 | 100% | 1,232 | 497 | 735 | 0 |
| 2 | | Bosque Blvd | N Valley Mills Dr | Lake Air Dr | 0.55 | 7 | SA | 665 | 100% | 2,175 | 803 | 1,371 | 0 |
| 2 | | Bosque Blvd | Lake Air Dr | N New Rd | 0.52 | 7 | SA | 665 | 100% | 2,070 | 765 | 1,305 | 0 |
| 2 | | Sanger Ave | 200' NE or Cranbrook Dr | Londonberry Rd | 0.14 | 2 | UA | 590 | 100% | 160 | 54 | 106 | 0 |
| 2 | | Sanger Ave | Londonberry Rd | SH 6 | 0.19 | 4 | UA | 590 | 100% | 440 | 186 | 253 | 0 |
| 2 | | Sanger Ave | SH 6 | Melrose Dr | 0.24 | 4 | UA | 590 | 100% | 570 | 241 | 328 | 0 |
| 2 | | Sanger Ave | Melrose Dr | Richland Dr | 0.65 | 4 | UA | 590 | 100% | 1,527 | 647 | 880 | 0 |
| 2 | | Sanger Ave | Richland Dr | Lake Air Dr | 0.18 | 4 | UA | 590 | 100% | 431 | 183 | 248 | 0 |
| 2 | | Sanger Ave | Lake Air Dr | N Valley Mills Dr | 0.58 | 4 | UA | 590 | 100% | 1,370 | 581 | 790 | 0 |
| 2 | | Londonberry Dr | New Sanger Rd | McGregor Rd | 0.50 | 5 | SA | 665 | 100% | 1,322 | 497 | 825 | 0 |
| 2 | 1 | Lake Shore Dr | 550' SE of Airport Rd | Macarthur Dr | 0.56 | 5 | SA | 665 | 50% | 741 | 390 | 351 | 0 |
| 2 | 1 | Lake Shore Dr | Macarthur Dr | Park Lake Dr | 0.40 | 5 | SA | 665 | 50% | 536 | 254 | 283 | 0 |
| 2 | 1 | Lake Shore Dr | Park Lake Dr | Hillcrest Dr | 1.05 | 5 | SA | 665 | 50% | 1,397 | 564 | 833 | 0 |
| 2 | | Lake Shore Dr | Hillcrest Dr | Wooded Acres Dr | 0.84 | 5 | SA | 665 | 100% | 2,246 | 778 | 1,469 | 0 |



Waco Roadway Capital Recovery Fee Study Existing Capital Improvements Analysis

| Serv | Shared | | | Existing cupitant | Length | No. of | 7 undir y | PM Peak Hr | Pct. in | VMT Supply | VMT Demand | Excess | Exist. VMT |
|---------|----------|-------------------------------|-------------------------------|----------------------------------|--------|--------|-----------|---------------|------------|-------------|-------------|--------------|------------|
| Area | Svc Area | Roadway | From | | (mi) | Lanes | Туре | Capacity/Lane | Serv. Area | Pk Hr Total | Pk Hr Total | VMT Capacity | Deficiency |
| 2 | | Jaka Chara Dr | Mandad Assos Dr | Mt Cormol Dr | 0.10 | - | 64 | CCF | 100% | 470 | 105 | 212 | 0 |
| 2 | | Lake Shore Dr | Wooded Acres Dr | Wit Carmer Dr | 0.18 | 2 | SA | 665 | 100% | 476 | 105 | 512 | 0 |
| 2 | | Lake Shore Dr | Mt Carmei Dr | Koenne Park Dr | 0.62 | 2 | UA | 590 | 100% | /35 | 5/4 | 161 | 0 |
| 2 | | Valley Mills Dr | Koenne Park Dr | Hillandale Kd | 0.15 | 3 | SA | 665 | 100% | 196 | 192 | 10 | 5 |
| 2 | | Valley Mills Dr | Hillandale Rd | Ridgewood Dr | 0.26 | 2 | UA | 590 | 100% | 309 | 341 | U | 31 |
| 2 | | Valley Mills Dr | Ridgewood Dr | Bisnop Dr | 0.18 | 3 | SA | 665 | 100% | 235 | 265 | 0 | 30 |
| 2 | | Valley Mills Dr | Bishop Dr | Runtington Dr | 0.24 | 5 | SA | 665 | 100% | 510 | 359 | 224 | 41 |
| 2 | | Valley Mills Dr | Huntington Dr | Cobbs Dr | 0.23 | 5 | SA | 665 | 100% | 621 | 397 | 224 | 0 |
| 2 | | Valley Mills Dr | CODDS Dr | Bosque Biva | 0.44 | | SA | 665 | 100% | 1,739 | /41 | 998 | 0 |
| 2 | | Valley Mills Dr | Bosque Blvd | Lake Air Dr | 0.54 | | SA | 665 | 100% | 2,138 | 1,167 | 9/1 | 0 |
| 2 | | Valley Mills Dr | Lake Air Dr | Sanger Ave | 0.46 | 7 | SA | 665 | 100% | 1,822 | 995 | 827 | 0 |
| 2 | | Valley Mills Dr | Sanger Ave | New Rd | 0.30 | 7 | SA | 665 | 100% | 1,178 | 643 | 535 | 0 |
| 2 | 1 | Valley Mills Dr | New Rd | Waco Dr | 0.21 | 6 | DA | 665 | 50% | 422 | 129 | 294 | 0 |
| 2 | 9 | Waco Dr | Franklin Ave | Lake Air Dr | 0.25 | 6 | DA | 665 | 50% | 490 | 188 | 302 | 0 |
| 2 | 9 | Waco Dr | Lake Air Dr | Valley Mills Dr | 0.81 | 6 | DA | 665 | 50% | 1,618 | 619 | 998 | 0 |
| 2 | | Lake Air Dr | Hillcrest | Wilford Dr | 0.60 | 3 | SA | 665 | 100% | 800 | 601 | 198 | 0 |
| 2 | | Lake Air Dr | Wilford Dr | Cobbs Dr | 0.12 | 4 | UA | 590 | 100% | 284 | 120 | 164 | 0 |
| 2 | | Lake Air Dr | Cobbs Dr | Bosque Blvd | 0.74 | 5 | SA | 665 | 100% | 1,972 | 741 | 1,231 | 0 |
| 2 | | Lake Air Dr | Bosque Blvd | N Valley Mills Dr | 0.38 | 5 | SA | 665 | 100% | 1,010 | 380 | 630 | 0 |
| 2 | | Lake Air Dr | N Valley Mills Dr | Sanger Ave | 0.33 | 5 | SA | 665 | 100% | 891 | 335 | 556 | 0 |
| 2 | | Lake Air Dr | Sanger Ave | Waco Dr | 0.58 | 5 | SA | 665 | 100% | 1,532 | 576 | 956 | 0 |
| 2 | 1 | N 41st St | Glendale Dr | Cobbs Dr | 0.13 | 4 | UA | 590 | 50% | 154 | 86 | 68 | 0 |
| 2 | 1 | N New Rd | Cobbs Dr | Bosque Blvd | 0.75 | 5 | SA | 665 | 50% | 991 | 491 | 500 | 0 |
| 2 | 1 | N New Rd | Bosque Blvd | Watt Ave | 0.70 | 5 | SA | 665 | 50% | 925 | 458 | 467 | 0 |
| 2 | 1 | N New Rd | Watt Ave | N Valley Mills Dr | 0.13 | 4 | DA | 665 | 50% | 167 | 83 | 84 | 0 |
| 2 | - | N New Rd | N Valley Mills Dr | N New Rd | 0.18 | - | SA | 665 | 100% | 476 | 264 | 212 | 0 |
| ~ | | in new na | it funcy thins bi | | 0.20 | | 5/1 | 005 | 10070 | | 201 | | |
| Sub-Tot | al Servi | ce Area 2 | | | 10.33 | | | | | 23,746 | 11,686 | 12,167 | 107 |
| | | | | | | | | | | | | | |
| 3 | | Speight Ave | S New Rd | Richter Ave | 0.96 | 2 | UA | 590 | 100% | 1,128 | 382 | 745 | 0 |
| 3 | | Speight Ave | Richter Ave | Valley Vills Dr | 0.46 | 2 | UA | 590 | 100% | 548 | 186 | 362 | 0 |
| 3 | 1 | Valley Mills | Bagby Ave | JH Kultgen Expy | 0.23 | 8 | DA | 665 | 50% | 622 | 166 | 456 | 0 |
| 3 | | Valley Mills | JH Kultgen Expy | Traffic Circle | 0.13 | 4 | DA | 665 | 100% | 167 | 89 | 78 | 0 |
| 3 | | La Salle | The Cir | 18th St | 0.59 | 6 | DA | 665 | 100% | 2,373 | 660 | 1,713 | 0 |
| 3 | 1 | La Salle | 18th St | 12th St | 0.47 | 6 | DA | 665 | 50% | 929 | 385 | 544 | 0 |
| 3 | 1 | La Salle | 12th St | University Parks Dr | 1.11 | 6 | DA | 665 | 50% | 2.214 | 817 | 1.397 | 0 |
| 3 | 9 | S New Rd | Memorial Dr | Bagby Ave | 0.50 | 5 | SA | 665 | 50% | 660 | 149 | 511 | 0 |
| 3 | 9 | S New Rd | Bagby Ave | 1-35 | 0.80 | 5 | SA | 665 | 50% | 1.070 | 241 | 828 | 0 |
| - | 9 | S New Bd | 1-35 | Old Robinson Rd | 0.54 | 5 | SΔ | 665 | 50% | 718 | 161 | 557 | 0 |
| 3 | | Garden Dr | Old Robinson Rd | Robinson Rd | 0.44 | - | 5/1 | 665 | 100% | 1 176 | 202 | 884 | 0 |
| - | | Carden Dr | 1646.64 | 1246.04 | 0.77 | - | | 500 | 100% | 1,170 | 2.52 | 170 | 0 |
| 2 | | Garden Dr | 1011 51 | Laiversity Berlys Dr. | 1.02 | 2 | UA | 590 | 100% | 1 204 | 218 | 172 | 0 |
| | | Garden Dr | 12(1) 3(| Driversity Parks Dr | 1.02 | 2 | UA CA | 590 | 100% | 1,204 | 0/4 | 529 | 0 |
| 3 | | Robinson | The Cir | Primrose Dr | 0.23 | 5 | SA | 665 | 100% | 601 | 249 | 352 | 0 |
| 3 | | Robinson | Primrose Dr | Garden Dr | 0.87 | 5 | SA | 665 | 100% | 2,320 | 993 | 1,327 | 0 |
| 3 | | Robinson | Garden Dr | Brewster St | 0.23 | 5 | SA | 665 | 100% | 616 | 265 | 350 | 0 |
| 3 | x | Robinson | Brewster St | Creek (516' S of Darden Dr) | 0.23 | 5 | SA | 665 | 50% | 308 | 133 | 175 | 0 |
| 3 | | 18th St | La Salle | Primrose Dr | 0.18 | 4 | DA | 665 | 100% | 476 | 72 | 404 | 0 |
| 3 | | 18th St | Primrose Dr | Gurley Ln | 0.27 | 4 | UA | 590 | 100% | 630 | 107 | 523 | 0 |
| 3 | | 16th | Gurley Ln | Garden Dr | 0.42 | 2 | UA | 590 | 100% | 495 | 168 | 327 | 0 |
| 3 | | 12th | Garden Dr | TX-340 | 1.08 | 2 | UA | 590 | 100% | 1,274 | 432 | 842 | 0 |
| 3 | | University Parks Dr | La Salle Ave | Gurley Ln | 0.46 | 2 | UA | 590 | 100% | 548 | 637 | 0 | 89 |
| 3 | | University Parks Dr | Gurley Ln | Garden Dr | 0.37 | 2 | UA | 590 | 100% | 441 | 310 | 130 | 0 |
| 3 | | University Parks Dr | Garden Dr | 3rd St | 0.93 | 2 | UA | 590 | 100% | 1,099 | 352 | 747 | 0 |
| 3 | | University Parks Dr | 3rd St | TX-340 | 0.42 | 2 | UA | 590 | 100% | 500 | 150 | 350 | 0 |
| | | | | | | | | | | | | | |
| Sub-Tot | al Servi | ce Area 3 | | | 11.63 | | | | | 20,207 | 7,553 | 12,744 | 89 |
| | | | | | | | | | | | | | |
| 4 | | Urchard Ln | US /7 NBFR | Kendall Ln | 0.12 | 2 | UA | 590 | 100% | 142 | 48 | 94 | 0 |
| 4 | | Orchard Ln | Kendall Ln | Carl Dr | 1.62 | 2 | UA | 590 | 100% | 1,912 | 648 | 1,264 | 0 |
| 4 | | Orchard Ln | Carl Dr | SH 340 | 0.31 | 3 | SA | 665 | 100% | 414 | 124 | 289 | 0 |
| 4 | | Kendall Ln | Orchard Ln | Railroad | 0.41 | 2 | UA | 590 | 100% | 487 | 165 | 322 | 0 |
| 4 | | Kendall Ln | Railroad | SH 340 | 1.70 | 2 | UA | 590 | 100% | 2,006 | 680 | 1,326 | 0 |
| Sub Tot | al Sorvi | co Aroa A | | | 4 16 | | | | | 4 960 | 1 666 | 2 205 | 0 |
| 305-101 | ur servi | | | | 4.10 | | | | | 4,900 | 1,000 | 3,295 | U |
| 5 | x | Crest Dr | Railroad | 725' NE of Railroad | 0.14 | 4 | DA | 665 | 50% | 183 | 65 | 118 | 0 |
| 5 | x | Crest Dr | 725' NF of Railroad | Avenue C | 0.14 | 5 | SΔ | 665 | 50% | 191 | 68 | 123 | 0 |
| 5 | Ŷ | Crest Dr | | Mazanec Rd | 0.84 | 2 | 110 | 590 | 50% | 498 | 186 | 312 | 0 |
| - | Ŷ | Air Paso Pd | 1250's of Crowon Avo | Crawop Avo | 0.04 | 2 | 114 | 500 | 50% E0% | 140 | 200 | 120 | 0 |
| - | Û | All base Ru | 1250 S OF CLAVEITAVE | Clavell Ave | 0.24 | - | UA | 590 | 50% | 140 | 20 | 120 | 0 |
| 5 | × | AIr Base Rd | Craven Ave | Bolling Dr | 0.49 | 4 | UA | 590 | 50% | 582 | 76 | 507 | U |
| 5 | x | US 84 | Tirey Rd | Aviation Pkwy | 0.52 | 4 | DA | 665 | 50% | 692 | 418 | 274 | 0 |
| 5 | x | US 84 | Aviation Pkwy | 1500' NE of Aviation | 0.28 | 4 | DA | 665 | 50% | 378 | 167 | 211 | 0 |
| Sub-Tot | al Servi | ce Area 5 | | | 2.66 | | | | | 2.664 | 999 | 1.664 | 0 |
| 545 101 | | | | | 2.00 | | | | | 2,004 | 555 | 2,004 | , |
| 6 | | Steinbeck Bend Dr | China Spring Rd | Rock Creek Rd | 0.29 | 2 | UA | 590 | 100% | 338 | 65 | 273 | 0 |
| 6 | | Steinbeck Bend Dr | Rock Creek Rd | Lake Shore Dr | 2.50 | 2 | UA | 590 | 100% | 2.950 | 2.190 | 760 | 0 |
| 6 | | N Martin Luther King Ir. Blvd | Lake Shore Dr | 1050' NW of Herring Ave | 1.58 | 2 | UA | 590 | 100% | 1.864 | 1,326 | 539 | 0 |
| 6 | | N Martin Luther King Ir Blud | 1050' NW of Herring Ave | Herring Ave | 0.20 | 4 | DA | 665 | 100% | 529 | 177 | 352 | 0 |
| 6 | 7 | China Spring Pd | Pioneer Pkww | Steinheck Rond Dr | 1 17 | 2 | 114 | 500 | 50% | 600 | 100 | 205 | 0 |
| 0 2 | ' | N 10th St | N 10th St | Jake Shore Dr | 1.1/ | 2 | CA CA | 530 | 100% | 2 007 | 400 | 205 | 0 |
| 0 2 | | lake Shore Dr | 550' SE of Airport P-1 | N 10th St | 1.59 | - | SA CA | 005 665 | ±00% | 3,097 | 1,100 | 2,591 | 0 |
| 0 6 | 1 | Lake Shore Dr | N 10th St | Collogo Dr | 0.72 | د م | JA DA | 667 | 50% | 909 | 214 | 440 | 0 |
| 0 | 1 | Lake Shore Dr | IN TRUI OF | Conege Dr | 0.65 | 4 | DA | 600 | 50% | 8/1 | 314 | 557 | 0 |
| 0 | 1 | Lake Shore Dr | Conege Dr | busque River | 0.27 | 4 | DA | 600 | 50% | 360 | 130 | 230 | U |
| 6 | 1 | Lake Shore Dr | BUSQUE RIVER | N WINIARTIN LUTNER KING Jr. Blvc | 0.78 | 4 | DA | 605 | 50% | 1,034 | 428 | 607 | 0 |
| 6 | | Lake Shore Dr | N Martin Luther King Jr. Blvd | 1200 NW OT MLK Blvd | 0.23 | 4 | UA | 590 | 100% | 536 | 351 | 185 | 0 |
| 6 | | Lake Shore Dr | 1200' NW of MLK Blvd | Gnolson Rd | 2.14 | 4 | DA | 665 | 100% | 5,692 | 3,599 | 2,093 | 0 |
| 6 | | Lake Shore Dr | Gnolson Rd | Kallroad ROW | 0.30 | 5 | SA | 665 | 100% | 798 | 660 | 144 | 6 |



| Waco Roadway Capital Recovery Fee Study | |
|---|--|
| Existing Capital Improvements Analysis | |

| Serv | Shared | Roadway | From | То | Length (mi) | No. of | Type | PM Peak Hr Capacity/Lape | Pct. in Serv. Area | VMT Supply Pk Hr Total | VMT Demand Pk Hr Total | Excess VMT Canacity | Exist. VMT Deficiency |
|---------|-----------|--------------------------|-----------------------------|-----------------------------------|----------------|--------|----------|-----------------------------|-----------------------|---------------------------|---------------------------|------------------------|--------------------------|
| Area | JVCAICO | Hoadway | Prove Direct | | (111) | Lanes | Type | capacity/ canc | Serv. Area | 170 | | vivil capacity | Denciency |
| 6 | 1 | Herring | Brazos Kiver | N Martin Luther King Jr. Bive | 0.13 | 4 | DA | 665 | 50% | 1/8 | 50 | 118 | 0 |
| 6 | 1 | Herring | I Flewellen Rd | 1035' SW of Gholson Rd | 0.72 | 4 | DA | 665 | 50% | 501 | 325 | 429 | 0 |
| 6 | 1 | Herring | 1035' SW of Gholson Rd | Gholson Rd | 0.40 | 5 | SA | 665 | 50% | 261 | 88 | 173 | 0 |
| 6 | | Montrose | Gholson Rd | Railroad ROW | 0.22 | 2 | UA | 590 | 100% | 255 | 86 | 169 | 0 |
| 6 | 1 | Gholson Rd | 960' S of Herring Ave | Herring Ave | 0.18 | 2 | UA | 590 | 50% | 107 | 51 | 56 | 0 |
| 6 | | Gholson Rd | Herring Ave | Montrose St | 0.53 | 2 | UA | 590 | 100% | 626 | 300 | 326 | 0 |
| 6 | | Gholson Rd | Montrose St | Lakeshore Dr | 0.82 | 2 | UA | 590 | 100% | 966 | 509 | 457 | 0 |
| 6 | | Gholson Rd | Lakeshore Dr | Old Fort Graham Rd | 0.40 | 5 | SA | 665 | 100% | 1,051 | 417 | 635 | 0 |
| Sub-Tot | al Servio | ce Area 6 | | | 9.55 | | | | | 13,294 | 6,740 | 6,554 | 0 |
| 7 | | North River Crossing | Reginning of bridge | 580' NE of Curry In | 2 25 | 2 | IIΔ | 590 | 100% | 2 655 | 1 557 | 1 098 | 0 |
| 7 | | North River Crossing | 580' NE of Curry Ln | Yankie Rd | 0.47 | 3 | SA | 665 | 100% | 628 | 499 | 145 | 15 |
| 7 | | North River Crossing | Yankie Rd | 900' SW of China Spring Rd | 0.16 | 2 | UC | 510 | 100% | 161 | 84 | 77 | 0 |
| 7 | | North River Crossing | 900' SW of China Spring Rd | China Spring Rd | 0.17 | 3 | SA | 665 | 100% | 227 | 91 | 136 | 0 |
| 7 | | China Spring Rd | Yankie Rd | North River Crossing | 0.42 | 2 | UA | 590 | 100% | 494 | 173 | 321 | 0 |
| 7 | | China Spring Rd | North River Crossing | Old China Spring Rd | 0.17 | 3 | SA | 665 | 100% | 220 | 68 | 151 | 0 |
| 7 | | China Spring Rd | Old China Spring Rd | Wortham Bend | 1.88 | 2 | UA | 590 | 100% | 2,218 | 1,444 | 775 | 0 |
| 7 | | China Spring Rd | Wortham Bend | Flat Rock Rd | 1.10 | 3 | SA | 665 | 100% | 1,463 | 1,203 | 330 | 70 |
| | ~ | China Spring Rd | FIAT KOCK KO | Pioneer Pkwy Steinback Band Dr | 0.96 | 2 | UA | 590 | 100% | 1,132 | 1,470 | 65 | 404 |
| 7 | v | Old China Spring Rd | 1350' N of Bb Burt | Bh Burt | 0.26 | 2 | | 590 | 50% | 130 | 954 | 118 | 203 |
| 7 | ^ | Old China Spring Rd | Rh Burt | China Spring Rd | 0.20 | 2 | UC | 510 | 100% | 419 | 41 | 378 | 0 |
| | | ord crima spring itd | 55 5012 | cinita Spring Na | 0.41 | - | 00 | 510 | 10070 | -15 | 41 | 570 | |
| Sub-Tot | al Servio | ce Area 7 | | | 6.69 | | | | | 7,154 | 5,541 | 2,351 | 737 |
| 8 | | FM 185 (Cedar Rock Pkwy) | Galaxy Rd | SH 6 | 1.32 | 2 | UA | 590 | 100% | 1,558 | 264 | 1,294 | 0 |
| 8 | | North River Crossing | SH 6 | Dosher Ln | 0.61 | 2 | UA | 590 | 100% | 720 | 122 | 598 | 0 |
| 8 | | North River Crossing | Dosher Rd | End of Service Area | 0.93 | 2 | UA | 590 | 100% | 1,096 | 186 | 910 | 0 |
| 8 | | Sundown Dr | Dosher Rd | N Speegleville Rd | 1.87 | 2 | UC | 510 | 100% | 1,907 | 374 | 1,533 | 0 |
| Sub-Tot | al Servio | ce Area 8 | | | 4.73 | | | | | 5,281 | 946 | 4,335 | 0 |
| • | 2 | Waco Dr | Franklin Ave | Jake Air Dr | 0.25 | 6 | DA | 665 | 50% | /190 | 3/10 | 141 | 0 |
| 9 | 2 | Waco Dr | Lake Air Dr | Valley Mills Dr | 0.23 | 6 | DA | 665 | 50% | 1.618 | 724 | 893 | 0 |
| 9 | | Franklin Ave | US 84 | New Rd | 0.90 | 7 | SA | 665 | 100% | 3,606 | 1,320 | 2,287 | 0 |
| 9 | | Franklin Ave | New Rd | Valley Mills Dr | 0.52 | 7 | SA | 665 | 100% | 2,080 | 834 | 1,246 | 0 |
| 9 | | Imperial Dr | Hewitt Dr | Texas Central Pkwy | 0.94 | 5 | SA | 665 | 100% | 2,513 | 1,364 | 1,149 | 0 |
| 9 | | Imperial Dr | Texas Central Pkwy | Jewell Dr | 0.39 | 5 | SA | 665 | 100% | 1,037 | 565 | 472 | 0 |
| 9 | | Imperial Dr | Jewell Dr | W Loop 340 | 0.86 | 5 | SA | 665 | 100% | 2,284 | 1,264 | 1,020 | 0 |
| 9 | | Beverly Dr | W Loop 340 | 4128' NE of Loop 340 | 0.78 | 2 | UA | 590 | 100% | 923 | 78 | 844 | 0 |
| 9 | x | Beverly Dr | 4128' NE of Loop 340 | New Road | 0.31 | 2 | UA | 590 | 50% | 182 | 15 | 167 | 0 |
| 9 | | Bagby Ave | Flat Creek | Corporation Pkwy | 0.91 | 5 | SA | 665 | 100% | 2,433 | 1,749 | 684 | 0 |
| 9 | | Bagby Ave | Corporation Pkwy | EB Loop 340 | 0.31 | 5 | SA | 665 | 100% | 829 | 589 | 239 | 0 |
| 9 | v | Bagby Ave | We Loop 340 | New Ka | 0.83 | 4 | UA | 590 | 100% | 1,954 | 1,338 | 616 | 0 |
| 9 | 10 | Hewitt Dr | Old McGregor Dr | Imperial Dr | 0.19 | 5 | SA SA | 665 | 50% | 250 | 210 | 40 | 0 |
| 9 | 10 | Hewitt Dr | Imperial Dr | Mars Dr | 0.62 | 5 | SA | 665 | 50% | 827 | 641 | 186 | 0 |
| 9 | | Texas Central Pkwy | Woodway Dr | Railroad | 0.26 | 5 | SA | 665 | 100% | 688 | 268 | 420 | 0 |
| 9 | | Texas Central Pkwy | Railroad | Imperial Dr | 0.34 | 2 | UA | 590 | 100% | 402 | 354 | 49 | 0 |
| 9 | | Texas Central Pkwy | Imperial Dr | Mars Dr | 0.60 | 5 | SA | 665 | 100% | 1,583 | 617 | 966 | 0 |
| 9 | | Texas Central Pkwy | Mars Dr | Railroad | 0.33 | 4 | DA | 665 | 100% | 872 | 340 | 532 | 0 |
| 9 | | Texas Central Pkwy | Railroad | Bagby Ave | 1.48 | 4 | DC | 565 | 100% | 3,345 | 1,535 | 1,810 | 0 |
| 9 | | Lake Air Dr | Waco Dr | Franklin Ave | 0.17 | 4 | UA | 590 | 100% | 395 | 167 | 227 | 0 |
| 9 | | New Rd | Waco Dr | Franklin Ave | 0.32 | 5 | SA | 665 | 100% | 843 | 482 | 361 | 0 |
| 9 | | New Rd | Franklin Ave | Lower Railroad | 0.33 | 4 | UA | 590 | 100% | 784 | 505 | 279 | 0 |
| 9 | x | New Rd | Beverly Dr Mamarial Dr | Memorial Dr | 0.14 | 5 | SA | 665 | 50% | 184 | 69 | 115 | 0 |
| 9 | 2 | New Rd | Radhy Avo | L SE | 0.50 | 2 | SA CA | 665 | 50% | 1 070 | 246 | 412 | 0 |
| | 3 | New Rd | L35 | Old Robinson Rd | 0.50 | 5 | SA SA | 665 | 50% | 718 | 402 | 557 | 0 |
| 9 | 1 | Valley Mills | Waco Dr | Railroad | 0.78 | 6 | DA | 665 | 50% | 1,560 | 793 | 767 | 0 |
| Sub-Tot | al Servio | ce Area 9 | | | 13.17 | | | | | 26,930 | 14,215 | 12,714 | 0 |
| 10 | x | Chapel Rd | 1850' W of Ritchie Rd | Ritchie Rd | 0.35 | 2 | UA | 590 | 50% | 207 | 100 | 107 | 0 |
| 10 | | Chapel Rd | Ritchie Rd | 155' west of Meadow Moun | 0.65 | 2 | UA | 590 | 100% | 767 | 788 | 192 | 212 |
| 10 | | Chapel Rd | 155' W of Meadow Mountain R | d Hewitt Dr | 0.86 | 5 | SA | 665 | 100% | 2,285 | 1,121 | 1,164 | 0 |
| 10 | | Panther Way | Ritchie Rd | 3700' east of Ritchie Rd | 0.70 | 3 | SA | 665 | 100% | 932 | 280 | 652 | 0 |
| 10 | x | Panther Way | 3700' E of Ritchie Rd | 900' west of Hewitt Dr | 0.62 | 3 | SA | 665 | 50% | 412 | 124 | 288 | 0 |
| 10 | | Ritchie Rd | Railroad | Chapel Rd | 0.18 | 2 | UA | 590 | 100% | 216 | 76 | 140 | 0 |
| 10 | | Ritchie Rd | Chapel Rd | Panther Rd | 0.64 | 4 | DA | 665 | 100% | 1,714 | 269 | 1,446 | 0 |
| 10 | | Ritchie Rd | Panther Rd | 1300' N of Warren St | 0.76 | 2 | UA | 590 | 100% | 894 | 316 | 578 | 0 |
| 10 | X | Hewitt Dr | 1300' N of Warren St | Warren St | 0.25 | 2 | UA | 590 | 50% | 145 | 43 | 103 | 0 |
| 10 | 9 | newitt Dr Hewitt Dr | WOODWAY DF | un McGregor Dr Imperial Dr | 0.19 | 5 | SA SA | 665 | 50% | 250 | 229 | 21 | 0 |
| 10 | 9 | Hewitt Dr | Imperial Dr | Mars Dr | 0.45 | 5 | SΔ | 665 | 50% | 827 | 878 | 42 | 1 |
| | | | ····· | | 0.02 | - | | | - 5/0 | | 010 | | - |
| Sub-Tot | al Servio | ce Area 10 | | | 4.77 | | | | | 7,428 | 3,074 | 4,566 | 212 |



Waco Roadway Capital Recovery Fee Study

| | Existing Capital Improvements Analysis | | | | | | | | | | | | |
|--------------------------------|--|-----------------|------------------------|--------------------|--------|--------|-------|---------------|------------|-------------|-------------|--------------|------------|
| Serv | Shared | | | | Length | No. of | | PM Peak Hr | Pct. in | VMT Supply | VMT Demand | | Exist. VMT |
| Area | Svc Area | Roadway | From | То | (mi) | Lanes | Туре | Capacity/Lane | Serv. Area | Pk Hr Total | Pk Hr Total | VMT Capacity | Deficiency |
| | | | | | | | | | | | | | |
| 11 | x | Speegleville Rd | 1700' N of Pecan Creek | Pecan Creek | 0.32 | 2 | UA | 590 | 50% | 190 | 51 | 139 | 0 |
| 11 | | Speegleville Rd | Pecan Creek | Oak Rd | 0.54 | 2 | UA | 590 | 100% | 643 | 171 | 472 | 0 |
| 11 | | Speegleville Rd | Oak Rd | US 84 WBFR | 0.85 | 2 | UA | 590 | 100% | 1,006 | 268 | 739 | 0 |
| 11 | | Old Lorena Rd | US 84 EBFR | South Bosque River | 0.90 | 2 | UA | 590 | 100% | 1,058 | 281 | 776 | 0 |
| Sub-Total Service Area 11 2.62 | | | | | | | 2,897 | 771 | 2,126 | 0 | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Total | | | | | | | | | | 125,606 | 56,585 | 70,167 | 1,145 |

Notes: * denotes deficiencies absorbed through CRF CIP 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 D

Projected 10-Year Growth

(Vehicle Miles of New Demand)



Vehicle-Mile Trip Generation by Service Area, Waco Capital Recovery Fee

Based on 2020-2030 Land Use Assumptions dated June 2019

| Service Unit Equivalency | | | | | | |
|--------------------------|------|-------------|------|--|--|--|
| Residential | 3.20 | Service Emp | 4.95 | | | |
| Basic Emp | 2.71 | Retail Emp | 3.71 | | | |

Estimated <u>Residential</u> Growth Vehicle-Mile Trip Generation

| Сс | onversion Factor: | 2.59 2010 persons/household | | | |
|--------------|---------------------|-----------------------------|-------------------------|------------------------|--|
| Service Area | Added Population | Added Dwelling Units | Vehicle-Miles per DU | Total Vehicle-Miles | |
| 1 | 5,874 | 2,268 | 3.20 | 7,258 | |
| 2 | 1,140 | 440 | 3.20 | 1,408 | |
| 3 | 2,274 | 878 | 3.20 | 2,810 | |
| 4 | 425 | 164 | 3.20 | 525 | |
| 5 | 44 | 17 | 3.20 | 54 | |
| 6 | 994 | 384 | 3.20 | 1,229 | |
| 7 | 2,157 | 833 | 3.20 | 2,666 | |
| 8 | 0 | 0 | 3.20 | 0 | |
| 9 | 1,543 | 596 | 3.20 | 1,907 | |
| 10 | 1,839 | 710 | 3.20 | 2,272 | |
| 11 | 1,224 | 473 | 3.20 | 1,514 | |
| Total | 17,514 | 6,763 | | 21,643 | |

Estimated <u>Basic Employment</u> Growth Vehicle-Mile Trip Generation

| Сс | onversion Factor: | 1,500 square feet/employee | | | |
|--------------|--------------------|----------------------------|----------------------------------|------------------------|--|
| Service Area | Added Employees | Total Square Feet | Vehicle-Miles per 1,000 Sq Ft | Total Vehicle-Miles | |
| 1 | 315 | 471,967 | 2.71 | 1,279 | |
| 2 | 61 | 91,343 | 2.71 | 248 | |
| 3 | 96 | 143,965 | 2.71 | 390 | |
| 4 | 8 | 12,329 | 2.71 | 33 | |
| 5 | 364 | 545,631 | 2.71 | 1,479 | |
| 6 | 73 | 109,076 | 2.71 | 296 | |
| 7 | 87 | 131,081 | 2.71 | 355 | |
| 8 | 0 | 0 | 2.71 | 0 | |
| 9 | 1,472 | 2,208,705 | 2.71 | 5,986 | |
| 10 | 30 | 44,384 | 2.71 | 120 | |
| 11 | 88 | 131,370 | 2.71 | 356 | |
| Total | 2,593 | 3,889,852 | | 10,542 | |

Vehicle-Mile Trip Generation by Service Area, Waco Capital Recovery Fee

Based on 2020-2030 Land Use Assumptions dated June 2019

| Service Unit Equivalency | | | | | | |
|--------------------------|------|-------------|------|--|--|--|
| Residential | 3.20 | Service Emp | 4.95 | | | |
| Basic Emp | 2.71 | Retail Emp | 3.71 | | | |

Estimated Service Employment Growth Vehicle-Mile Trip Generation

| Ca | onversion Factor: | 500 square feet/employee | | | |
|--------------|--------------------|--------------------------|----------------------------------|------------------------|--|
| Service Area | Added Employees | Total Square Feet | Vehicle-Miles per 1,000 Sq Ft | Total Vehicle-Miles | |
| 1 | 1,783 | 891,392 | 4.95 | 4,412 | |
| 2 | 753 | 376,481 | 4.95 | 1,864 | |
| 3 | 199 | 99,598 | 4.95 | 493 | |
| 4 | 19 | 9,563 | 4.95 | 47 | |
| 5 | 38 | 18,961 | 4.95 | 94 | |
| 6 | 157 | 78,351 | 4.95 | 388 | |
| 7 | 161 | 80,686 | 4.95 | 399 | |
| 8 | 0 | 0 | 4.95 | 0 | |
| 9 | 547 | 273,495 | 4.95 | 1,354 | |
| 10 | 67 | 33,364 | 4.95 | 165 | |
| 11 | 61 | 30,665 | 4.95 | 152 | |
| Total | 3,785 | 1,892,557 | | 9,368 | |

Estimated Retail Employment Growth Vehicle-Mile Trip Generation

| Ca | onversion Factor: | 1,000 square feet/employee | | | | |
|--------------|--------------------|----------------------------|----------------------------------|------------------------|--|--|
| Service Area | Added Employees | Total Square Feet | Vehicle-Miles per 1,000 Sq Ft | Total Vehicle-Miles | | |
| 1 | 808 | 808,021 | 3.71 | 2,998 | | |
| 2 | 305 | 304,552 | 3.71 | 1,130 | | |
| 3 | 162 | 161,625 | 3.71 | 600 | | |
| 4 | 12 | 12,195 | 3.71 | 45 | | |
| 5 | 6 | 6,263 | 3.71 | 23 | | |
| 6 | 24 | 23,882 | 3.71 | 89 | | |
| 7 | 124 | 123,841 | 3.71 | 459 | | |
| 8 | 0 | 0 | 3.71 | 0 | | |
| 9 | 464 | 463,620 | 3.71 | 1,720 | | |
| 10 | 21 | 21,163 | 3.71 | 79 | | |
| 11 | 20 | 19,519 | 3.71 | 72 | | |
| Total | 1,945 | 1,944,679 | | 7,215 | | |

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 | 7,258 | 1,279 | 4,412 | 2,998 | 15,947 |
| 2 | 1,408 | 248 | 1,864 | 1,130 | 4,650 |
| 3 | 2,810 | 390 | 493 | 600 | 4,293 |
| 4 | 525 | 33 | 47 | 45 | 650 |
| 5 | 54 | 1,479 | 94 | 23 | 1,650 |
| 6 | 1,229 | 296 | 388 | 89 | 2,002 |
| 7 | 2,666 | 355 | 399 | 459 | 3,879 |
| 8 | 0 | 0 | 0 | 0 | 0 |
| 9 | 1,907 | 5,986 | 1,354 | 1,720 | 10,967 |
| 10 | 2,272 | 120 | 165 | 79 | 2,636 |
| 11 | 1,514 | 356 | 152 | 72 | 2,094 |
| Total | 21,643 | 10,542 | 9,368 | 7,215 | 48,768 |



Appendix E

Roadway Capital Improvements Plan


ROADWAY IMPROVEMENTS PLAN PROJECTS

Definitions

| LANES | The total number of lanes in both directions available for travel. |
|---------------------------------|--|
| ТҮРЕ | 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. |



City of Waco

| Wac | o Road | way Capita | al Recovery Fee Study | | | | | | | | | | | | | |
|-------|--------------|----------------|------------------------------|-----------------------|-----------------------|-------|-----------------|----------------|----------------------|----------------|----------|-----------|-----------------------|----------------------|------------------------|-----------------------|
| Preli | minary | r Capital In | nprovements Plan | | | | | | | Exis | ing | Proposed | d Existi | bu | | |
| log v | Serv Area | Svc Area Ty | iject rpe Roadway | From | To | (mi) | No. or Lanes | Kawy Type S | Pct. In erv. Area | реакнои А Е | r volume | al PkHrTo | ipiy VMLI ital PkH | uemand Ir Total V | excess VMT Capacity | CIP VMI Deficiency |
| 1 | 1 | 9 9 | V Gholson Rd | Herring Ave | 960' S of Herring Ave | 0.18 | 2 | ٩N | 50% | | 0 | 0 10 | 07 | 0 | 107 | 0 |
| 2 | 1 | 2 | V Gholson Rd | 960' S of Herring Ave | Waco Dr | 0.33 | 2 | Ν | 100% | 0 | 0 | 0 35 | 95 | 0 | 395 | 0 |
| | Sub-Tot | al Service Ar | rea 1 | | | 20.18 | | | | | | 5 | 02 | 0 | 502 | 0 |
| ŝ | 2 | ~ | V Lake Shore Dr | Mt Carmel Dr | Koehne Park Dr | 0.62 | 4 | DA | 100% | 0 | 0 | 0 1,65 | 58 | 0 | 1,658 | 0 |
| 4 | 2 | 2 | V Valley Mills Dr | Koehne Park Dr | Hillandale Rd | 0.15 | 4 | DA | 100% | 0 | 0 | 0 | 92 | 0 | 392 | 0 |
| 2 | 2 | ~ | V Valley Mills Dr | Hillandale Rd | Ridgewood Dr | 0.26 | 4 | PA | 100% | 0 | 0 | 0 | 97 | 0 | 697 | 0 |
| 9 | 2 | ~ | V Valley Mills Dr | Ridgewood Dr | Bishop Dr | 0.18 | m | PA | 100% | 0 | 0 | 0 | 58 | 0 | 358 | 0 |
| | Sub-Tot | al Service Ar | rea 2 | | | 2.34 | | | | | | 36 | 58 | 0 | 3,105 | 0 |
| ~ | œ | - | N Bagby Ave | New Rd | Monte Vista St | 0.27 | 2 | DA | 100% | 0 | 0 | 0 | 60 | 0 | 360 | 0 |
| 00 | e | - | N Bagby Ave | Monte Vista St | Richter Ave | 0.68 | 2 | DA | | | | | | | | |
| ٩ | e | - | N Bagby Ave | Richter Ave | Valley Mills Dr | 0.59 | 2 | PA | 100% | 0 | 0 | 0 77 | 78 | 0 | 778 | 0 |
| 10 | e | 6 | N S New Rd | Bagby Ave | I-35 | 0.80 | 1 | DA | 50% | 0 | | 0 26 | 67 | 0 | 267 | 0 |
| 11 | e | - | N Garden Dr | Robinson Rd | 16th St | 1.34 | 2 | NA | 100% | 0 | 0 | 0 1,58 | 81 | 0 | 1,581 | 0 |
| 12 | e | - | N 18th St | La Salle | Gurley Ln | 0.45 | 2 | DA | 100% | 0 | 0 | 0 55 | 93 | 0 | 593 | 0 |
| 13 | 8 | ~ | v 16th | Gurley Ln | Garden Dr | 0.42 | 4 | DA | 100% | 0 | 0 | 0 1,11 | 16 | 0 | 1,116 | 0 |
| 14 | e | ~ | v 12th | Garden Dr | TX-340 | 1.08 | 4 | DA | 100% | 0 | 0 | 0 2,87 | 73 | 0 | 2,873 | 0 |
| 15 | m | 2 | V University Parks Dr | La Salle Ave | Garden Dr | 0.84 | 2 | PA | 100% | 0 | 0 | 0 1,11 | 14 | 0 | 1,114 | 0 |
| | Sub-Tot | al Service Ar | rea 3 | | | 11.09 | | | | | | 5,8(| 60 | 0 | 8,683 | 0 |
| 16 | 4 | ~ | N Martin Luther King Jr Blvi | d BUS 77 | SH 484 | 0.39 | 9 | DA | 100% | 0 | 0 | 0 1,55 | 51 | 0 | 1,551 | 0 |
| | Sub-Tot | tal Service Ar | rea 4 | | | 4.24 | | | | | | 1,59 | 51 | 0 | 1,551 | 0 |
| | | | No Projects in Service Ar | 'ea | | | | | | | | | | | | |
| | Sub-Tot | tal Service Ar | rea 5 | | | 1.56 | | | | | | 1,70 | 01 | 0 | 1,700 | 0 |
| 1 | 9 | 1 | V Gholson Rd | 960' S of Herring Ave | Herring Ave | 0.18 | 2 | NA | 50% | 0 | | 0 10 | 07 | 0 | 107 | 0 |
| 17 | 9 | ~ | V Gholson Rd | Herring Ave | Lakeshore Dr | 1.35 | 2 | NA | 100% | 0 | 0 | 0 1,55 | 92 | 0 | 1,592 | 0 |
| | Sub-Tot | al Service Ar | rea 6 | | | 11.35 | | | | | | 1,69 | 66 | 0 | 1,699 | 0 |
| 18 | 7 | 2 | N North River Crossing | End of bridge | 580' NE of Curry Ln | 1.38 | 4 | DA | 100% | 0 | 0 | 0 3,67 | 11 | 0 | 3,671 | 0 |
| 19 | 7 | ~ | N North River Crossing | 580' NE of Curry Ln | Yankie Rd | 0.47 | 4 | DA | 100% | 0 | 0 | 0 1,25 | 57 | 0 | 1,257 | 0 |
| 20 | 7 | ~ | N Flat Rock Rd | Yankie Rd | Tree Lake Rd | 1.01 | 2 | nc | 100% | 0 | 0 | 0 1,03 | 30 | 0 | 1,030 | 0 |
| 21 | 7 | ~ | N Flat Rock Rd | Tree Lake Rd | China Spring Rd | 1.66 | 2 | nc | 100% | 0 | 0 | 0 1,65 | 93 | 0 | 1,693 | 0 |
| 22 | 7 | ~ | V Yankie Rd | North River Crossing | Flat Rock Rd | 1.89 | 2 | Ы | 100% | 0 | 0 | 0 1,92 | 28 | 0 | 1,928 | 0 |
| 23 | 7 | 4 | N Tree Lake Dr | China Spring Rd | Flat Rock Rd | 1.57 | 2 | Ы | 100% | 0 | 0 | 0 1,6(| 01 | 0 | 1,601 | 0 |
| 24 | 2 | 2 | V Wortham Bend | North City Limit | China Spring Rd | 0.82 | 2 | З | 100% | 0 | 0 | 0 | 34 | • | 834 | 0 |
| | Sub-Tot | al Service Ar | rea 7 | | | 15.45 | | | | | | 10,75 | 27 | 0 | 12,015 | 0 |
| | | | No Projects in Service Ar | ea | | | | | | | | | | | | |
| | Sub-Tot | al Service Ar | rea 8 | | | 6.05 | | | | | | | 0 | 0 | 0 | 0 |

| Waco | Road | way Ca | pital F | Recovery Fee Study | | | | | | | | | | | | |
|--------|---------|-------------|---------|--------------------|--------------------------|--------------------------|--------|--------|--------|-----------|-----------|--------|---------------|---------------|--------------|------------|
| Prelir | ninary | r Capita | l Impr | ovements Plan | | | | | | | Exist | ing | Proposed | Existing | | |
| Proj | Serv | Shared | Project | | | | Length | No. of | Rdwy | Pct. in | Peak Hour | Volume | VMT Suppl | y VMT Demand | Excess | CIP VMT |
| No. | Area | Svc Area | Type | Roadway | From | To | (mi) | Lanes | Type S | erv. Area | A B | Tota | al Pk Hr Tota | l Pk Hr Total | VMT Capacity | Deficiency |
| 25 | 6 | | z | Mars Dr | Hewitt Dr | Texas Central Pkwy | 0.94 | 2 | NA | 100% | 0 | 0 | 0 1,114 | 0 | 1,114 | 0 |
| 26 | 6 | | z | Beverly Dr | W Loop 340 | 4128' NE of Loop 340 | 0.78 | 2 | NA | 100% | 0 | 0 | 0 923 | 0 | 923 | 0 |
| 27 | 6 | × | z | Beverly Dr | 4128' NE of Loop 340 | New Road | 0.31 | 2 | M | 50% | 0 | | 0 182 | 0 | 182 | 0 |
| 28 | 6 | × | z | Hewitt Dr | Woodway Dr | Old McGregor Dr | 0.19 | 1 | DA | 50% | 0 | | 0 63 | 0 | 63 | 0 |
| 29 | 6 | 10 | z | Hewitt Dr | Old McGregor Dr | Imperial Dr | 0.45 | 1 | DA | 50% | 0 | | 0 148 | 0 | 148 | 0 |
| 30 | 6 | 10 | z | Hewitt Dr | Imperial Dr | Mars Dr | 0.62 | 1 | DA | 50% | 0 | | 0 207 | 0 | 207 | 0 |
| 31 | 6 | | z | Texas Central Pkwy | Railroad | Imperial Dr | 0.34 | 2 | ٩ | 100% | 0 | 0 | 0 402 | 0 | 402 | 0 |
| 10 | 6 | e | z | S New Rd | Bagby Ave | I-35 | 0.80 | 1 | NA | 50% | | 0 | 0 237 | 0 | 237 | 0 |
| 32 | 6 | | z | Bagby Ave. | New Road | TX 340 | 0.83 | 1 | DA | 100% | 0 | 0 | 0 550 | 0 | 550 | 0 |
| | Sub-Tot | al Service | e Area | 6 | | | 4.32 | | | | | | 2,712 | 0 | 2,713 | 0 |
| 33 | 10 | | z | Warren Rd | City Limit | Ritchie Rd | 0.38 | m | SC | 100% | 0 | 0 | 0 430 | 0 | 430 | 0 |
| 34 | 10 | × | z | Warren Rd | Ritchie Rd | 3700' east of Ritchie Rd | 0.70 | 1 | Sc | 50% | | 0 | 0 | 0 | 0 | 0 |
| 35 | 10 | × | z | Farmiller Rd | 1300' south of Chapel Rd | 2100' north of Warren Rd | 1.13 | 2 | SA | 50% | 0 | | 0 376 | 0 | 376 | 0 |
| 29 | 10 | 6 | z | Hewitt Dr | Old McGregor Dr | Imperial Dr | 0.45 | 1 | DA | 50% | | 0 | 0 148 | 0 | 148 | 0 |
| 30 | 10 | 6 | z | Hewitt Dr | Imperial Dr | Mars Dr | 0.62 | 1 | DA | 50% | | 0 | 0 207 | 0 | 207 | 0 |
| 36 | 10 | | z | Chapel Rd | Meadow Mountain Dr | Ritchie Rd | 1.15 | m | SA | 100% | 0 | 0 | 0 1,530 | 0 | 1,530 | 0 |
| 37 | 10 | | z | Ritchie Rd | Panther Way | Warren St | 1.01 | 2 | NA | 100% | 0 | 0 | 0 1,192 | 0 | 1,192 | 0 |
| 5, | Sub-Tot | tal Service | e Area | 10 | | | 7.44 | | | | | | 3,883 | 0 | 3,882 | 0 |
| 38 | п | | z | Val Verde Rd | Fossil Rim Rd | US 84 | 0.89 | 1 | SC | 100% | 0 | 0 | 0 | 0 | 0 | 0 |
| 39 | п | | z | Harris Creek Rd | US 84 | Walking Horse Ln | 0.66 | 1 | SC | 100% | 0 | 0 | 0 | 0 | 0 | 0 |
| 40 | Ħ | | z | Speegleville Rd | Pecan Creek | Oak Rd | 0.54 | 4 | DA | 100% | 0 | 0 | 0 1,449 | 0 | 1,449 | 0 |
| 41 | Ħ | | z | Speegleville Rd | Oak Rd | US 84 | 0.85 | 4 | DA | 100% | 0 | 0 | 0 2,248 | 0 | 2,248 | 0 |
| 42 | Ħ | | z | Old Lorena Rd | US 84 EBFR | South Bosque River | 06.0 | 4 | DA | 100% | 0 | 0 | 0 2,384 | 0 | 2,384 | 0 |
| | Sub-Tot | tal Servic | e Area | 11 | | | 2.61 | | | | | | 6,081 | 0 | 6,081 | 0 |
| | Totals: | | | | | | | | | | | | 35,053 | 0 | 41,932 | 0 |

Notes:

DA - Divided Arterial UA - Undivided Arterial

N - New Project R - Recoupment Project

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 (TWLTI)

