

**WATER AND WASTEWATER  
LAND USE ASSUMPTIONS  
CAPITAL IMPROVEMENT PLAN  
AND  
IMPACT FEE STUDY  
UPDATE**



**CITY OF ALVIN**

April 2013

JET Civil Consulting, LLC

TBPE Firm # F-14865

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Alvin, Texas 77511

*This document is released for  
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## **1.0 INTRODUCTION**

The City of Alvin initially adopted Impact Fees and the supporting Land Use Assumptions (LUA) and Capital Improvements Plan (CIP) in 2005. Since the initial adoption, Impact Fees have been amended and reviewed to determine the progress on the CIP, appropriateness of initial LUA, and the Impact Fee collections and implementation. In February of 2013, the City approved a contract with JET Civil Consulting, LLC to review and update the LUA, CIP, and resulting Impact Fee recommendations, which is the purpose of this report.

Chapter 395 of the Texas Local Government Code (the legislation), included in the Appendix, prescribes the required process for cities to follow for adoption, amendment and update of Impact Fees. The process requires engaging a Registered Professional Engineering firm to provide the aforementioned documents to present to an Advisory Committee appointed by the City Council to review and recommend adoption of population projections (LUA), proposed CIP projects, and the amount of the Impact Fees to be considered and adopted by the City. The City has elected to utilize the Planning Commission plus one member from the real estate industry, as required by the legislation, to fulfill this requirement.

For purposes of this update, we will adopt a ten year planning period from 2013-2023 and consider factors affecting growth rates, intensity of development, known major development projects, and projections by local and state agencies to guide the LUA and resulting CIP. We will review the growth during the previous planning period, projects implemented from the CIP and their actual cost. Water and wastewater studies and reports performed during this period will also be reviewed.

At the time of the initial adoption of Impact Fees, the real estate market was at a peak and many new projects were under development. As a result, Alvin realized their highest recorded household starts. Since that time, the housing market has significantly declined resulting in much lower numbers than originally projected. Therefore, Impact Fee collections were also much lower than estimated. As a result, some of the CIP projects planned for the previous planning period were not constructed, although many were completed.

## 2.0 LAND USE ASSUMPTION

The purpose of the LUA's is to provide the basis for provision and requirement for projects to support new development in the City and to project the number of equivalent service units to fairly allocate the resulting costs through the assessment of Impact Fees. The following factors were considered in the initially adopted LUA's and will be reviewed in this update process:

- The character, type, density and quantity of existing development.
- Proposed land use.
- The Comprehensive Water and Wastewater Master Plan (2001 Carter and Burgess).
- Availability of land for future development.
- Current growth trends in the City.
- Location and configuration of vacant land.
- Employment and population absorption rates.
- Physical holding capacity of the City.
- Known or anticipated development projects.

In addition, this update will consider the following:

- Actual growth rates for the previous period.
- 2010 census data.
- Comprehensive plan update (2005).
- Recent annexations.

Many new developments were in the planning phases, several projects were completed, and some had initial phases started. The following is a list of the major projects started:

- Kendall Lakes- Sections 1,2 and 5 completed
- Mustang Crossing- Sections 1,2 and 4 completed
- North Pointe Trails- infrastructure complete with 80% homes complete
- Midtown Park- Section 1 infrastructure complete with 50% homes complete
- Hamilton Square- Infrastructure complete- 95% homes completed
- Forest Heights- Infrastructure complete- 60% homes completed

Several large properties were annexed by the City of Alvin that are west of the City in the vicinity of State Highway 288 and F.M. 1462. Several are undeveloped with development proposals pending and do not have utility service. One property, Savannah Plantation, has most infrastructure completed with its own water and sewer system. There are no immediate plans to incorporate these areas in to the City's current water or sewer systems, although it may occur long term.

## 2.1 SERVICE AREA MAPS

The original LUA adopted in 2005 utilized a service area defined as a Regional Area Zone (RAZ) as provided by the Houston Galveston Area Council(HGAC). The RAZ boundaries were very close to the city limits without recently annexed areas to the west (annexed in 2004 and 2005).

The service areas for water and wastewater were the same and are shown on Exhibit 1. The City of Alvin currently only issues building permits for areas within their city limits and any areas in the RAZ not in these limits have not been assessed for impact fees during the previous period. It is recommended, with this update, the City adopt a service area consistent with their city limits for the main core of the City (excluding recently annexed areas previously mentioned). There have also been minor annexations near the main core during the period since the original adoption of Impact Fees, and the resulting service area is shown on Exhibit 2.

## 2.2 BASE DATA

The data developed for the original LUA's was based on US Census data and HGAC planning resources and provided results as shown in the following Table 1:

TABLE 1  
POPULATION PER 2005 REPORT

	1990	2000	2005	2014(2005 Projection)
Population	19,220	21,413	23,737	31,682
Household	6,985	8,430	9,345	12,473

Since the original LUA's were adopted, the 2010 Census was completed and provided that the City of Alvin had a population of 24,828.

HGAC provides long-term projections as well as tracking of previous data for both households and total population. Table 2 shows their projections for the 10 year planning period for this study:



# 2013 Service Areas For Water & Wastewater Impact Fees



**Map Legend**

- Areas Annexed Since 2005

## EXHIBIT 2 CITY OF ALVIN LAND USE REPORT FOR IMPACT FEES



TABLE 2  
HGAC POPULATION PROJECTIONS

Geography Name	Year	Household Population	Increase
Alvin	2013	25,178	
Alvin	2014	25,288	0.4%
Alvin	2015	25,364	0.3%
Alvin	2016	25,415	0.2%
Alvin	2017	25,406	0.0%
Alvin	2018	25,406	0.0%
Alvin	2019	25,849	1.7%
Alvin	2020	26,121	1.1%
Alvin	2021	26,140	0.1%
Alvin	2022	26,248	0.4%
Alvin	2023	26,314	0.3%

**AVERAGE                      0.4%**

The following Table 3 provides the actual housing starts and resulting estimated population increases for the past 8 years.

TABLE 3  
PREVIOUS PERIOD HOUSING STARTS

Year	Housing Starts*	Population (HGAC)	Percent Increase
2005	143	22,834	
2006	157	23,358	2.3%
2007	124	23,874	2.2%
2008	70	24,233	1.5%
2009	65	24,595	1.5%
2010	53	24,828	0.9%
2011	79	24,894	0.3%
2012	51	24,999	0.4%
2013	26	25,178	0.7%

**AVERAGE                      1.2%**

\*From City of Alvin building department records.

## 2.3 TEN YEAR GROWTH ASSUMPTIONS

The original LUA projected a growth rate going forward for the 10 year planning period (2005-2014) of 4%. Due to the economic downturn beginning shortly after the original adoption, much lower growth rates were actually experienced. Although slight increases in rate of housing starts are the current trend for the City, no major changes are anticipated according to HGAC's long range forecasts. A much lower projected rate of growth adopted in this update process will result in fewer new water meters and either a much higher possible maximum impact fee or a much more conservative Capital Improvement Plan due to the smaller amount of funds generated by Impact Fees. With fewer new development projects and resulting home starts than originally forecasted, the need for water and wastewater infrastructure to support the growth is also significantly reduced.

The current rate of growth in terms of equivalent service units (ESU's) for the City is averaging around 60-100 new ESU's per year as evidenced by the impact fees collected for the 2011 and 2012 budget years:

Budget Year 2011: Impact Fees collected= \$231,553 / 2400 = 96 ESU's

Budget Year 2012: Impact Fees collected= \$147,593 / 2400 = 61 ESU's

With the current total meters in the system expressed in ESU's of approximately 9510, the growth rates in terms of meters was 0.98% for 2011 and 0.62% for 2012 for an average of just over 0.8%. This is significantly higher than HGAC's average projection for the 10 year planning period (2013-2023) of 0.4%. The HGAC projections are for population growth and do not take into account commercial meters which are typically larger. It is the purpose of these LUA's to project the rate of increase in ESU's for the purpose of calculation of a the maximum Impact Fee amount.

It is therefore recommended that for the 2013 update of the LUA's we adopt a growth rate of **1.0%**.

## 2.4 ULTIMATE POPULATION PROJECTIONS

The original LUA's adopted in 2005 provided a build-out or ultimate holding capacity of the City as established in the City's Comprehensive Plan. Primary factors considered were existing development patterns, proposed land uses, and available land. This ultimate build-out population was estimated at 58,600. Since 2005, approximately 420 acres of new land have been annexed into the City resulting in an increase of this ultimate population to approximately 60,000 based on a density similar to that of the existing City prior to annexations.

## 2.5 LAND USE ASSUMPTIONS SUMMARY

The updated land use assumptions are summarized as follows:

- The existing estimated population is 25,178 and the HGAC projected 2023 population is 26,314.
- The projected growth rate for the ten year planning period (2013-2023) for purposes of this update report is 1.0 percent.
- The ultimate population is estimated to be 60,000.
- Based on the 1.0% growth rate, the following table summarizes population increase, total population and resulting increase in ESU's for the ten year planning period.
- The following summary table shows growth by year based on 1.0% rate.

TABLE 4  
POPULATION PROJECTION SUMMARY

YEAR	INCREASE (1.0%)	POPULATION
2013		25,178
2014	252	25,430
2015	254	25,684
2016	257	25,941
2017	259	26,200
2018	262	26,462
2019	265	26,727
2020	267	26,994
2021	270	27,264
2022	273	27,537
2023	275	27,812

### **3.0 CAPITAL IMPROVEMENT PLAN**

The Impact Fee Capital Improvement Plan (CIP) adopted in 2005 included projects anticipated to serve growth in the City from 2005 to 2014 based on an aggressive growth rate of 4.0% as stated in the LUA. Due to the previously discussed economic downturn and resulting projected growth rate of only 1.0%, the CIP will be reduced to fewer projects that can be implemented with the projected Impact Fee funds.

#### **3.1 ELIGIBLE FACILITIES**

The impact fee law allows those projects necessitated by growth during the planning period to be included in the impact fee calculation. Projects included in the 2005 CIP included distribution lines, wells, tanks, and water production and treatment facilities. The original projects are shown in Table 1 with original and final costs and status of completion. Many of the projects were implemented and many were not warranted due to the reduced rate of growth during the previous period. The source of the identified projects was the Water and Wastewater Master Plan prepared by Carter and Burgess, Inc. in 2001. There was \$750,000 included in both the wastewater project and water project lists for developer assistance in the event that lines or facilities were required to be upsized to serve future development. These funds have not been utilized and will not be included in the CIP for the next planning period. Six lift stations were identified in the original CIP of which only 2 were warranted due to increased flows. The remainder of these projects will be warranted for rehabilitation purposes only and will be removed from the CIP for Impact Fees.

#### **3.2 EXISTING WASTEWATER SYSTEM**

The original CIP for Impact Fees adopted in 2005 inventoried the wastewater facilities that existed in the City at that time. The collection system consisted of 506,745 linear feet of gravity flow pipe with diameters ranging from 6 to 33 inches consisting of vitrified clay, PVC, RCP, and ductile iron pipe. There were approximately 2,250 manholes in the system according to the report at that time. Wastewater system expansions that have occurred since 2005 include the following:

Barrell Road Sanitary Sewer: 2800 feet – 18" gravity main

Recreation Center Area Utilities- 415 feet of 12" gravity main and 880 feet of 6" force main

### **3.3 EXISTING WATER DISTRIBUTION SYSTEM**

The City's water system was also inventoried with the 2005 report which listed only production, storage, and pumping facilities. The system consisted of one pressure plane including five water wells, three pump booster stations, six ground storage tanks, and two elevated tanks. New facilities added to the water system since the 2005 report include the following:

Northside Elevated Storage Tank

Recreation Area Utilities- 900 feet of 10" inch water mains and 7 fire hydrants

Not reported in 2005 were the lengths of water mains and appurtenances within the City's water distribution system. The City currently has approximately 145 miles of water mains in the city with 975 fire hydrants and approximately 2600 valves.

### **3.4 CAPITAL IMPROVEMENT CATEGORIES**

The 2005 report separated projects into three categories:

CATEGORY A- Expansion of Systems to Currently Unserved Areas

CATEGORY B- Upgrading Existing System for Future Flows

CATEGORY C- Additions to Existing System for Future Flows

Category A projects were determined to be 100% related to growth and the costs for these projects were therefore totally eligible for reimbursement by impact fees. Categories B and C included projects that were to be partially funded with impact fees and partially from other funding sources. Category B project costs that were eligible for impact fees were determined by subtracting the capacity of the existing facility to be expanded and only applying the percentage of the cost for the increase. Category C projects were system additions such as new tanks and plant expansions that would serve future growth in areas that currently have service.

The CIP from the 2005 report is included on the following table:

Capital Improvement Plan Projects for Impact Fees				
September 23, 2004				
Capital Improvement Project	Year	Project Costs	Percent Related to Growth	Project Costs Applicable to Impact Fees
<b><u>WASTEWATER PROJECTS</u></b>				
Category A Projects				
Barrell Road Sanitary Sewer	2007	\$212,000	100%	\$212,000
Recreation Center Area Utilities	2005	\$287,000	100%	\$287,000
FM517 Sanitary Sewer Extension	2013	\$108,000	100%	\$108,000
Bypass 35 Sanitary Services	2014	\$151,000	100%	\$151,000
Developer Assistance for WW	Yearly	\$750,000	100%	\$750,000
Category B Projects				
Interceptor Diversion at LS17	2005	\$54,000	100%	\$54,000
LS 23 upgrade & FM Diversion	2006	\$240,000	100%	\$240,000
LS 11 Replacement	2006	\$135,000	100%	\$135,000
LS 15 Upgrade	2009	\$18,000	20%	\$3,600
LS 16 Upgrade	2009	\$25,000	50%	\$12,500
LS 21 Upgrade	2009	\$23,000	50%	\$11,500
LS 22 Upgrade	2009	\$19,000	20%	\$3,800
Rowan-Burton WW Upgrade	2010	\$109,000	44%	\$47,960
Davis Bend Road WW Upgrade	2011	\$128,000	44%	\$56,320
FM528 WW Improvement	2012	\$203,000	70%	\$142,100
SH35 WW Improvement	2014	\$166,000	55%	\$91,300
Category C Projects				
Westside Interceptor and FM	2006	\$3,200,000	100%	\$3,200,000
Herman Drive Sanitary Sewer	2008	\$109,000	100%	\$109,000
WWTP Optimization Ph. 1	2006	\$1,569,151	15%	\$235,373
WWTP Optimization Ph. 2	2007	\$1,169,136	15%	\$175,370
<b><u>WATER PROJECTS</u></b>				
Category A Projects				
South SH 35 Area Waterlines	2008	\$435,000	100%	\$435,000
Barrell Road Waterline Loop	2006	\$430,000	100%	\$430,000
CR 424 Waterline	2010	\$663,000	100%	\$663,000
Recreation Center Waterline Extension	2005	\$125,000	100%	\$125,000
Chestnut Street	2011	\$241,000	100%	\$241,000
Developer Assistance for Water	Yearly	\$750,000	100%	\$750,000
Category B Projects				
Durant Street 8" Waterline	2005	\$90,000	56%	\$50,400
Johnson Street Waterline	2008	\$85,500	58%	\$49,590
Davis Bend Road Waterline	2012	\$150,000	45%	\$67,500
Category C Projects				
Northside Elevated Storage	2005	\$1,035,000	100%	\$1,035,000
Water Plant and Water Well #9	2006	<u>\$1,215,000</u>	100%	<u>\$1,215,000</u>
<b>TOTALS</b>		<b>\$13,894,787</b>		<b>\$11,087,313</b>

The projects from the previous list that were constructed along with the final cost are as follows:

Capital Improvement Project	Actual Cost
<b><u>WASTEWATER PROJECTS</u></b>	
Barrell Road Sanitary Sewer	\$359,714
Recreation Center Area Utility Line	\$253,288
Lift Station 23 Upgrade and FM Diversion	\$166,066
Lift Station 11 Replacement	\$262,126
Wastewater Treatment Plant Optimization Ph. 1	\$2,506,500
Subtotal Wastewater	\$3,547,694
<b><u>WATER PROJECTS</u></b>	
Recreation Center Area Utility Line	\$57,502
Northside Elevated Storage Tank	\$1,734,166
Subtotal Water	\$1,791,668

### 3.5 CAPITAL IMPROVEMENT PROJECTS FOR 2013 UPDATE

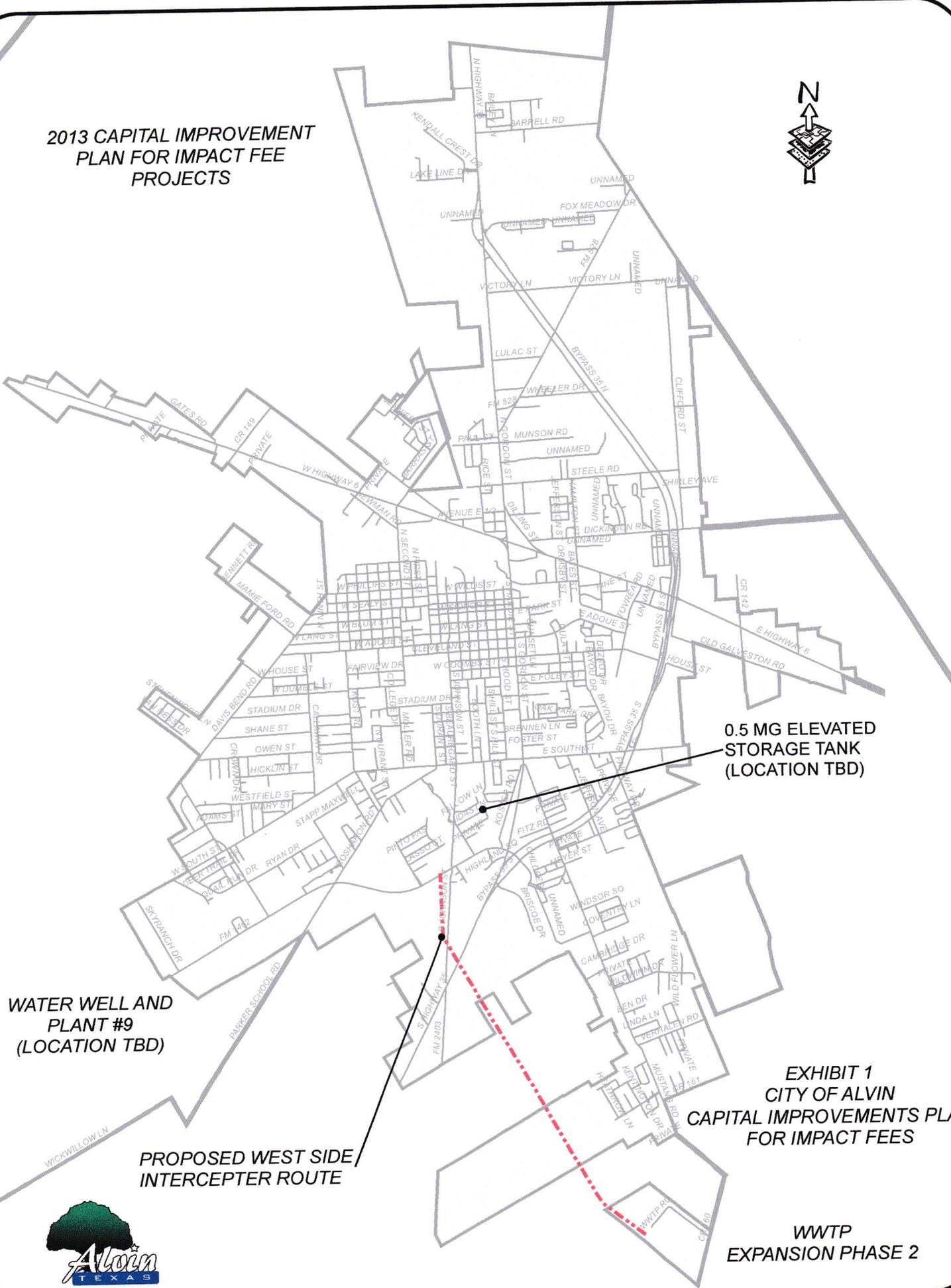
#### WASTEWATER PROJECTS

• Westside Interceptor	\$3,860,000
• WWTP Expansion Phase 2	\$6,820,000
• Master Plan Update	\$100,000
<b>Subtotal</b>	<b>\$10,780,000</b>

#### WATER PROJECTS

• Dyche Lane Elevated Storage	\$1,845,000
• Master Plan Update	\$100,000
• Water Well and Plant #9	\$1,215,000
<b>Subtotal</b>	<b>3,160,000</b>
<b>Total</b>	<b>\$12,725,000</b>

**2013 CAPITAL IMPROVEMENT  
PLAN FOR IMPACT FEE  
PROJECTS**



**0.5 MG ELEVATED  
STORAGE TANK  
(LOCATION TBD)**

**WATER WELL AND  
PLANT #9  
(LOCATION TBD)**

**PROPOSED WEST SIDE  
INTERCEPTOR ROUTE**

**EXHIBIT 1  
CITY OF ALVIN  
CAPITAL IMPROVEMENTS PLAN  
FOR IMPACT FEES**

**WWTP  
EXPANSION PHASE 2**



## 4.0 IMPACT FEE CALCULATION

This section will include determination of interest costs for the CIP, service unit equivalency and projections and the maximum impact fee amount. The capital improvement costs included in the impact fee calculation will be the portion of the previously identified CIP that is directly related to new growth. Some of the projects will include replacement of an existing facility with new capacity added that will be available for future growth. Table 5 shows the proposed CIP with cost prorated for new development to be used in the impact fee calculation.

Table 5

<b>Wastewater Projects</b>	<b>Estimate Cost</b>	<b>Percent New Capacity</b>	<b>Cost for Impact Fee Calculation</b>
Westside Interceptor	\$3,860,000	100%	\$3,860,000
WWTP Expansion Phase 2	\$6,820,000	15%*	\$1,023,000
Master Plan Update	\$100,000	100%	\$100,000
<b>Total Wastewater for Impact Fees</b>			<b>\$4,983,000</b>
<b>Water Projects</b>	<b>Estimate Cost</b>	<b>Percent New Capacity</b>	<b>Cost for Impact Fee Calculation</b>
Dyche Lane Elevated Tank	\$1,845,000	100%	\$1,845,000
Master Plan Update	\$100,000	100%	\$100,000
Water Well and Plant #9	\$1,215,000	100%	\$1,215,000
<b>Total Water for Impact Fees</b>			<b>\$3,160,000</b>

\*From 2005 report

## 4.1 FINANCE COSTS DETERMINATION

Interest expense to support the debt service for the CIP list above are eligible for reimbursement in accordance with the Impact Fee Legislation. The 2005 report used a 20 year term with an interest rate of 5.5%. Interest rates have declined significantly since 2005 with current Texas Water Development Board loans available at 2% for eligible clean water projects. We will use 2.5% for the purposes of this report which would be the average of TWDB and standard market rates for the period. On that basis, the total interest expense for the Impact Fee calculation would be as follows:

	<u>Water</u>	<u>Wastewater</u>
Project Cost	\$3,160,000	\$4,983,000
Interest Rate	2.5%	2.5%
Term(years)	20	20
Total Interest	<u>\$858,784</u>	<u>\$1,354,215</u>
Total Eligible Cost With Interest	\$4,018,784	\$6,337,215

#### 4.2 SERVICE UNIT DETERMINATION

The equivalent meter was selected in the 2005 report as the method to measure consumption by new growth for impact fee purposes. The water meter serves as the service unit for both water and wastewater impact fee calculations. The equivalent meter is defined as the unit equivalent to the hydraulic capacity of a ¾ inch meter. The ¾ inch meter was selected because it represents the water meter size for an average single family dwelling. Equivalency factors were provided for larger meter sizes as developed by the American Water Works Association. Table 6 provides these equivalency factors.

TABLE 6

#### EQUIVALENT METER FACTORS

METER SIZE (INCHES)	EQUIVALENCY FACTOR
5/8 OR 3/4	1.0
1	1.67
1 ½	3.33
2	5.33
3	10.0
4	16.67
6	33.33
8	53.33
10	76.67

Based on these equivalency factors and the total existing meter count provided by the City's Water Billing Department the total equivalent meters in the system can be determined. As

noted in Table 7 provided below there has been a significant increase in the total meters in the City since the original report in 2005. Although the population has not changed this drastically, the staff estimates that the increase is due to several factors such as new service to previously unserved areas and large commercial meters added by businesses and institutions.

**TABLE 7  
EXISTING METER COUNT**

Size	Meters	ESU/EQUIV.	ESU 2013	ESU 2005
3/4"	6782	1.0	6782	5955
1"	322	1.67	538	364
1-1/2"	90	3.33	300	246
2"	170	5.33	906	581
3"	40	10.0	400	230
4"	19	16.67	317	150
6"	8	33.33	267	233
		TOTAL	9510	7759

The 2005 report calculated the population per equivalent meter to factor in not only the residential meters but also include the commercial and other meters. The 2005 calculation was as follows:

$$\text{Population per Equivalent meter(2005)} = 23,450/7759 = 3.02$$

For 2013 the calculation is as follows:

$$\text{Population per equivalent meter(2013)} = 25,178/9510 = 2.65$$

Using this ratio, we can next determine the estimated expansion of the City's utility system over the ten year planning period expressed in an increase in equivalent service units or meters.

Using the population projections presented in the Land Use Assumptions for 2013 to 2023 the increase is as follows:

$$\text{Increase in Equivalent meters} = 2023 \text{ population} - 2013 \text{ population} / 2.65$$

$$= 27,812 - 25,178 / 2.65 = \mathbf{994 \text{ Equivalent Meters}}$$

### 4.3 MAXIMUM IMPACT FEE CALCULATION

The maximum assessable impact fee is determined by dividing the cost of the CIP projects plus interest by the project increase in equivalent meters for the 10 year planning period. The fee for various meter sizes is then determined by applying the factors provided in Table 6 for all meters larger than the standard ¾" residential meter. The maximum assessable impact fee for the City of Alvin for water and wastewater is as follows:

#### Maximum Impact Fee

$$\begin{aligned}\text{Maximum Water impact fee} &= \text{CIP cost} / \text{increase in equivalent meters} \\ &= \$4,018,784 / 994 \\ &= \mathbf{\$4043 \text{ per equivalent meter}}\end{aligned}$$

$$\begin{aligned}\text{Maximum Wastewater Impact Fee} &= \text{CIP cost} / \text{increase in equivalent meters} \\ &= \$6,337,215 / 994 \\ &= \mathbf{\$6375 \text{ per equivalent meter}}\end{aligned}$$

Chapter 395 of the Local Government Code was amended in 2001 to include that the City must provide a credit for the following:

#### Section 395.014 Paragraph a (7)

(A) a credit for the portion of ad valorem tax and utility service revenues generated by new service units during the program period that is used for the payment of improvements, including the payment of debt, that are included in the Capital Improvements Plan; or

(B) in the alternative, a credit equal to 50 percent of the total projected cost of implementing the capital improvements plan.

The Impact Fee legislation allows the City to charge an impact fee up to this calculated maximum. In 2005 the maximum calculated fees were \$3107 for water and \$3699 for wastewater. The City adopted fee amounts of \$750 for water and \$500 for wastewater with the initial adoption. Subsequently in 2007, the City elected to raise the fee to \$1440 for water and \$960 for wastewater for a total fee of \$2400 where it has remained until 2013.

#### **4.4 CONCLUSIONS AND RECOMMENDATIONS**

The Impact Fee Legislation provides the City with a tool to assist with the financing of Water and Wastewater Capital Improvements necessitated by growth and development. The City of Alvin initially adopted their Impact Fees of in 2005 at a conservative amount of \$1250 with the intent of providing a new income source for system expansions without stifling economic growth in the City. The increase in 2007 to \$2400 was planned so that the development community would be prepared and would not be negatively impacted. The City's assessed Impact Fee amount has remained very competitive with neighboring communities and still remains one of the lowest in the area.

This 2013 update provides an update of the Land Use Assumptions that resulted in a much lower projected growth rate than originally anticipated in 2005. As a result, the CIP that can be partially financed by Impact Fees and required to support this growth will be smaller. As the housing and development market rebounds, the City of Alvin desires to remain competitive in the area to attract economic growth.

After discussion and deliberation of the Impact Fee Advisory Committee, the 2013 fee amounts to be recommended to City Council are as follows:

**RECOMMENDED WATER IMPACT FEE:     \$1000/ESU**

**RECOMMENDED WASTEWATER IMPACT FEE:     \$1500 /ESU**

**TOTAL 2013 IMPACT FEE:     \$2500/ESU**