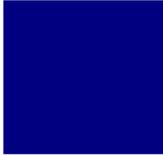


**WATER AND WASTEWATER  
IMPACT FEE UPDATE  
2005 - 2015**



*Prepared For*



**CITY OF WYLIE**

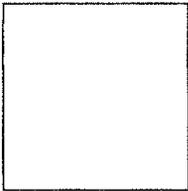
*Prepared By*



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***DALLAS, TEXAS***



*February 2006*



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March 2, 2006

Chris Holsted, P.E.  
City Engineer  
City of Wylie  
949 Hensley Lane  
Wylie, Texas 75098

Re: Water and Wastewater Impact Fee Update  
2005-2015

Dear Mr. Holsted:

We are pleased to present the results of the City of Wylie Water and Wastewater Impact Fee Update for the planning years 2005 through 2015. This report includes discussions on Land Use Assumptions, impact fee methodology, the Impact Fee Capital Improvement Plan, Capital Improvement Plan maps, utilized capacity calculations, and maximum impact fee by service unit equivalent tabulations.

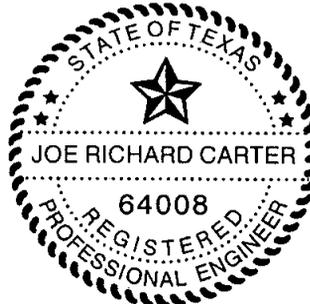
The maximum allowable fees per service unit (defined as a 3/4-inch water meter), adjusted to fifty percent (50%) of the maximum calculated fees are as follows:

**Maximum Water Impact Fee per Service Unit ..... \$1,304.97**  
**Maximum Wastewater Impact Fee per Service Unit ..... \$1,231.01**

Table Number 18 summarizes the findings and maximum allowable impact fee for water and wastewater services based on various size water meters.

We have enjoyed working with the City of Wylie on this important project. The cooperation and input we received from you and the City staff was invaluable. We are available to discuss the findings and conclusions of this impact fee update further at your convenience and look forward to our continued working relationship.

Sincerely yours,



Joe Richard Carter, P.E.

Enclosures

**CITY OF WYLIE, TEXAS**  
**WATER AND WASTEWATER IMPACT FEE UPDATE**

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## CITY OF WYLIE

### WATER AND WASTEWATER IMPACT FEE UPDATE

#### I. INTRODUCTION

On April 24, 2001, the City of Wylie adopted Ordinance No. 2001-19 “Establishing Water and Wastewater Impact Fees” in accordance with Chapter 395 of the Local Government Code. The ordinance and associated impact fees were established and based on the Service Area Land Use Assumptions and Capital Improvements Plan prepared by Hunter Associates of Texas, Ltd., dated March 2001. The maximum calculation fee and current imposed fees are summarized below:

	Fee Per Service Unit	
	Calculated Maximum	Fees Imposed (Ordinance 2001-19)
<b>Water</b>	\$1,212	\$606
<b>Wastewater</b>	\$2,446	\$1,223

Since the adoption of the Impact Fee Ordinance 2001-19, the City of Wylie has expanded its corporate boundaries and environmental jurisdiction. The City adopted a new Comprehensive Land Use Plan in April 2005. These changes in the boundaries and proposed land use prompt the requirement for an impact fee update.

In accordance with the requirements of Chapter 395.052 of the Local Government Code, this report updates the City of Wylie’s Land Use Assumptions and Capital Improvement Plan.

Chapter 395, of the Local Government Code is an act that provides guidelines for financing capital improvements required by new development in municipalities, counties, and certain other local governments. The basis for determination of an impact fee requires the preparation and adoption of a land use plan and growth assumption, and the preparation of a 10-year capital improvement plan. A master plan of the water and wastewater systems is necessary to prepare a 10-year capital improvement plan. From these two phases, a maximum impact fee is calculated.

The Act allows the maximum impact fee to be charged if revenues from future ad valorem taxes, and water and sewer bills are included as a credit in the analysis. If not, the Act allows the maximum fee to be set at 50% of the calculated maximum fee. The following items were included in the impact fee calculation:

- A. The portion of the cost of the new infrastructure that is to be paid by the City, including engineering, property acquisition and construction cost.
- B. Existing excess capacity in lines and facilities that will serve future growth and which were paid for in whole or part by the City.
- C. Engineering and quality control fees for construction projects.
- D. Interest and other finance charges on bonds issued by the City to cover its portion of cost.

The engineering analysis portion of the Water and Wastewater Impact Fee review determines utilized capacity cost of the major water distribution and wastewater collection facilities between the year 2005 and the year 2015. Facilities in this analysis include, water pump stations, water storage tanks, water transmission lines, wastewater treatment plants, wastewater lift stations and wastewater collection lines. The North Texas Municipal Water District (NTMWD) water treatment and distribution components were excluded from this analysis. The study period is a ten-year period with 2005 as the base year. The impact fee calculation for the water and wastewater systems is based on land uses provided by the City of Wylie. The City's Water Distribution and Wastewater Collection Master Plans were updated prior to this impact fee update. The Master Plans are available for review from the City of Wylie. The equivalency factors utilized in this analysis conform to the latest American Water Works Association Standards (C700 - C703).

## II. GLOSSARY

1. Advisory Committee means the capital improvements advisory committee established by the City for purposes of reviewing and making recommendations to the City Council on adoption and amendment of the City's impact fee program.
2. Area-related facility means a capital improvement or facility expansion which is designated in the impact fee capital improvements plan and which is not a site-related facility. Area-related facility may include a capital improvement that is located off-site, or within or on the perimeter of the development site.
3. Assessment means the determination of the amount of the maximum impact fee per service unit that can be imposed on new development.
4. Capital improvement means either a water facility or a wastewater facility, with a life expectancy of three or more years, to be owned and operated by or on behalf of the City.
5. City means the City of Wylie, Texas.
6. Credit means the amount of the reduction of an impact fee due, determined under this ordinance or pursuant to administrative guidelines, that is equal to the value of area-related facilities provided by a property owner pursuant to the City's subdivision or zoning regulations or requirements, for the same type of facility.
7. Facility expansion means either a water facility expansion or a sewer facility expansion.
8. Final plat approval means the point at which the applicant has complied with all conditions of approval in accordance with the City's subdivision regulations, and the plat has been approved for filing with Collin County.
9. Impact fee means either a fee for water facilities or a fee for wastewater facilities, imposed on new development by the City pursuant to Chapter 395 of the Texas Local Government Code in order to generate revenue to fund or recoup the costs of capital improvements or facility expansion necessitated by and attributable to such new development. Impact fees do not include the dedication of rights-of-way or easements for such facilities, or the construction of such improvements, imposed pursuant to the City's zoning or subdivision regulations.

10. Impact fee capital improvements plan means either a water capital improvements plan or a wastewater capital improvements plan, adopted or revised pursuant to the impact fee regulations.
11. Land use assumptions means the projections of population and growth, and associated changes in land uses, densities and intensities over at least a ten-year period, as adopted by the City and as may be amended from time to time, upon which the capital improvements plans are based.
12. Land use equivalency table means a table converting the demands for capital improvements generated by various land uses to numbers of service units, as may be amended from time to time.
13. New development means the subdivision of land; the construction, reconstruction, redevelopment, conversion, structural alteration, relocation, or enlargement of any structure; or any use or extension of the use of land; any of which increases the number of service units.
14. Plat has the meaning given the term in the City's subdivision regulations. Plat includes replat.
15. Platting has the meaning given the term in the City's subdivision regulations. Platting includes replatting.
16. Property owner has the meaning given the term in the City's subdivision regulations. Property owner includes the developer for a new development.
17. Recoupment means the imposition of an impact fee to reimburse the City for capital improvements that the City had previously oversized to serve new development.
18. Roadway means any freeway, expressway, principal or minor arterial or collector roadways designated in the City's adopted Thoroughfare Plan, as may be amended from time to time. Roadway does not include any roadway designated as a numbered highway on the official Federal or Texas highway system.

19. Roadway capital improvements plan means the adopted plan, as may be amended from time to time, which identifies the roadway facilities or roadway expansions and their costs for each road service area, which are necessitated by and which are attributable to new development, for a period not to exceed 10 years.
20. Roadway expansion means the expansion of the capacity of an existing roadway in the City, but does not include the repair, maintenance, modernization, or expansion of an existing roadway to better serve existing development.
21. Roadway facility means an improvement or appurtenance to a roadway that includes, but is not limited to, rights-of-way, whether conveyed by deed or easement; intersection improvements; traffic signals; turn lanes; drainage facilities associated with the roadway; street lighting or curbs.
22. Service area means either a water service area or wastewater benefit area within the City, within which impact fees for capital improvements or facility expansion will be collected for new development occurring within such area, and within which fees so collected will be expended for those types of improvements or expansions identified in the type of capital improvements plan applicable to the service area.
23. Service unit means the applicable standard units of measure shown on the land use equivalency table in the Impact Fees Capital Improvements Plan that can be converted to water meter equivalents, for water or for wastewater facilities, which serves as the standardized measure of consumption, use or generation attributable to the new unit of development.
24. Site-related facility means an improvement or facility which is for the primary use or benefit of a new development, and/or which is for the primary purpose of safe and adequate provision of water or wastewater facilities to serve the new development, and which is not included in the impact fees capital improvements plan and for which the property owner is solely responsible under subdivision or other applicable development regulations.
25. Utility connection means installation of a water meter for connecting a new development to the City's water system, or connection to the City's wastewater system.

26. Wastewater facility means a wastewater interceptor or main, lift station or other facility included within and comprising an integral component of the City's collection system for wastewater. Wastewater facility includes land, easements or structure associated with such facilities. Wastewater facility excludes site-related facilities.
27. Wastewater facility expansion means the expansion of the capacity of any existing wastewater improvement for the purpose of serving new development, but does not include the repair, maintenance, modernization, or expansion of an existing sewer facility to serve existing development.
28. Wastewater capital improvements plan means the adopted plan, as may be amended from time to time, which identifies the wastewater facilities or wastewater expansions and their associated costs which are necessitated by and which are attributable to new development, for a period not to exceed 10 years.
29. Water facility means a water interceptor or main, pump station, storage tank or other facility included within and comprising an integral component of the City's water storage or distribution system. Water facility includes land, easements or structures associated with such facilities. Water facility excludes site-related facilities.
30. Water facility expansion means the expansion of the capacity of any existing water facility for the purpose of serving new development, but does not include the repair, maintenance, modernization, or expansion of an existing water improvement to serve existing development.
31. Water improvements plan means the adopted plan, as may be amended from time to time, which identifies the water facilities or water expansions and their associated costs which are necessitated by and which are attributable to new development, for a period not to exceed 10 years.
32. Water meter means a device for measuring the flow of water to a development, whether for domestic or for irrigation purposes.

### III. LAND USE ASSUMPTIONS (Provided By: The City Of Wylie)

#### A. Purpose

Chapter 395 of the Texas Local Government Code prescribes the process by which cities in Texas must formulate development impact fees. The initial step in this process is the establishment of "land use assumptions" for the City upon which the impact fee program is based. These land use assumptions, which are derived from the Future Land Use Plan and from population projections adopted in the Comprehensive Plan, will become the basis for the preparation of impact fee capital improvement plans for water and wastewater facilities.

To assist the City of Wylie in determining the need for, and the timing of, capital improvements to serve future development, a reasonable estimation of future growth is required. The purpose of this report is to formulate growth and development projections based upon assumptions pertaining to the type, location, quantity and timing of various future land uses within the community, and to establish and document the methodology used for preparing the growth and land use assumptions.

#### B. Elements of The Land Use Assumption Report

This report contains the following components:

- 1) **Methodology** -- Explanation of the general methodology used to prepare the land use assumptions.
- 2) **Service Zone Map** (Plate 1) – The **impact** fee service area for water and wastewater facilities.
- 3) **Base Data** – Information on population and land use for Wylie for each capital facility/impact fee service area.
- 4) **Ten-Year Growth Assumptions** – Population and land use growth assumptions for ten years for each capital facility/impact fee service area.
- 5) **Ultimate Population Projections** – Projections that **reflect** a completely developed condition, based upon the City's ultimate "build-out" scenario.
- 6) **Summary** – Brief synopsis of the **land use** assumptions report.

### **C. Methodology**

Based upon the growth assumptions and the capital improvements that will be needed to support future growth, it is possible to develop an impact fee structure which fairly allocates capital improvement costs to growth areas in relationship to their impact upon the entire infrastructure system. The database and projections in this report have been formulated using reasonable and generally accepted planning principles and methodologies.

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

- 1) The character, type, density and quantity of existing development
- 2) Existing land use patterns
- 3) Anticipated future land uses (as shown in the City's Future Land Use Plan)
- 4) Availability of land for future expansion, and the City's physical holding capacity
- 5) Current growth trends in the City and region
- 6) Location and configuration of undeveloped (vacant) land
- 7) Known or anticipated development projects
- 8) Potential sanitary sewer availability (e.g., topographical constraints)
- 9) Growth policies adopted in the Future Land Use Plan

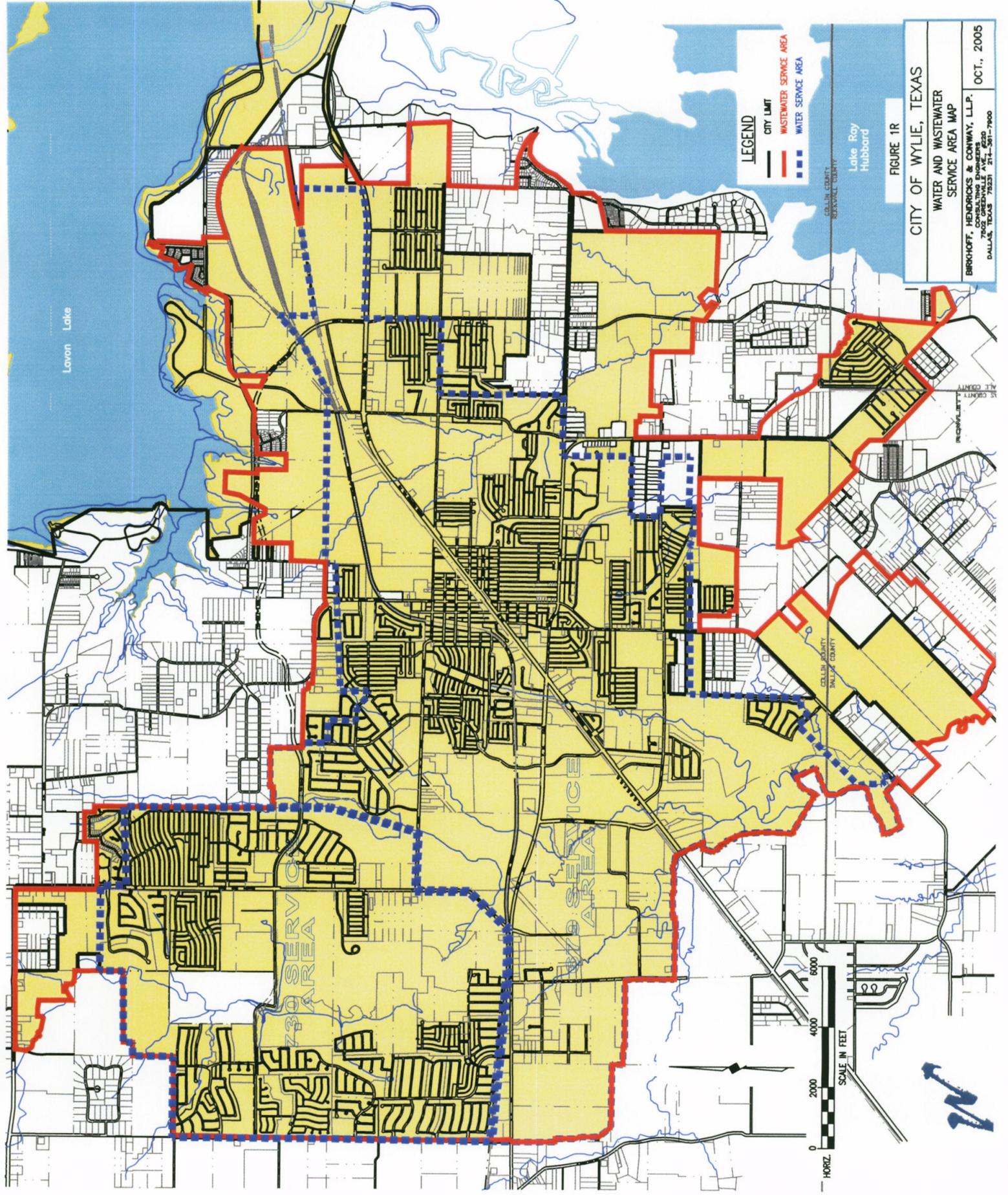
A summary of the general methodology used for the preparation of this report follows:

- 1) Establish impact fee water and wastewater service areas (see Section II – Service Area Map).
- 2) Collect/determine benchmark (i.e., base year) data on population and land use as of January 2005 (see Section III – Base Year Data).
- 3) Project population and land use growth for ten years by impact fee service areas (see Section IV – Ten-Year Growth Assumptions).
- 4) Project the ultimate population for a fully developed City, assuming full development of service area(s) (see Section V – Ultimate Population Projections).

A more detailed methodology for each is contained within the referenced sections.

**D. Service Area Maps**

**Figure 1R** on the following page shows the proposed service area for water and wastewater facilities. The service area boundary for wastewater includes all land area within the existing City limits, all that land within the Wylie water CCN, and those portions of shared CCNs that Wylie will serve as development occurs. The service area boundary for water includes all that land within the Wylie water CCN, and those portions of shared CCNs that Wylie will serve as development occurs. A recommended priority listing of projects for water and wastewater facilities will be outlined in the City's Capital Improvements Program (CIP). The actual ten-year CIP upon which the impact fee program must be based will be prepared separately, per the requirements of Chapter 395.



**LEGEND**

— CITY LIMIT

— WASTEWATER SERVICE AREA

--- WATER SERVICE AREA

Lake Roy Hubbard

FIGURE 1R

**CITY OF WYLIE, TEXAS**

**WATER AND WASTEWATER SERVICE AREA MAP**

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OCT., 2005

## E. Base Year Data

This section documents historical growth trends and base data for the City. This "benchmark" information provides a starting basis of data, as established in the City's Future Land Use Plan and updated in April 2005, for the ten-year growth assumptions.

One method of predicting future growth is looking at past growth. The historical growth rates for Wylie are shown in **Table 1** below.

**Table 1**  
**HISTORICAL GROWTH RATE**  
**City of Wylie, Texas**

<b>Year</b>	<b>City of Wylie</b>	<b>% Change</b>	<b>Compounded Average Annual % Change per Period</b>
1970 <sup>(1)</sup>	2,675	0.0%	0.0%
1980 <sup>(1)</sup>	3,152	17.8%	1.6%
1990 <sup>(1)</sup>	8,716	176.5%	10.7%
2000 <sup>(1)</sup>	14,965	71.7%	5.6%
2004 <sup>(2)</sup>	26,150	174.7%	15.0%

<sup>(1)</sup> Source: U.S. Census.

<sup>(2)</sup> Source: City of Wylie, April 2005.

Over the 30-year period of 1970 to 2000, the City of Wylie experienced a significant amount of growth. The City is continuing to experience a significant increase in population, housing, and commercial development activity. As of January 2005, the City of Wylie had a total of 2,852 residential lots in various stages of development, including recently approved zoning cases and plats. The build-out of these lots will increase the existing housing stock as follows: 8,980 existing units (2004) + 2,852 future units (2005) = 11,832 units or 31.8 % increase. Accordingly, it is anticipated that the City has the lot inventory to maintain the significant increases in population and housing growth experienced over the last ten to twenty years.

It is also anticipated that the City will continue to receive petitions for the zoning and platting of new subdivisions. There are a number of pending development cases that will provide for additional new residential units.

Another comparison and useful base data source for population growth is the past trends in residential construction. **Table 2** shows the growth trend in residential construction in the City from 2000 to 2004. At the end of 1999 there were approximately 5,340 residential units this is the base number for percentage of growth.

**Table 2**  
**RESIDENTIAL BUILDING PERMITS PER YEAR**  
**City of Wylie, Texas**

<b>Year</b>	<b>Prior Total Residential Units</b>	<b>New Residential Units</b>	<b>% Growth</b>
2000	5,340	385 <sup>(1)</sup>	7.2%
2001	5,725	749 <sup>(1)</sup>	13.1%
2002	6,474	1,085 <sup>(1)</sup>	16.8%
2003	7,559	1,415 <sup>(2)</sup>	18.7%
2004	8,974	1,162 <sup>(2)</sup>	12.9%

**Average: 959 new residential units per year over 5 years**

Source: <sup>(1)</sup> Current Housing Estimates, North Central Texas Council of Governments, 2000, 2001 and 2002.

<sup>(2)</sup> City of Wylie Building Department, 2003 and 2004.

The growth in housing shown in **Table 2** illustrates the recent trend in residential activity for the City of Wylie. The trend shown here reflects that observed for the recent trend in population growth. The City has seen sharp increases in residential growth over the past few years. As mentioned earlier, the City's available lot inventory is increasing.

For the purposes of documenting changes in population, land use, density and intensity, the data format to be used as a basis to formulate the land use assumptions will be principally population and land use estimates. These estimates and the land use inventory, from the City's Future Land Use Plan, were used to establish a beginning baseline and updated to January 2005 for the projections for Wylie.

1) Population and Land Use

Existing land uses were documented throughout each of the service areas in development of the Land Use Plan. Residential and non-residential building activity for each of the service areas was then analyzed to establish base population and employment estimates for January 2005.

The estimated population in January 2005 for both service areas is:

	<u>Water</u>	<u>Wastewater</u>
▪ Population .....	25,325	29,427
▪ Dwelling Units .....	8,980	10,434
▪ Households .....	8,585	9,975

These residential calculations are based on the following assumptions:

- Occupancy Rate ..... 95.6 percent (2000 U.S. Census for Wylie); and
- Average Household Size ..... 2.95 persons/household (2000 U.S. Census).

2) Land Use

Prior to an evaluation and projection of future land use patterns, an understanding of existing conditions is essential. Documentation of existing land use patterns within the City and its ETJ was included as part of the Land Use Plan. This data has been updated to reflect the residential and non-resident development activity that has occurred through January 2005. This documentation provides an overview of the general present physical composition and condition of the City.

**Table 3** shows a summary of estimated existing land uses for the land area within the water and sanitary sewer service zones.

**TABLE 3A**  
**Existing Land Use For The Water Service Zones – 2004**  
**City of Wylie, Texas**

Land Use	Acres Used (Developed)	Percent of Developed Area
Low Density Residential	1,527	21.71%
Medium Density Residential	2,352	33.43%
High Density Residential	142	2.02%
Commercial /Retail/Office	265	3.77%
School, Public/Semi-Public, Services	198	2.81%
Downtown Historic District	34	0.48%
Utilities/Heavy Industrial	373	5.30%
Light Industrial	2	0.03%
Parks & Open Space	88	1.25%
Agricultural	2,054	29.20%
<b>Total Area:</b>	<b>7,035</b>	<b>100.00%</b>

*Source: City of Wylie, April 2005.*

**TABLE 3B**  
**Existing Land Use For The Sanitary Sewer Service Zones – 2004**  
**City of Wylie, Texas**

<b>Land Use</b>	<b>Acres Used (Developed)</b>	<b>Percent of Developed Area</b>
Low Density Residential	2,799	22.87%
Medium Density Residential	3,501	28.60%
High Density Residential	186	1.52%
Commercial /Retail/Office	482	3.94%
School, Public/Semi-Public, Services	334	2.73%
Downtown Historic District	34	0.28%
Utilities/Heavy Industrial	447	3.65%
Light Industrial	155	1.26%
Parks & Open Space	213	1.74%
Agricultural & Floodplain	4,090	33.41%
<b>Total Area:</b>	<b>12,241</b>	<b>100.00%</b>

*Source: City of Wylie, April 2005.*

**Table 4** shows a summary of estimated existing land uses (as of April 2005), in acres per 100 persons, assuming 3 people per ESFU for the land area within the water and wastewater service areas.

**TABLE 4A**  
**Existing Land Use Per 100 Persons**  
**For The Water Service Zones – 2004**  
**City of Wylie, Texas <sup>(1)</sup>**

<b>Land Use Category</b>	<b>Acres Per 100 Persons</b>
Low Density Residential	5.84
Medium Density Residential	8.99
High Density Residential	0.54
Commercial /Retail/Office	1.01
School, Public/Semi-Public, Services	0.76
Downtown Historic District	0.13
Utilities/Heavy Industrial	1.43
Light Industrial	0.01
Parks & Open Space	0.34
Agricultural	7.85
<b>Total Area:</b>	<b>26.90</b>

<sup>(1)</sup> Based upon 2004 population of 26,150 persons. *Source: City of Wylie*

**TABLE 4B**  
**Existing Land Use Per 100 Persons**  
**For The Sanitary Sewer Service Zones – 2004**  
**City of Wylie, Texas <sup>(1)</sup>**

Land Use Category	Acres Per 100 Persons
Low Density Residential	10.71
Medium Density Residential	13.39
High Density Residential	0.71
Commercial /Retail/Office	1.84
School, Public/Semi-Public, Services	1.28
Downtown Historic District	0.13
Utilities/Heavy Industrial	1.71
Light Industrial	0.59
Parks & Open Space	0.81
Agricultural & Floodplain	15.64
<b>Total Area:</b>	<b>46.81</b>

<sup>(1)</sup> Based upon 2004 population of 26,150 persons. Source: City of Wylie

#### **F. Ten-Year Growth Assumptions**

Growth is characterized in two forms: population (residential land use) and nonresidential land use. Several assumptions were necessary in order to arrive at reasonable growth rates for population and employment in the City of Wylie. The following assumptions were made as a basis from which 10-year projections are initiated:

- 1) Future land uses will occur as shown on the Future Land Use Plan.
- 2) The City will be able to finance the necessary improvements to the water and wastewater systems to accommodate expected growth.
- 3) School facilities will accommodate expected increases in school-age population.
- 4) Densities will be as projected, based upon anticipated zoning districts.
- 5) Known or anticipated development projects will occur as presently planned.

The 10-year projections, or land use assumptions, are based upon the establishment of a reasonable growth rate based upon past trends and/or other considerations. Considering the increasing trends in population and housing growth (**Table 2**) and the City's proximity to the Dallas/Fort Worth metropolitan area and combining these factors with anticipated development projects provides a reasonable indication of growth potential. Based upon these assumptions, the annual average number of residential dwelling units constructed per year over the next 10-year period is projected to be 900. A household size of 2.95 persons per household with an occupancy rate of 95.6 percent was used to

calculate the future population based on the projected residential activity. The 2004 population of 26,150 (Table 1) is projected to increase to approximately 51,520 by the year 2015, representing a compounded annual growth rate of 7.02%. This rate would generate an average population increase of about 2,537 persons per year. The following shows the formula for calculating the ten-year growth assumptions:

Residential:

900 dwelling units x 0.956 occupancy rate = 860 occupied dwelling units/year

860 occupied dwelling units/year x 2.95 household size = 2,537 persons/year

2,537 persons/year x 10 years = 25,370 persons net 10-year residential growth

*“Note: It should be noted that the 10-year population and housing projection assumes growth potential within the existing municipal boundaries and the existing extraterritorial jurisdiction (ETJ). These projections do not assume residential growth beyond the existing ETJ.”*

This rate of growth (7.02% compound annual growth rate) is a reasonable rate for Wylie to be expected to grow at over the next 10 years. The growth rate projected for Wylie is less than the compounded annual growth rate over the last 14 years (8.2%) and is consistent with other comparable cities within the region. The region, in which Wylie is located, is one of the State’s fastest growing population and employment centers.

**Table 5** shows the average annual compounded growth rates for other cities in the area and for Collin County from 1990 to 2000:

**TABLE 5**  
**Populations and Growth Rates of Area Cities**  
**and Collin County -- 1990 and 2000**

<b>City/Jurisdiction</b>	<b>1990 Population</b>	<b>2000 Population</b>	<b>Compounded Average Annual % Change</b>
Wylie	8,716	14,965	5.6%
Allen	19,315	43,544	8.0%
Frisco	6,138	33,714	19.0%
McKinney	21,283	54,369	10.0%
Murphy	1,547	3,099	7.0%
Plano	127,885	222,030	6.0%
Prosper	1,018	2,097	7.0%
Collin County	219,212	415,219	7.0%

*Source: U.S. Census, 1990 and 2000.*

**Table 5** illustrates that the regional growth pattern is continuing to move outward from Dallas toward the City of Wylie. Those cities that experienced the greatest amount of growth from the 1980s to the 1990s have achieved significant levels of build-out and those cities further north have begun to experience significant population and housing increases. Those cities north and west of Wylie are currently experiencing growth rates similar to those projected for Wylie through 2015.

The projected annual growth rate for the City of Wylie and the resulting population projection of 51,520 persons for the 10-year planning horizon is considered reasonable for planning purposes. As mentioned, this growth is projected throughout the City's water and wastewater service area, with a substantial amount of the growth being beyond the current municipal boundaries during the next ten years. The above mentioned growth rate represents growth throughout the water and wastewater service zones.

It is anticipated that most of this projected growth will ultimately be incorporated into the City service area limits for several reasons:

- 1) More stringent environmental laws pertaining to septic waste systems.
- 2) Increasing insurance rates outside corporate City limits.
- 3) The City's progressive philosophy regarding water and sewer line extensions.
- 4) Proposed upgrading of construction standards in the City's ETJ.

Changes in population affect the use of land. In the case of Wylie, increased population is due to the conversion of vacant or agricultural land into residential and other land uses. Non-residential development will increase in order to provide the goods and services that the increased population will demand. The estimation of the additional acres to be developed for the next 10 years will aid in the determination of demand for additional water and wastewater facilities.

**Table 6** shows the additional Retail/Office, Commercial, and industrial land uses required for the increase in population projected through 2015 (25,370 people).

**TABLE 6A**  
**TEN-YEAR LAND USE PROJECTIONS -- 2015**  
**For The Water Service Zones – 2015**  
**City of Wylie, Texas**

Land Use	Future Acres Per 100 Persons	Acres Required For 25,370 Persons
Commercial/Retail/Office	1.80	457
School, Public/Semi-Public, Services	0.67	170
Utilities, Heavy and Light Industrial	2.50	634
Parks & Open Space	1.03	261
<b>Total Acres:</b>	<b>6.00</b>	<b>1,522</b>

*Source: City of Wylie, April 2005.*

The future acres per 100 persons reflect those ratios that have been observed for Texas cities with healthy local economies. It should be noted that these ratios also closely reflect the existing land use mix for Wylie's water and wastewater service areas. The ratios are used to calculate the amount of non-residential development that the local population may support.

#### **G. Ultimate Population Projection**

An ultimate, or holding capacity, land use and population projection was also established in the City of Wylie's Future Land Use Plan. First, known densities of development were considered. Then, based upon the remaining developable vacant land in Wylie and its ETJ, densities of anticipated development projects were applied. The ultimate population of the City of Wylie is a function of anticipated residential land use area (acres), housing density (dwelling units per acre), and population density (persons per dwelling unit). Based upon the land uses identified on the Future Land Use Plan, the total ultimate land use areas of residential development were calculated using the density standards adopted as part of the Future Land Use Plan. The ultimate holding capacity for the planning area, assuming that each residential area is built out to its maximum capacity, generates a maximum population of approximately 75,600 persons for the sewer service area, excluding the unincorporated lake areas.

## **H. Summary**

The data used to compile these land use assumptions were from three sources, anticipated development for the City of Wylie, residential building data and other data from the City, and information from the Future Land Use Plan. The ten-year growth projections were calculated based upon reasonable growth rates and trends for Wylie and the surrounding area. Ultimate projections were based upon the holding capacity of vacant land using land use types and applying densities as established by development policies, the Future Land Use Plan, and known proposed development plans.

The land use assumptions may be summarized as follows:

- 1) The Wylie wastewater planning area contains approximately 24.19 square miles, about 50% of which is presently undeveloped land or right-of-way.
- 2) The 2004 estimated population in the existing water service area is 25,325. The 2004 estimated population in the existing wastewater service area is 29,427.
- 3) The ten-year growth projections were calculated using a compounded average annual growth rate of approximately 7.02%.
- 4) The ten-year population projection for Wylie is approximately 51,520 persons inside the water service area and 57,996 in the sanitary sewer service area.
- 5) The ultimate (build-out) population within the water service area is approximately 55,900 persons and 75,600 persons in the wastewater service area, according to the adopted Land Use Plan.

#### IV. DEFINITION OF A SERVICE UNIT – WATER AND WASTEWATER

Chapter 395 of the Local Government Code requires that impact fees be based on a defined service unit. A “service unit” means a standardized measure of consumption, use generation, or discharge attributable to an individual unit of development calculated in accordance with generally accepted engineering or planning standards. This update defines a water and wastewater service unit to be a *3/4-inch water meter* and has referred to this service unit as a Single Family Living Unit Equivalent (SFLUE). The SFLUE is based on the continuous duty capacity of a 1-inch water meter. This is the typical meter used for a single-family detached dwelling, and therefore is considered to be equivalent to one “living unit”. Many single-family dwellings were constructed with 5/8-inch meters in the City; therefore, 5/8-inch meters are also considered one “living unit”. Other meter sizes can be compared to the 3/4-inch meter through a ratio of water flows as published by the American Water Works Association as shown in Table No. 7 below. This same ratio is then used to determine the proportional water and wastewater impact fee amount for each water meter size.

**TABLE NO. 7**  
**Living Unit Equivalencies**  
**For**  
**Various Types and Sizes Of Water Meters**

<b>Meter Type</b>	<b>Meter Size</b>	<b>Continuous Duty Maximum Rate (gpm) <sup>(a)</sup></b>	<b>Ratio to 3/4" Meter</b>
Simple	3/4"	15	1.0
Simple	1"	25	1.7
Simple	1 1/2"	50	3.3
Simple	2"	80	5.3
Compound	2"	80	5.3
Turbine	2"	100	6.7
Compound	3"	160	10.7
Turbine	3"	240	16.0
Compound	4"	250	16.7
Turbine	4"	420	28.0
Compound	6"	500	33.3
Turbine	6"	920	61.3
Compound	8"	800	53.3
Turbine	8"	1,600	106.7
Compound	10"	2,300	153.3
Turbine	10"	2,500	166.7
Turbine	12"	3,300	220.0

<sup>(a)</sup> Source: AWWA Standard C700 (1995) - C703 (1996)

## V. CALCULATION OF WATER & WASTEWATER - LIVING UNIT EQUIVALENTS

The City of Wylie provided the existing water meter count by size category as of January 2005. In total, there are 9,344 water meters serving the existing population of 25,325 residents and business. **Table No. 8** shows the number of existing meters, the living unit equivalent factor and the total number of living unit equivalents for water accounts.

The City also provided wastewater accounts as of December 2004. There are 10,743 accounts serving 29,427 residents. **Table No. 9** illustrates the existing account and SFLUE's.

Using the growth rate provided by the Land Use Assumptions prepared by the City, a straight-line extrapolation of water meters and wastewater accounts were calculated for the year 2015. Living unit equivalents were then applied to the water meters and wastewater accounts for 2005 and 2015 resulting in a total number of living units. The difference in the total number of 2005 and 2015 living units results in the new living unit equivalents during the impact fee period. The calculation of living unit equivalents is summarized in Table Nos. 8 and 9.

**TABLE NO. 8**  
**Water Living Unit Equivalents 2005 - 2015**

Meter Size	2005			2015			New SFLUE's During Impact Fee Period
	Number of Water Meters	Living Unit Equivalent	Total Number of SFLUE's	Number of Water Meters	Living Unit Equivalent	Total Number of SFLUE's	
5/8" & 3/4"	8,991	1	8,991	17,720	1	17,720	8,729
1"	148	1.7	252	292	1.7	496	244
2"	185	6.7	1,240	365	6.7	2,445	1,205
4"	12	28.0	336	24	28.0	672	336
6"	8	63.0	504	16	63.0	1,008	504
<b>Totals:</b>	<b>9,344</b>		<b>11,323</b>	<b>18,382</b>		<b>20,413</b>	<b>11,018</b>

**TABLE NO. 9**  
**Wastewater Living Unit Equivalents 2005 - 2015**

Equivalent Meter Size	2005			2015			New SFLUE's During Impact Fee Period
	Number of Water Meters	Living Unit Equivalent	Total Number of SFLUE's	Number of Water Meters	Living Unit Equivalent	Total Number of SFLUE's	
5/8" & 3/4"	10,390	1	10,390	20,477	1	20,477	10,087
1"	148	1.7	252	292	1.7	496	244
2"	185	6.7	1,240	365	6.7	2,445	1,205
4"	12	28.0	336	24	28.0	672	336
6"	8	63.0	504	16	63.0	1,008	504
<b>Totals:</b>	<b>10,743</b>		<b>12,722</b>	<b>21,134</b>		<b>22,938</b>	<b>12,376</b>

**VI. WATER DISTRIBUTION SYSTEM**

Birkhoff, Hendricks & Conway, L.L.P. Consulting Engineers prepared computer models for the years 2005 and 2015. The models were developed from residential population projections and planning units provided by the City of Wylie. Employment population was considered in a similar manner. The land areas follow closely to the construction of major facilities in the system as outlined in Figure 2. These facilities include major distribution lines, pump stations, ground storage reservoirs and elevated storage tanks.

All computer models were run for the Maximum Hourly Demand and the Minimum Hourly Demand to insure proper sizing of the facilities to meet peak demand periods.

**A. Existing Pump Stations, Ground Storage Reservoirs & Elevated Storage Tanks**

For purposes of this Impact Fee, the existing Nortex, North Texas Municipal Water District and Newport Harbor Pump Stations, ground storage reservoirs and two elevated storage tanks are considered fully utilized in the impact fee calculation.

**TABLE NO. 10**

**Water Distribution System -- Existing Pump Stations & Ground Storage**

<b>Pump Station</b>	<b>Number of Pumps</b>	<b>Rated Capacity (MGD)</b>	<b>Number of Ground Storage Tanks</b>	<b>Total Ground Storage Available (Gallons)</b>
Nortex	2	0.86	1	900,000
NTMWD	4	2.88	1	*1,700,000
Newport Harbor	4	5.84	1	500,000
<b>Total:</b>	<b>10</b>	<b>9.58</b>	<b>3</b>	<b>3,100,000</b>

\* - As directed, 1,700,000 gallons of 10 million gallon clear wells are assumed to be available for the City.

<b><u>Elevated Storage Tanks</u></b>	<b><u>Capacity in Gallons</u></b>
South Ballard Elevated Storage Tank	250,000
Regency Elevated Storage Tank	<u>750,000</u>
<b>Total</b>	<b>1,000,000</b>

The pump stations and ground storage facilities were analyzed with the maximum daily demand, while elevated storage act dynamically and therefore are analyzed utilizing the difference between the Maximum Hourly Demand and the Maximum Daily Demand.

**B. Distribution Lines**

The distribution lines consist of all lines within the service area boundary supplying water to customers in the City of Wylie. Lines vary in size from 5/8-inch and 3/4-inch services to 24-inch transmission lines. Unless it is expected a smaller diameter water line will be constructed by the City of Wylie, only those water lines 12-inches and larger in diameter were considered in the Impact Fee calculations. The cost of water lines includes construction cost, appurtenances (water valves, fire hydrants, taps and the like), utility relocations, purchase of easements and engineering costs. Financing cost over a 20-year term is included for each project.

Records for existing water lines were unavailable and existing distribution lines were not included in the impact fee analysis. Unit cost for proposed capital improvement water lines 12-inches and larger in diameter were classified as City initiated water lines including the full cost of the facility. Developer initiated water line projects, 12-inches or less in diameter, were not included in this Impact Fee analysis, as the cost for these size lines are the responsibility of the developer.

**C. Water Supply**

The City of Wylie currently receives all of its water supply from the North Texas Municipal Water District (NTMWD). Wylie's allocation of the capital cost of services as a customer of the NTMWD was specifically excluded from the impact fee analysis.

If included, Wylie's share of the NTMWD capital cost could include the original construction cost, expansion cost, financing cost, engineering cost and real estate cost of the following components:

- 1) Water Rights Cost in Lake Lewisville and Other Reservoirs
- 2) Raw Water Intake Structures
- 3) Raw Water Pump Stations
- 4) Water Treatment Plant and Expansions
- 5) High Service Pump Stations
- 6) Transmission Lines
- 7) NTMWD Owned Ground Storage Facilities
- 8) Metering Facilities

**D. Water Distribution System Capital Improvement Projects**

In order to meet the demands of the anticipated growth over the next 10-years, as provided in the Land Use Assumptions, certain water distribution system improvements are required. **Figure 2** shows the recommended system improvements and Table No. 11 itemizes each project and the project cost. These recommended improvements form the basis for the Water System Impact Fee Calculation.

Actual capital cost, including construction, engineering and easements of the various elements of the existing water distribution system was utilized where the information was known. The existing cost of facilities was determined from records provided by the City of Wylie. Where actual costs are not known, an average cost in 2004 dollars has been calculated. The average unit cost is from a limited survey of projects, which bid recently, plus an estimated cost for engineering and easements. There are many variable factors that can have a significant impact on the actual construction cost of a project such as local conditions, material cost increases and fuel cost increases to name a few.

*The capital improvement plan provides for system improvements within the defined service area. Some of the system improvements may be physically located beyond the boundaries of the services area, but are necessary to provide adequate system service and capacity.*



**Table No. 11**  
**CITY OF WYLIE, TEXAS**  
**WATER DISTRIBUTION SYSTEM**  
**10-YEAR CAPITAL IMPROVEMENT PLAN**

**Water Lines**

Project No.	Year	Project	Size	Opinion of Construction Cost (1)	Debt Service (2)	Total Project Cost
L1	2005	Creekside Distribution Line No. 1	20"	\$ 866,000	\$ 545,581	\$ 1,411,581
L2	2005	Creekside Distribution Line No. 2	16" - 20"	\$ 416,500	\$ 262,395	\$ 678,895
L3	2006	Newport Harbor Distribution Line No. 1	12" - 24"	\$ 1,396,000	\$ 879,480	\$ 2,275,480
L4	2007	Creekside Distribution Line No. 3	16"	\$ 568,000	\$ 357,840	\$ 925,840
L5	2008	F.M. 1378 Distribution Line No. 1	12"	\$ 449,000	\$ 282,870	\$ 731,870
L6	2006	Westgate 20" Waterline Crossing at F.M. 544	20"	\$ 97,500	\$ 61,425	\$ 158,925
L7	2007	State Highway 78 Distribution Line No. 1	20" - 24"	\$ 942,000	\$ 593,460	\$ 1,535,460
L8	2008	State Highway 78 Distribution Line No. 2	16" - 24"	\$ 830,500	\$ 523,216	\$ 1,353,716
L9	2009	Hensley Lane Distribution Line No. 1	12"	\$ 916,000	\$ 577,080	\$ 1,493,080
L10	2005	East Alanis Drive Distribution Line	12"	\$ 250,000	\$ 131,250	\$ 381,250
L11	2010	Lake Travis Drive and Canyon Lake Drive Waterlines	8"	\$ 99,000	\$ 62,370	\$ 161,370
L12	2012	East Side Water Distribution Lines	12"	\$ 473,000	\$ 297,990	\$ 770,990
L13	2012	Woodbridge Water Distribution Line	8" - 12"	\$ 740,000	\$ 466,200	\$ 1,206,200
L14	2007	Pressure Reducing Valve Vaults	8" - 12"	\$ 314,500	\$ 198,135	\$ 512,635
L15	2007	Brown Street and Sanden Water Lines	12"	\$ 300,000	\$ 189,000	\$ 489,000
<b>Subtotal: Water Lines</b>				<b>\$ 8,658,000</b>	<b>\$ 5,428,292</b>	<b>\$ 14,086,292</b>

**Pumping and Storage Facilities**

Project No.	Year	Project	Capacity	Opinion of Construction Cost (1)	Debt Service (2)	Total Project Cost
P1	2005	Nortex Pump Station Improvements - Phase 1	2.3 MGD	\$ 163,000	\$ 102,690	\$ 265,690
S1	2005	Creekside Elevated Storage Tank	2.0 MG	\$ 2,883,260	\$ 1,816,454	\$ 4,699,714
P2	2006	Nortex Pump Station Improvements - Phase 2	5.9 MGD	\$ 358,000	\$ 225,540	\$ 583,540
S2	2006	Newport Harbor Ground Storage Reservoir No. 2	2.0 MG	\$ 1,255,200	\$ 790,776	\$ 2,045,976
P3	2006	NTMWD Pump Station Improvements - Phase 1	6.1 MGD	\$ 941,000	\$ 592,830	\$ 1,533,830
P4	2007	Newport Harbor Pump Station Improvements - Phase 1	8.3 MGD	\$ 160,000	\$ 100,800	\$ 260,800
S3	2007	Nortex Ground Storage Reservoir No. 2	1.5 MG	\$ 913,000	\$ 575,190	\$ 1,488,190
P5	2008	Newport Harbor Pump Station Improvements - Phase 2	11.5 MGD	\$ 160,000	\$ 100,800	\$ 260,800
P6	2009	NTMWD Pump Station Improvements - Phase 2	9 MGD	\$ 130,000	\$ 81,900	\$ 211,900
P7	2012	Nortex Pump Station Improvements - Phase 3	8.8 MGD	\$ 135,000	\$ 85,050	\$ 220,050
S4	2012	Ballard Elevated Storage Tank Replacement	1.5 MG	\$ 2,675,000	\$ 1,685,250	\$ 4,360,250
S5	2012	Newport Harbor Ground Storage Reservoir No. 1 (New)	1.0 MG	\$ 844,000	\$ 531,720	\$ 1,375,720
S6	2012	Nortex Ground Storage Reservoir No. 1 (Replace)	1.0 MG	\$ 675,000	\$ 425,250	\$ 1,100,250
P8	2014	NTMWD Pump Station Improvements - Phase 3	10.9 MGD	\$ 136,000	\$ 85,680	\$ 221,680
<b>Subtotal: Pumping and Storage Facilities</b>				<b>\$ 11,428,460</b>	<b>\$ 7,199,930</b>	<b>\$ 18,628,390</b>

**Table No. 11  
CITY OF WYLIE, TEXAS  
WATER DISTRIBUTION SYSTEM  
10-YEAR CAPITAL IMPROVEMENT PLAN**

**Previous Water System Bonds**

Year	Project	% Utilized	Principle	Debt Service (Actual)	Total Cost
2002	Wylie Water & Sewer Bonds @ 50% of Total	45%	\$ 232,875	\$ 99,024	\$ 331,899
2000	Wylie Water & Sewer Bonds @ 20% of Total	45%	\$ 132,300	\$ 61,632	\$ 193,932
2000	Regency Elevated Storage Tank	20%	\$ 257,000	\$ 159,340	\$ 416,340
1999	Wylie Water & Sewer Bonds @ 50% of Total	50%	\$ 277,500	\$ 118,533	\$ 396,033
1999	Wylie General, Water & Sewer Bonds @ 22.2225% of Total	50%	\$ 226,114	\$ 80,343	\$ 306,457
	<b>Subtotal: Previous Water System Bonds</b>		<b>\$ 1,125,789</b>	<b>\$ 518,871</b>	<b>\$ 1,644,661</b>

**Planning Expenses**

Year	Project	Opinion of Cost (1)(b)	Debt Service (2)	Total Project Cost
2005	Update Water System Master Plan	\$ 26,000	\$ -	\$ 26,000
2005	Water Impact Fee	\$ 20,000	\$ -	\$ 20,000
	<b>Subtotal, Planning Expenses:</b>	<b>\$ 46,000</b>		<b>\$ 46,000</b>

**Total Expenses For Impact Fees**

Project	% Utilized	Principle	Debt Service (2)	Total Cost
Water Transmission Lines	86.2075%	\$ 8,658,000	\$ 5,428,292	\$ 12,143,440
Pumping and Storage Facilities	80.1041%	\$ 11,428,460	\$ 7,199,930	\$ 14,922,108
Utilized Percentage of Previous Water System Bonds	100.000%	\$ 1,125,789	\$ 518,871	\$ 1,644,661
Planning Expenses	100.000%	\$ 46,000	\$ -	\$ 46,000
<b>Subtotal: Previous Water System Bonds</b>		<b>\$ 21,258,249</b>	<b>\$ 13,147,093</b>	<b>\$ 28,756,209</b>

Notes:

- (1) Opinion of Cost includes:
  - a) Engineer's Opinion of Construction Cost
  - b) Professional Services Fees (Survey, Engineering & Testing)
  - c) Cost of Easements based on \$15/L.f. of Open Cut Installation unless planned installation in existing right-of-way
- (2) Debt Service based on 20-year simple interest bonds at 6%

**E. Utilized Capacity**

Utilized capacity for the water distribution system was calculated based on the water line size required for each model year (2005, 2015 and build out). Master planning of the water distribution system is based on the maximum daily demand, maximum hourly demand, and the minimum hourly demand. Pump station capacity is generally based on the maximum daily system demand while transmission and distribution facilities are sized based on either the maximum hourly demand or the minimum hourly demand, whichever demand is greater for a particular water line. Often times, the capacity of a water line is determined by the flows generated by the minimum hourly demand. The minimum hourly flows are usually higher in those lines that are used to refill elevated storage. For each line segment in the water distribution model, the build-out flow rate in the line was compared to the flow rate in the same line segment for the 2005 and the 2015 models.

The percentage of utilized capacity was calculated for each year based on the build-out capacity. The utilized capacity during the Impact Fee period is the difference between the year 2015 capacity and the year 2005 capacity. Table No. 12 below summarizes the project cost and utilized cost over the impact fee period of 2005 - 2015 for each element of the Water Distribution System. The utilized capacity for each water distribution facility, both existing and proposed, is presented in detail in Impact Fee Capacity Calculation Tables Nos. 13, and 14.

**TABLE NO. 12****Summary of Eligible Capital Cost and Utilized Capacity Cost**

<b>Water System Facility</b>	<b>20-Year or Outstanding Project Cost</b>	<b>Utilized Capacity (\$) in the CRP Period</b>
Existing Water System Bond Projects	\$2,386,391	\$1,228,321
Existing Regency Elevated Tank	\$2,081,700	\$416,340
Proposed Pumping, Storage & CCN	\$18,628,390	\$14,922,108
Proposed Transmission/Distribution Lines	\$14,086,292	\$12,143,440
Planning Expenses	\$46,000	\$46,000
<b>Total</b>	<b>\$37,228,773</b>	<b>\$28,756,209</b>

**TABLE NO. 13**  
**CITY OF WYLIE, TEXAS**  
**WATER DISTRIBUTION IMPACT FEE STUDY**  
**PROPOSED WATER FACILITIES**

Project No.	Pump Station Improvements	Year Const.	Projected Capacity	Pump Station Cost (\$)					Capacity Utilized (%)			Capacity Utilized (\$)			
				Const.	Engineering & Testing	Debt Service Interest Rate %	20 Year Debt Service Utilizing Simple Interest	Total 20 Yr. Project Cost \$	2005	2015	In The CRF Period	2005	2015	In The CRF Period	
<b>Newport Harbor Pump Station</b>															
S2	(1) Ground Storage Reservoir (Conc.)	[4]	2006	2.0 MG	\$1,185,000	\$70,200	6%	\$790,776	\$2,045,976	0.0%	100.0%	100.0%	\$0	\$2,045,976	\$2,045,976
P4	(1) Phase I Improvements	[4]	2007	8.32 MGD	\$140,000	\$20,000	6%	\$100,800	\$260,800	0.0%	100.0%	100.0%	\$0	\$260,800	\$260,800
P5	(1) Phase II Improvements	[4]	2008	11.52 MGD	\$140,000	\$20,000	6%	\$100,800	\$260,800	0.0%	90.0%	90.0%	\$0	\$234,720	\$234,720
S5	(1) Ground Storage Reservoir (Conc.)	[4]	2011	1.0 MG	\$784,000	\$60,000	6%	\$531,720	\$1,375,720	0.0%	90.0%	90.0%	\$0	\$1,238,148	\$1,238,148
<b>Nortex Pump Station</b>															
P1	(1) Phase I Improvements	[3]	2006	2.30 MGD	\$144,150	\$18,850	6%	\$102,690	\$265,690	0.0%	100.0%	100.0%	\$0	\$265,690	\$265,690
P2	(1) Phase II Improvements	[4]	2007	5.90 MGD	\$316,600	\$41,400	6%	\$225,540	\$583,540	0.0%	100.0%	100.0%	\$0	\$583,540	\$583,540
S3	(1) Ground Storage Reservoir 2 (Steel)	[4]	2008	1.5 MG	\$863,700	\$49,300	6%	\$575,190	\$1,488,190	0.0%	90.0%	90.0%	\$0	\$1,339,371	\$1,339,371
P7	(1) Phase III Improvements	[4]	2011	9.07 MGD	\$120,000	\$15,000	6%	\$85,050	\$220,050	0.0%	90.0%	90.0%	\$0	\$198,045	\$198,045
S6	(1) Replace Ground Storage 1 (Steel)	[4]	2012	1.0 MG	\$625,000	\$50,000	6%	\$425,250	\$1,100,250	90.0%	100.0%	10.0%	\$990,225	\$1,100,250	\$110,025
<b>NTMWD Pump Station</b>															
P3	(1) Phase I Improvements	[4]	2006	6.05 MGD	\$850,550	\$90,450	6%	\$592,830	\$1,533,830	0.0%	100.0%	100.0%	\$0	\$1,533,830	\$1,533,830
P6	(1) Phase II Improvements	[5]	2009	9.22 MGD	\$118,000	\$12,000	6%	\$81,900	\$211,900	0.0%	100.0%	100.0%	\$0	\$211,900	\$211,900
P8	(1) Phase III Improvements	[6]	2013	10.94 MGD	\$123,500	\$12,500	6%	\$85,680	\$221,680	0.0%	90.0%	90.0%	\$0	\$199,512	\$199,512
<b>Proposed Elevated Storage</b>															
S1	2.0 MG Elevated Storage Tank (Creekside)		2005	2.0 MG	\$2,737,260	\$146,000	6%	\$1,816,454	\$4,699,714	0.0%	90.0%	90.0%	\$0	\$4,229,743	\$4,229,743
S4	(1) 1.5 MG Elevated Storage Tank (S. Ballard)		2010	1.5 MG	\$2,540,000	\$135,000	6%	\$1,685,250	\$4,360,250	33.3%	90.0%	56.7%	\$1,453,417	\$3,924,225	\$2,470,808
<b>Proposed Facility Total</b>					<b>\$10,687,760</b>	<b>\$740,700</b>		<b>\$7,199,930</b>	<b>\$18,628,390</b>				<b>\$990,225</b>	<b>\$17,365,750</b>	<b>\$14,922,108</b>

**CITY OF WYLIE, TEXAS**  
**WATER DISTRIBUTION IMPACT FEE STUDY**  
**EXISTING WATER FACILITIES**

Pump Station Improvements	Year Const.	Projected Capacity	Pump Station Cost (\$)					Capacity Utilized (%)			Capacity Utilized (\$)				
			Const.	Engineering & Testing	Debt Service Interest Rate %	20 Year Debt Service Utilizing Simple Interest	Total 20 Yr. Project Cost \$	2005	2015	In The CRF Period	2005	2015	In The CRF Period		
<i>Existing Regency Elevated Storage Tank</i>															
(1) Exist 0.75 MG Elevated Storage Tank		2000	0.75 MG	\$1,200,000	\$85,000	5%	\$796,700	\$2,081,700	80.0%	100.0%	20.0%	\$1,665,360	\$2,081,700	\$416,340	
<i>Existing Facility Total</i>					<i>\$1,200,000</i>	<i>\$85,000</i>		<i>\$796,700</i>	<i>\$2,081,700</i>				<i>\$1,665,360</i>	<i>\$2,081,700</i>	<i>\$416,340</i>
<b>Facilities Total Existing + Proposed</b>					<b>\$11,887,760</b>	<b>\$825,700</b>		<b>\$7,996,630</b>	<b>\$20,710,090</b>				<b>\$2,655,585</b>	<b>\$19,447,450</b>	<b>\$15,338,448</b>

(1) Estimated Cost  
(2) Number of Pumps

TABLE NO. 14  
CITY OF WYLIE, TEXAS  
WATER SYSTEM IMPACT FEE STUDY  
PROPOSED CIP - WATER LINES

\* Average Unit costs are based in 2005 dollars unless otherwise indicated. Projects not in Phase 1 of CIP include 25% for engineering and miscellaneous contingencies. Projects in Phase 1 of CIP include proposed engineering fee and 15% for miscellaneous contingencies. All projects include \$15/Lf. of open cut installation for easements unless they are planned to be constructed within existing right-of-way.

Pipe Number	Length (Ft.)	Diameter (Inches)	Date of Const.	Avg. Unit Cost (\$/Ft.)	Total Capital Cost (\$)	Debt Service Interest Rate %	20 Year Debt Service Utilizing Simple Interest	Total 20 Year Project Cost (\$)	Utilized Capacity (%)		Utilized Capacity (\$)		During Fee Period
									2005	2015	2005	2015	
<b>Project No. L1 - Creekside Distribution Line No. 1 [730 Service Area]</b>													
This project connects the existing 16" waterline east of the Creekside Estates Subdivision to the existing 12" waterline at Creekside Estates Drive													
352	5,100	20		\$121.91	\$621,750		\$391,703	\$1,013,453	0%	85%	\$0	\$861,435	\$861,435
1	199	1,400		\$174.46	\$244,250		\$153,878	\$398,128	0%	85%	\$0	\$338,409	\$338,409
1	375		2005		\$866,000	6%	\$545,581	\$1,411,581	0%	85%	\$0	\$1,199,844	\$1,199,844
Subtotal:	6,500												
<b>Project No. 2 - Creekside Distribution Line No. L2 [730 Service Area]</b>													
This project connects the existing 12" waterline along McMillan Road and McCreary Road to the existing 12" waterline south of Creekside Estates Phase 7													
223	140	16		\$403.64	\$56,510		\$35,601	\$92,111	0%	85%	\$0	\$78,294	\$78,294
335	2,500	20	2005	\$144.00	\$359,990	6%	\$226,794	\$586,784	0%	85%	\$0	\$498,766	\$498,766
Subtotal:	2,640				\$416,500		\$262,395	\$678,895				\$577,060	\$577,060
<b>Project No. L3 - Newport Harbor Distribution Line No. 1 [730 Service Area]</b>													
The Newport Harbor Pump Station will serve the High Pressure Service Area. The Newport Harbor Distribution Line will allow for future growth in the High Pressure Service Area.													
399	740	20		\$208.31	\$154,152		\$97,116	\$251,268	0%	85%	\$0	\$213,578	\$213,578
386	5,150	18		\$146.99	\$757,010		\$476,916	\$1,233,926	0%	85%	\$0	\$1,048,837	\$1,048,837
2	25						\$0	\$0	0%	0%	\$0	\$0	\$0
2	24						\$0	\$0	0%	0%	\$0	\$0	\$0
403							\$145,550	\$376,581	0%	85%	\$0	\$320,094	\$320,094
2	400	16		\$145.30	\$231,031		\$145,550	\$376,581	0%	85%	\$0	\$320,094	\$320,094
2	401						\$159,898	\$413,705	0%	85%	\$0	\$351,649	\$351,649
2	219	12	2006	\$105.75	\$233,807	6%	\$879,480	\$2,275,480	0%	85%	\$0	\$1,934,158	\$1,934,158
Subtotal:	9,880				\$1,396,000								
<b>Project No. L4 - Creekside Distribution Line No. 3 [730 Service Area]</b>													
This project begins west of the Creekside Elevated Storage Tank and connects to the existing 16" waterline along McCreary Road.													
218	5,100	16		\$111.37	\$568,000		\$357,840	\$925,840	0%	85%	\$0	\$786,964	\$786,964
371			2006		\$568,000	6%	\$357,840	\$925,840	0%	85%	\$0	\$786,964	\$786,964
Subtotal:	5,100												
<b>Project No. L5 - F.M. 1378 Distribution Line [730 Service Area]</b>													
This project connects the existing 12" waterline along E.M. 1378 at Brown Street to the existing 12" waterline in Lakefield Drive													
361	4,900	12		\$91.63	\$449,000		\$282,870	\$731,870	0%	85%	\$0	\$622,090	\$622,090
360							\$0	\$0	0%	0%	\$0	\$0	\$0
153							\$282,870	\$731,870	0%	85%	\$0	\$622,090	\$622,090
Subtotal:	4,900				\$449,000		\$282,870	\$731,870					
<b>Project No. L6 - Westgate 20" Waterline Crossing F.M. 544 [679 Service Area]</b>													
This project connects the existing 20" waterline along Westgate Way north of F.M. 544 to the existing 12" waterline south of F.M. 544													
385	150	20	2006	\$650.00	\$97,500	6%	\$61,425	\$158,925	0%	85%	\$0	\$135,086	\$135,086
Subtotal:	150				\$97,500		\$61,425	\$158,925					
<b>Project No. L7 - State Highway 78 Distribution Line No. 1 [679 Service Area]</b>													
This project connects the existing waterline near Birmingham Avenue to the existing 14" waterline in Brown Street													
374	2,900	20		\$232.06	\$672,970		\$423,971	\$1,096,941	0%	90%	\$0	\$987,247	\$987,247
376							\$0	\$0	0%	0%	\$0	\$0	\$0
379	1,150	24		\$233.94	\$269,030		\$169,489	\$438,519	0%	90%	\$0	\$394,667	\$394,667
362							\$593,460	\$1,535,460	0%	90%	\$0	\$1,381,914	\$1,381,914
Subtotal:	4,050				\$942,000		\$593,460	\$1,535,460					

**TABLE NO. 14**  
**CITY OF WYLIE, TEXAS**  
**WATER SYSTEM IMPACT FEE STUDY**  
**PROPOSED CIP - WATER LINES**

\* Average Unit costs are based in 2005 dollars unless otherwise indicated. Projects not in Phase 1 of CIP include 25% for engineering and miscellaneous contingencies. Projects in Phase 1 of CIP include proposed engineering fee and 15% for miscellaneous contingencies. All projects include \$1.5/Lf. of open cut installation for easements unless they are planned to be constructed within existing right-of-way.

Pipe Number	Length (Ft.)	Diameter (Inches)	Date of Const.	Avg. Unit Cost (\$/Ft.)	Total Capital Cost (\$)	Debt Service Interest Rate %	20 Year Debt Service Utilizing Simple Interest	Total 20 Year Project Cost (\$)	Utilized Capacity (%)		Utilized Capacity (\$)		During Fee Period
									2005	2015	2005	2015	
<b>Project No. L8 - State Highway 78 Distribution Line No. 2 [679 Service Area]</b>													
This project parallels the existing 14" waterline in Brown Street and from the NTMWD Pump Station to F.M. 544 and the 8" waterline along F.M. 544													
2	3,050	16		\$121.66	\$371,077		\$233,779	\$604,856		0%	90%	\$0	\$544,370
2	389	18		\$204.99	\$81,995		\$51,657	\$133,652		0%	90%	\$0	\$120,287
2	377	24		\$157.26	\$377,428		\$237,780	\$615,208		0%	90%	\$0	\$553,687
	<b>Subtotal:</b>	<b>5,850</b>	<b>2007</b>		<b>\$830,500</b>	<b>6%</b>	<b>\$523,216</b>	<b>\$1,355,716</b>				<b>\$0</b>	<b>\$1,218,344</b>
<b>Project No. L9 - Hensley Lane Distribution Line [679 Service Area]</b>													
This project connects the existing 12" waterline along Maxwell Creek Road to the existing 12" waterline along Hensley Lane													
2	310	12		\$93.95	\$916,000		\$577,080	\$1,493,080		0%	85%	\$0	\$1,269,118
2	311						\$0	\$0		0%	0%	\$0	\$0
2	312						\$0	\$0		0%	0%	\$0	\$0
2	313						\$0	\$0		0%	0%	\$0	\$0
	<b>Subtotal:</b>	<b>9,750</b>	<b>2008</b>		<b>\$916,000</b>	<b>6%</b>	<b>\$577,080</b>	<b>\$1,493,080</b>				<b>\$0</b>	<b>\$1,269,118</b>
<b>Project No. L11 - Lake Travis Drive and Canyon Lake Drive Waterlines [679 Service Area]</b>													
This project will loop the existing 8" waterlines in the subdivision to provide better pressures and chlorine residuals.													
2	340	8		\$79.20	\$99,000		\$62,370	\$161,370		0%	85%	\$0	\$137,165
2	343	1,250					\$0	\$0		0%	0%	\$0	\$0
	<b>Subtotal:</b>	<b>1,250</b>	<b>2010</b>		<b>\$99,000</b>	<b>6%</b>	<b>\$62,370</b>	<b>\$161,370</b>				<b>\$0</b>	<b>\$137,165</b>
<b>Project No. L12 - East Side Water Distributions Lines [679 Service Area]</b>													
This project will extend water service to the east of Spring Creek Parkway													
2	349	12		\$100.64	\$473,000		\$297,990	\$770,990		0%	85%	\$0	\$655,342
2	347	4,700					\$0	\$0		0%	0%	\$0	\$0
	<b>Subtotal:</b>	<b>4,700</b>	<b>2012</b>		<b>\$473,000</b>	<b>6%</b>	<b>\$297,990</b>	<b>\$770,990</b>				<b>\$0</b>	<b>\$655,342</b>
<b>Project No. L13 - Woodbridge Water Distribution Line [679 Service Area]</b>													
This water line will connect water in Alanis Drive to Woodbridge Property													
2	331	12		\$95.76	\$526,700		\$331,821	\$858,521		0%	85%	\$0	\$729,743
2	354						\$0	\$0		0%	0%	\$0	\$0
2	355						\$0	\$0		0%	0%	\$0	\$0
2	329	8		\$61.83	\$213,300		\$134,379	\$347,679		0%	85%	\$0	\$295,527
	<b>Subtotal:</b>	<b>8,950</b>	<b>2012</b>		<b>\$740,000</b>	<b>6%</b>	<b>\$466,200</b>	<b>\$1,206,200</b>				<b>\$0</b>	<b>\$1,025,270</b>
<b>Project No. L10 - East Alanis Drive Distribution Line [679 Service Area]</b>													
This project will connect the existing 20" waterline along South Ballard Avenue to the existing 12" waterline along Alanis Drive west of Martinez Lane													
2	221	12		\$63.78	\$250,000		\$131,250	\$381,250		0%	85%	\$0	\$324,063
2	222						\$0	\$0		0%	0%	\$0	\$0
2	381						\$0	\$0		0%	0%	\$0	\$0
2	387						\$0	\$0		0%	0%	\$0	\$0
2	388						\$0	\$0		0%	0%	\$0	\$0
	<b>Subtotal:</b>	<b>3,920</b>	<b>2005</b>		<b>\$250,000</b>	<b>.5%</b>	<b>\$131,250</b>	<b>\$381,250</b>				<b>\$0</b>	<b>\$324,063</b>
<b>Project No. L15 - Brown Street &amp; Sanden Water Lines [679 Service Area]</b>													
This project will connect the existing 12" waterline along from the existing NorTex Pump Station to 12" waterlines in Sanden Boulevard and Westgate Way													
2	405	2,600		\$115.38	\$300,000		\$189,000	\$489,000		0%	85%	\$0	\$415,650
2	407	2,600					\$0	\$0		0%	0%	\$0	\$0
	<b>Subtotal:</b>	<b>2,600</b>	<b>2007</b>		<b>\$300,000</b>	<b>6%</b>	<b>\$189,000</b>	<b>\$489,000</b>				<b>\$0</b>	<b>\$415,650</b>

**TABLE NO. 14  
CITY OF WYLIE, TEXAS  
WATER SYSTEM IMPACT FEE STUDY  
PROPOSED CIP - WATER LINES**

\* Average Unit costs are based in 2005 dollars unless otherwise indicated. Projects not in Phase 1 of CIP include 25% for engineering and miscellaneous contingencies. Projects in Phase 1 of CIP include proposed engineering fee and 15% for miscellaneous contingencies. All projects include \$15/Lf. of open cut installation for easements unless they are planned to be constructed within existing right-of-way.

Pipe Number	Length (Ft.)	Diameter (Inches)	Date of Const.	Avg. Unit Cost (\$/Ft.)	Total Capital Cost (\$)	Debt Service Interest Rate %	20 Year Debt Service Utilizing Simple Interest	Total 20 Year Project Cost (\$)	Utilized Capacity (%)		Utilized Capacity (\$)		During Fee Period
									2005	2015	2005	2015	
<b>Project No. L14 - Pressure Reducing Valve Vaults [679 Service Area &amp; 730 Service Area]</b>													
This project will allow interconnection between service zones for emergencies and temporary service.													
2			2007		\$314,500	6%	\$198,135	\$512,635	0%	90%	\$0	\$461,372	\$461,372
<b>Subtotal:</b>					<b>\$314,500</b>	<b>6%</b>	<b>\$198,135</b>	<b>\$512,635</b>	<b>0%</b>	<b>90%</b>	<b>\$0</b>	<b>\$461,372</b>	<b>\$461,372</b>
<b>Water Line CIP Total</b>	<b>70,240</b>				<b>8,658,000</b>		<b>5,428,292</b>	<b>14,086,292</b>			<b>0</b>	<b>12,143,440</b>	<b>12,143,440</b>

- 1 - City Participate in Cost Oversize
- 2 - City Initiated and Funded

## VII. WASTEWATER COLLECTION SYSTEM

### A. General

At this time, the majority of the wastewater generated in the City of Wylie (concentrating in areas adjacent to the present city center) flows by gravity and a combination of lift stations and force mains to the Wylie Wastewater Treatment Plant located near the center of the City and the new Muddy Creek Regional Wastewater Treatment Plant southwest of the City center. A small amount of current wastewater flow is handled through local residential septic systems. The Wylie Wastewater Treatment Plant has an average daily flow capacity of 1.0 MGD and a peak flow capacity of approximately 2.0 MGD. The average daily flow capacity of the new Muddy Creek Regional Wastewater Treatment Plant is 2.5 MGD and the peak flow capacity is 5.0 MGD. A planned expansion to the Muddy Creek Regional Wastewater Treatment Plant will provide an average daily flow capacity of 5.0 MGD and a peak flow capacity of 10.0 MGD.

For the purpose of this impact fee study, the Lake Side Collection Basins are not expected to commence development, to a significant degree prior to 2015. Therefore, infrastructure improvements are not planned or included in the impact fee calculation.

Muddy Creek, Cottonwood Creek and Rush Creek Basins are anticipated growth areas.

- 1) Muddy Creek: Muddy Creek includes the bulk of the existing development and produces the predominant volume of wastewater flow to the Wylie Treatment plant. The Muddy Creek Basin will add approximately 18,398 to the population by 2015.
- 2) Cottonwood Creek: Generally south of the City center is an expected growth area where approximately 4,342 will be added to the population by 2015.
- 3) Rush Creek: Generally east of the City center is an expected growth area where approximately 5,829 will be added to the population by 2015.

### B. Collection Lines

The wastewater collection system analysis, a more static system than the dynamic water distribution model, covered all of the drainage basins within the study area. The wastewater project cost includes necessary appurtenances, purchase of easements, utility relocation, pavement removal and replacement, and engineering costs. For existing Impact Fee projects, actual costs were utilized where known. Future project cost estimates were based on 2005 average unit cost per linear foot and include engineering and construction cost. An allowance of \$15 per linear foot was included for easements.

The natural ground in the area to be served by the Wylie Wastewater Collection System varies in elevation from approximately 460 feet above mean sea level near the Muddy Creek Regional Wastewater Treatment Plant to 620 feet above mean sea level near the northwest City Limit. There is a natural divide running generally North to South near the Wylie city center (following Ballard Avenue to the Pleasant Valley Road).

Generally speaking, the fall of the land on the west side of this divide is to the southwest and includes five main basins. These basins are (from south to north) Lower Muddy Creek, Tributary 1 to Muddy Creek, Tributary 2 to Muddy Creek, Tributary 3 to Muddy Creek and Upper Muddy Creek. The natural creeks, whose basins will collect wastewater through the installed system of trunk lines, flow into the geographic area normally serviced by the North Texas Municipal Water District.

The fall of the land on the east side of this divide is to the southeast and includes three main basins. The basins are Cottonwood Creek (near the City center), Rush Creek (east of the City center) and Tributary 1 to Rush Creek (east of the main channel). These basins flow naturally into Lake Ray Hubbard. Flows in the City of Wylie service areas are collected in Lift Stations at the downstream limit of the service area and lifted over to the Muddy Creek basin.

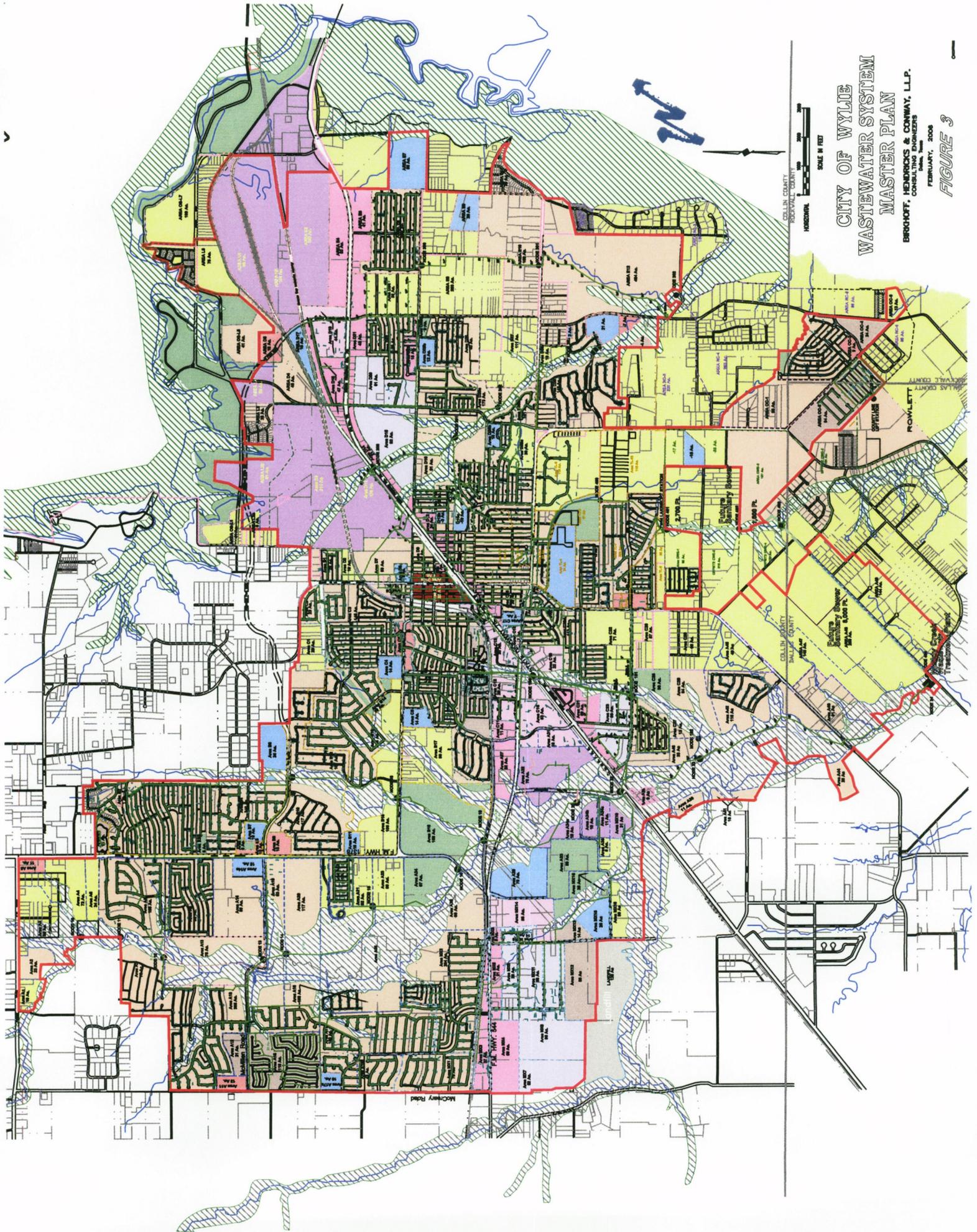
### **C. Treatment**

The Wylie Wastewater Treatment Plant is located near the City center. Currently, this plant serves the City center through both a gravity flow collection network and a network of lift stations, force mains and gravity sewers. It also serves some additional developed through a network of lift stations, force mains and gravity lines. The new Muddy Creek Regional Wastewater Treatment Plant was constructed southwest of the City center. An expansion of the Muddy Creek Regional Wastewater Treatment Plant is currently being designed. The North Texas Municipal Water District operates both treatment plants.

### **D. Capital Improvement Program**

The wastewater facilities shown in Figure 3 include City constructed collection lines, trunk sewer lines, lift stations and force mains.

The cost of the City constructed treatment plant and gravity sewers that are included in the Impact Fee Update are itemized in **Table No. 15**. The project locations are shown in **Figure No. 3**. The projects shown in Table No. 15 represent those required to meet the needs of the projected growth as provided in the Land Use Assumptions for Impact Fees.



**CITY OF WYLIE  
WASTEWATER SYSTEM  
MASTER PLAN**

**HENDRICKS & CONWAY, L.L.P.**  
BERGHOFF, CONSULTING ENGINEERS  
Dallas, Texas

FEBRUARY, 2008

**FIGURE 3**

**Table No. 15  
CITY OF WYLIE, TEXAS  
WASTEWATER COLLECTION SYSTEM**

**10-YEAR CAPITAL IMPROVEMENT PLAN**

**WASTEWATER COLLECTION LINES**

Year	Project	Size	Opinion of Construction Cost (1)	Debt Service (2)	Total Project Cost
2007	Twin Lakes Relief Sewer	30" & 42"	\$ 2,608,000	\$ 1,369,200	\$ 3,977,200
			\$ -	\$ -	\$ -
	<b>Subtotal: Wastewater Collection Lines</b>		<b>\$ 2,608,000</b>	<b>\$ 1,369,200</b>	<b>\$ 3,977,200</b>

**TREATMENT FACILITIES**

Year	Project	Capacity	Opinion of Construction Cost (1)	Debt Service (2)	Total Project Cost
2006	Treatment Plant Expansion #2	5 MGD	\$ 5,000,000	\$ 3,150,000	\$ 8,150,000
			\$ -	\$ -	\$ -
	<b>Subtotal: Treatment Facilities</b>		<b>\$ 5,000,000</b>	<b>\$ 3,150,000</b>	<b>\$ 8,150,000</b>

**MUDDY CREEK WASTEWATER INTERCEPTOR SYSTEM & PREVIOUS BOND SALES**

Year	Project	Utilized Capacity	Amount of Bond Sale (1)	Debt Service (2)	Total Project Cost
2004	NTMWD Muddy Creek Interceptor System (Bond 1)	95%	\$ 2,039,840	\$ 1,111,089	\$ 3,150,929
2004	NTMWD Muddy Creek Interceptor System (Bond 2)	95%	\$ 9,416,875	\$ 4,589,260	\$ 14,006,135
2002	Wylie Water & Sewer Bonds @ 50% of Total	95%	\$ 491,625	\$ 209,050	\$ 700,675
2000	Wylie Water & Sewer Bonds @ 80% of Total	95%	\$ 1,117,200	\$ 520,448	\$ 1,637,648
1999	Wylie Water & Sewer Bonds @ 50% of Total	95%	\$ 527,250	\$ 225,212	\$ 752,462
1997	Wylie Water & Sewer Bonds @ 22.225% of Total	95%	\$ 429,617	\$ 152,652	\$ 582,268
1988	NTMWD Contract Revenue Bonds @100% of Total	100%	\$ 355,000	\$ 43,924	\$ 398,924
	<b>Subtotal: Treatment Facilities</b>		<b>\$ 14,377,407</b>	<b>\$ 6,851,635</b>	<b>\$ 21,229,041</b>

**PLANNING EXPENSES**

Year	Project	Capacity	Opinion of Cost (1)(b)	Debt Service (2)	Total Project Cost
	Wastewater Master Plan	-	\$ 20,600	\$ -	\$ 20,600
	Wastewater Impact Fee Calculation		\$ 20,000	\$ -	\$ 20,000
	<b>Subtotal: Planning and Operations</b>		<b>\$ 40,600</b>	<b>\$ -</b>	<b>\$ 40,600</b>
	<b>Wastewater Collection System CIP Grand Total:</b>		<b>\$ 22,026,007</b>	<b>\$ 11,370,835</b>	<b>\$ 33,396,841</b>

Notes:

- (1) Opinion of Cost includes:
  - a) Engineer's Opinion of Construction Cost
  - b) Professional Services Fees (Survey, Engineering, Testing, Legal)
  - c) Cost of Easement at \$15/L.f. of Open Cut Installation
- (2) Debt Service based on 20-year simple interest bonds at 5%

**E. Utilized Capacity**

The Land Use Assumptions from the City of Wylie were utilized to calculate the utilized capacity for the wastewater collection system based on land absorption from population growth projections. The population and employment growth in each wastewater drainage basin was determined utilizing the DSA growth projections. These growth rates were utilized to calculate 2005 and 2015 design flows. The following summarizes each design flow component utilized to calculate the wastewater design flows.

1) Population Based Flow: For the purpose of this wastewater impact fee study an average per capita flow of 110 gallons per day (gpcd) is a reasonable basis for the design of the wastewater collection and treatment facilities. Peak flows associated with this per capita rate have been estimated for various segments of the collection system by using the following formula ( $PF = (5/(population/1000)^{0.167})$ ). The formula takes into account the estimated population, and, indirectly, the area of the drainage basin to be served. This method gives a ratio of peak to average flows varying from a maximum of 5.0 times the average flow for a population of 1,000 or less to 2.32 times the average flow for a population of 93,700 (includes 18,000 for the City of Murphy).

2) Non-Population Based Flow: Non-residential average flows are estimated based on an average daily flow per acre for each non-residential land use category. The following were used for average daily flow per acre for each category:

- Business/Commercial Corridor: 1,600 gallons ... Commercial/Retail: 1,400 gallons
- Neighborhood Services: 1,200 gallons ..... Public/Semi Private: 1,000 gallons
- Heavy Industrial: 2,400 gallons ..... Light Industrial: 2,000 gallons
- Parks/Open Space: 5 gallons ..... Floodplains: 0.01 gallons

A 2.0 Peaking factor was used for each non-residential land use. The combination of per capita and non-residential based flow is the basis for aggregate dry weather flow in the basins.

3) Infiltration and Inflow: Groundwater can infiltrate into the sanitary sewer system through faulty sewer pipe joints, tree roots, breaks in sewer pipes and manholes and faulty service lines. Infiltration creates an average day flow related burden on wastewater collection systems and treatment plants. Infiltration is fairly constant and not necessarily based on temporary storm based events. Normal plant capacity

must be designed to handle infiltration related flows. The City can embark on programs to rehabilitate lines that contribute significant infiltration volumes when economically and environmentally feasible, and/or desirable.

Inflow is generally related to storm based events that increase groundwater and surface water flow into the sanitary system. The additional flow is generally recognized to enter through manholes, service lines, roof drains and storm drains. Inflow related flows could cause surcharged sewers, overflows at manholes and peak flows to surpass the capacity of the treatment plant. The wastewater collection system planning calculations include a combined infiltration and inflow rate of 400 gallons per acre per day (gpad) for the entire wastewater service area. This flow is not peaked.

The percentage of utilized capacity was calculated for the design flow of each study year based on the build-out capacity. The utilized capacity during the Impact Fee period is the difference between the year 2015 capacity and the year 2005 capacity. **Table No. 16** below summarizes the project cost and utilized cost over the impact fee period of 2005 - 2015 for each element of the wastewater system. The utilized capacity for each existing and proposed wastewater facility and collection line is presented in detail in Impact Fee Capacity Calculation **Tables Nos. 17 and 18**.

**TABLE NO. 16**  
**Summary of Eligible Capital Cost and Utilized Capacity Cost**

Wastewater System Facility	20-Yr. or Outstanding Cost	Utilized Capacity (\$ in CRP Period)
2004 NTMWD Muddy Creek Interceptor System Bonds (1)	\$3,316,767	\$3,150,929
2004 NTMWD Muddy Creek Interceptor System Bonds (2)	\$14,743,300	\$14,006,135
2002 Wylie Water & Sewer Bonds @ 50% of Total	\$737,533	\$331,899
2000 Wylie Water & Sewer Bonds @ 80% of Total	\$1,723,838	\$775,727
1999 Wylie Water & Sewer Bonds @ 50% of Total	\$792,065	\$316,826
1997 Wylie General, Water & Sewer Bonds @ 22.2225%	\$612,914	\$214,520
1988 NTMWD Contract Revenue Bonds @ 100% of Total	\$398,924	\$79,785
Proposed Wastewater Collection Line	\$4,254,300	\$3,403,440
Proposed Muddy Creek WWTP Expansion	\$8,150,000	\$8,150,000
Planning Expenses	\$40,600	\$40,600
<b>Total</b>	<b>\$34,770,241</b>	<b>\$30,469,861</b>

(1) Muddy Creek Trunk Sewer – Wylie Share at 61%

(2) Muddy Creek Regional Wastewater Treatment Plant – Wylie Share at 61%

TABLE NO. 17  
CITY OF WYLIE, TEXAS  
WASTEWATER SYSTEM IMPACT FEE STUDY

**EXISTING MUDDY CREEK REGIONAL WASTEWATER SYSTEM DEBT SERVICE SCHEDULE**  
**\$3,520,000 TOTAL BOND SALE (LOWER MUDDY CREEK INTERCEPTOR COSTS)**

Wylie Share 61%

Maturity Year	Principal	Rate	Interest (12/01)	Interest (6/01)	Fiscal Total
2004			\$ 37,406.90		\$ 37,406.90
2005	\$ 76,250.00	4.875%	\$ 47,650.53	\$ 49,509.13	\$ 173,409.66
2006	\$ 67,100.00	4.875%	\$ 46,014.97	\$ 47,650.53	\$ 160,765.51
2007	\$ 70,150.00	4.875%	\$ 44,306.28	\$ 46,014.97	\$ 160,471.25
2008	\$ 73,200.00	4.875%	\$ 42,520.81	\$ 44,306.28	\$ 160,027.10
2009	\$ 79,300.00	4.875%	\$ 40,587.88	\$ 42,520.81	\$ 162,408.69
2010	\$ 82,350.00	4.875%	\$ 38,580.60	\$ 40,587.88	\$ 161,518.47
2011	\$ 85,400.00	4.875%	\$ 36,498.97	\$ 38,580.60	\$ 160,479.57
2012	\$ 91,500.00	4.875%	\$ 34,268.66	\$ 36,498.97	\$ 162,267.63
2013	\$ 94,550.00	4.875%	\$ 31,964.00	\$ 34,268.66	\$ 160,782.66
2014	\$ 100,650.00	4.875%	\$ 29,510.66	\$ 31,964.00	\$ 162,124.66
2015	\$ 103,700.00	4.000%	\$ 27,436.66	\$ 29,510.66	\$ 160,647.32
2016	\$ 109,800.00	4.125%	\$ 25,172.03	\$ 27,436.66	\$ 162,408.69
2017	\$ 115,900.00	4.250%	\$ 22,709.16	\$ 25,172.03	\$ 163,781.19
2018	\$ 122,000.00	4.300%	\$ 20,086.16	\$ 22,709.16	\$ 164,795.32
2019	\$ 128,100.00	4.400%	\$ 17,267.96	\$ 20,086.16	\$ 165,454.12
2020	\$ 134,200.00	4.500%	\$ 14,248.46	\$ 17,267.96	\$ 165,716.42
2021	\$ 143,350.00	4.500%	\$ 11,023.08	\$ 14,248.46	\$ 168,621.54
2022	\$ 149,450.00	4.625%	\$ 7,567.05	\$ 11,023.08	\$ 168,040.13
2023	\$ 155,550.00	4.700%	\$ 3,911.63	\$ 7,567.05	\$ 167,028.68
2024	\$ 164,700.00	4.750%	\$ -	\$ 3,911.63	\$ 168,611.63
<b>TOTALS</b>	<b>\$ 2,147,200.00</b>		<b>\$ 578,732.45</b>	<b>\$ 590,834.68</b>	<b>\$ 3,316,767.13</b>

**TABLE NO. 17  
CITY OF WYLIE, TEXAS  
WASTEWATER SYSTEM IMPACT FEE STUDY**

**EXISTING - MUDDY CREEK REGIONAL WASTEWATER SYSTEM DEBT SERVICE SCHEDULE  
\$16,250,000 TOTAL BOND SALE (MUDDY CREEK REGIONAL WWTP COSTS)  
Wylie Share 61%**

Maturity Year	Principal	Rate	Interest (12/01)	Interest (6/01)	Fiscal Total
2005	\$ 341,600.00	5.000%	\$ 216,548.48	\$ 216,548.48	\$ 774,696.95
2006	\$ 356,850.00	5.000%	\$ 208,008.48	\$ 208,008.48	\$ 772,866.95
2007	\$ 372,100.00	5.000%	\$ 199,087.23	\$ 199,087.23	\$ 770,274.45
2008	\$ 390,400.00	5.000%	\$ 189,784.73	\$ 189,784.73	\$ 769,969.45
2009	\$ 405,650.00	5.000%	\$ 180,024.73	\$ 180,024.73	\$ 765,699.45
2010	\$ 423,950.00	5.000%	\$ 169,883.48	\$ 169,883.48	\$ 763,716.95
2011	\$ 445,300.00	4.750%	\$ 159,284.73	\$ 159,284.73	\$ 763,869.45
2012	\$ 463,600.00	3.300%	\$ 148,708.85	\$ 148,708.85	\$ 761,017.70
2013	\$ 484,950.00	3.500%	\$ 141,059.45	\$ 141,059.45	\$ 767,068.90
2014	\$ 506,300.00	3.700%	\$ 132,572.83	\$ 132,572.83	\$ 771,445.65
2015	\$ 530,700.00	3.800%	\$ 123,206.28	\$ 123,206.28	\$ 777,112.55
2016	\$ 555,100.00	4.000%	\$ 113,122.98	\$ 113,122.98	\$ 781,345.95
2017	\$ 579,500.00	4.100%	\$ 102,020.98	\$ 102,020.98	\$ 783,541.95
2018	\$ 603,900.00	4.200%	\$ 90,141.23	\$ 90,141.23	\$ 784,182.45
2019	\$ 631,350.00	4.300%	\$ 77,459.33	\$ 77,459.33	\$ 786,268.65
2020	\$ 658,800.00	4.400%	\$ 63,885.30	\$ 63,885.30	\$ 786,570.60
2021	\$ 689,300.00	4.500%	\$ 49,391.70	\$ 49,391.70	\$ 788,083.40
2022	\$ 719,800.00	4.600%	\$ 33,882.45	\$ 33,882.45	\$ 787,564.90
2023	\$ 753,350.00	4.600%	\$ 17,327.05	\$ 17,327.05	\$ 788,004.10
<b>TOTALS</b>	<b>\$ 9,912,500.00</b>		<b>\$ 2,415,400.23</b>	<b>\$ 2,415,400.23</b>	<b>\$ 14,743,300.45</b>

TABLE NO. 17  
CITY OF WYLIE, TEXAS  
WASTEWATER SYSTEM IMPACT FEE STUDY

EXISTING - WASTEWATER COLLECTION LINES

	Avg. Unit (S/FL)	Remaining Principle	Remaining Debt Service	Total Remaining Cost (\$)	(% Utilized Capacity)		(\$ Utilized Capacity)		
					2005	2015	2005	2015	% Fee
<b>2002 Water &amp; Sewer Bond Sales @ 50% Total Bond Amount</b>									
Need Breakdown If Possible									
		\$517,500	\$220,053	\$737,553	50%	95%	\$368,777	\$700,675	
Subtotal:		\$517,500	\$220,053	\$737,553			\$368,777	\$700,675	
<b>2000 Water &amp; Sewer Bond Sales @ 80% Total Bond Amount</b>									
Need Breakdown If Possible									
		\$1,176,000	\$547,838	\$1,723,838	50%	95%	\$861,919	\$1,637,646	
Subtotal:		\$1,176,000	\$547,838	\$1,723,838			\$861,919	\$1,637,646	
<b>1999 Water &amp; Sewer Bond Sales @ 50% Total Bond Amount</b>									
Need Breakdown If Possible									
		\$555,000	\$237,065	\$792,065	60%	100%	\$475,239	\$792,065	
Subtotal:		\$555,000	\$237,065	\$792,065			\$475,239	\$792,065	
<b>1997 General Obligation, Water &amp; Sewer Bond Sales @ 22.2225% Total Bond Amount</b>									
Need Breakdown If Possible									
		\$452,228	\$160,686	\$612,914	65%	100%	\$398,394	\$612,914	
Subtotal:		\$452,228	\$160,686	\$612,914			\$398,394	\$612,914	
<b>1988 NTMWD Contract Revenue Bond Sales @ 100% Total Bond Amount</b>									
Need Breakdown If Possible									
		\$355,000	\$43,924	\$398,924	80%	100%	\$319,139	\$398,924	
Subtotal:		\$355,000	\$43,924	\$398,924			\$319,139	\$398,924	
<b>Total</b>							\$2,423,468	\$4,142,224	\$1,718,757

**TABLE NO. 18  
CITY OF WYLIE, TEXAS  
WASTEWATER SYSTEM IMPACT FEE STUDY**

**PROPOSED CIP - WASTEWATER COLLECTION LINES**

\* Average Unit costs are based in 2005 dollars unless otherwise indicated and includes 25% for engineering and contingencies and \$15/L.f. of Open Cut for Easements

Pipe Number	Length (Ft.)	Diameter (Inches)	Date of Const.	Avg. Unit Cost (\$/Ft.)	Total Capital Cost (\$)	20 Year Debt Service @ 6% Simple Interest	Total 20 Year Project Cost (\$)	Utilized Capacity (%)		Utilized Capacity (\$)		During Fee Period
								2005	2015	2005	2015	
Twin Lakes Relief Sewer - Proposed Collection Lines												
This Project includes 12,400 LF of new 30" and 42" Transfer Sewer commencing at the Twin Lakes Lift Station and running along Pleasant Valley Road to the Muddy Creek Regional Wastewater Treatment Plant.												
*	4,200	30	2007	\$153.72	\$645,624	\$406,743	\$1,052,367	0%	80%	\$0	\$841,894	\$841,894
*	8,200	42		\$239.56	\$1,964,376	\$1,237,557	\$3,201,933	0%	80%	\$0	\$2,561,546	\$2,561,546
Subtotal:	12,400				\$2,610,000	\$1,644,300	\$4,254,300			\$0	\$3,403,440	\$3,403,440
Sanitary Sewer Line - CIP Total												
Total	12,400	L.F.			\$2,610,000	\$1,644,300	\$4,254,300			\$0	\$3,403,440	\$3,403,440

**VIII. MAXIMUM IMPACT FEE CALCULATION – WATER & WASTEWATER SYSTEM**

The maximum impact fees for the water and wastewater systems are calculated separately by dividing the cost of the capital improvements or facility expansions necessitated and attributable to new development in the service area within the ten year period by the number of living units anticipated to be added to City within the ten year period as shown on Table No. 8 and Table No. 9. To simplify collection, we recommend the fee remain fixed throughout the next 5-year period, unless changed by Council.

The water system impact fee is calculated as follows:

$$\begin{aligned} \text{Maximum Impact Fee} &= \frac{\text{Eligible Existing Facility Cost} + \text{Eligible Proposed Facility Cost}}{\text{Number of New Living Unit Equivalent over the Next 10-Years}} \\ &= \frac{\$1,644,621 + \$27,111,588}{11,018} = \frac{\$28,756,209}{11,018} \\ \text{Water Maximum Impact Fee} &= \$2,609.93 * \\ * \text{ Maximum Allowable Water Impact Fee is 50\% of the Calculated Water Maximum Impact Fee.} \\ \text{Allowable Maximum Water Impact Fee} &= \$2,609.93 \times 50\% = \$1,304.97 \end{aligned}$$

The wastewater system impact fee is calculated as follows:

$$\begin{aligned} \text{Maximum Impact Fee} &= \frac{\text{Eligible Existing Facility Cost} + \text{Eligible Proposed Facility Cost}}{\text{Number of New Living Unit Equivalent over the Next 10-Years}} \\ &= \frac{\$18,875,821 + \$11,594,040}{12,376} = \frac{\$30,469,861}{12,376} \\ \text{Wastewater Max. Impact Fee} &= \$2,462.01 \\ * \text{ Maximum Allowable Wastewater Impact Fee is 50\% of the Calculated Wastewater Maximum Impact Fee.} \\ \text{Allowable Maximum Wastewater Fee} &= \$2,462.01 \times 50\% = \$1,231.01 \end{aligned}$$

Based on the Allowable Maximum Impact Fee Calculation for Water and Wastewater, Table No. 19 calculates the maximum impact fee for the various sizes of water meters.

**TABLE NO. 18**  
**Allowable Maximum Fee per Living Unit Equivalent**

**50% Maximum Water Impact Fee per Living Unit Equivalent                   \$1,304.97**  
**50% Maximum Wastewater Impact Fee per Living Unit Equivalent           \$1,231.01**

Typical Land Use	Meter Type	Meter Size	Living Unit Equivalent	Maximum Impact Fee		Total
				Water	Sewer	
Single Family Residential	Simple	5/8" & 3/4"	1.0	\$ 1,304.97	\$ 1,231.01	\$ 2,535.98
Single Family Residential	Simple	1"	1.7	\$ 2,218.45	\$ 2,092.72	\$ 4,311.17
Single Family Residential	Simple	1-1/2"	3.3	\$ 4,306.40	\$ 4,062.33	\$ 8,368.73
Single Family Residential	Simple	2"	5.3	\$ 6,916.34	\$ 6,524.35	\$ 13,440.69
Comm./Retail	Compound	2"	5.3	\$ 6,916.34	\$ 6,524.35	\$ 13,440.69
Comm./Retail	Turbine	2"	6.7	\$ 8,743.30	\$ 8,247.77	\$ 16,991.07
Comm./Retail/ Multi Family	Compound	3"	10.7	\$ 13,963.18	\$ 13,171.81	\$ 27,134.99
Comm./Retail/ Multi Family	Turbine	3"	16.0	\$ 20,879.52	\$ 19,696.16	\$ 40,575.68
Comm./Retail/ Multi Family	Compound	4"	16.7	\$ 21,793.00	\$ 20,557.87	\$ 42,350.87
Comm./Retail/ Multi Family	Turbine	4"	28.0	\$ 36,539.16	\$ 34,468.28	\$ 71,007.44
Industrial	Compound	6"	33.3	\$ 43,455.50	\$ 40,992.63	\$ 84,448.13
Industrial	Turbine	6"	61.3	\$ 79,994.66	\$ 75,460.91	\$ 155,455.57
Industrial	Compound	8"	53.3	\$ 69,554.90	\$ 65,612.83	\$ 135,167.73
Industrial	Turbine	8"	106.7	\$ 139,240.30	\$ 131,348.77	\$ 270,589.07
Industrial	Compound	10"	153.3	\$ 200,051.90	\$ 188,713.83	\$ 388,765.73
Industrial	Turbine	10"	166.7	\$ 217,538.50	\$ 205,209.37	\$ 422,747.87
Industrial	Turbine	12"	220.0	\$ 287,093.40	\$ 270,822.20	\$ 557,915.60

**TABLE NO. 19**  
**Alternative Fee per Living Unit Equivalent**

**Alternative Water Impact Fee per Living Unit Equivalent                   \$1,300.00**  
**Alternative Wastewater Impact Fee per Living Unit Equivalent           \$1,230.00**

Typical Land Use	Meter Type	Meter Size	Living Unit Equivalent	Maximum Impact Fee		Total
				Water	Sewer	
Single Family Residential	Simple	¾"	1.0	\$ 1,300.00	\$ 1,230.00	\$ 2,530.00
Single Family Residential	Simple	1"	1.7	\$ 2,210.00	\$ 2,091.00	\$ 4,301.00
Single Family Residential	Simple	1-1/2"	3.3	\$ 4,290.00	\$ 4,059.00	\$ 8,349.00
Single Family Residential	Simple	2"	5.3	\$ 6,890.00	\$ 6,519.00	\$ 13,409.00
Comm./Retail	Compound	2"	5.3	\$ 6,890.00	\$ 6,519.00	\$ 13,409.00
Comm./Retail	Turbine	2"	6.7	\$ 8,710.00	\$ 8,241.00	\$ 16,951.00
Comm./Retail/Multi Family	Compound	3"	10.7	\$ 13,910.00	\$ 13,161.00	\$ 27,071.00
Comm./Retail/Multi Family	Turbine	3"	16.0	\$ 20,800.00	\$ 19,680.00	\$ 40,480.00
Comm./Retail/Multi Family	Compound	4"	16.7	\$ 21,710.00	\$ 20,541.00	\$ 42,251.00
Comm./Retail/Multi Family	Turbine	4"	28.0	\$ 36,400.00	\$ 34,440.00	\$ 70,840.00
Industrial	Compound	6"	33.3	\$ 43,290.00	\$ 40,959.00	\$ 84,249.00
Industrial	Turbine	6"	61.3	\$ 79,690.00	\$ 75,399.00	\$ 155,089.00
Industrial	Compound	8"	53.3	\$ 69,290.00	\$ 65,559.00	\$ 134,849.00
Industrial	Turbine	8"	106.7	\$ 138,710.00	\$ 131,241.00	\$ 269,951.00
Industrial	Compound	10"	153.3	\$ 199,290.00	\$ 188,559.00	\$ 387,849.00
Industrial	Turbine	10"	166.7	\$ 216,710.00	\$ 205,041.00	\$ 421,751.00
Industrial	Turbine	12"	220.0	\$ 286,000.00	\$ 270,600.00	\$ 556,600.00