APPROVED
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CITY OF LEANDER, TEXAS

WASTEWATER MASTER PLAN

PREPARED FOR
THE CITY OF LEANDER, TEXAS

PREPARED BY

K FRIESE
& ASSOCIATES, INC.

MARCH 2008

CITY OF LEANDER

WASTEWATER MASTER PLAN

Prepared For:
City of Leander, Texas

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March 2008

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EXECUTIVE SUMMARY

The City of Leander (City) contracted with K Friese & Associates, Inc. to prepare a Wastewater Master Plan for the 20-year period from 2007 to 2027. The primary goals of this plan include:

- Calculate flow projections for the wastewater service area based on population projections provided by City staff.

- Capacity evaluation of existing significant wastewater infrastructure, including the Leander Wastewater Treatment Plant, lift stations, large collection system mains/interceptors.

- Analysis and planning of methods to convey wastewater flows to the existing Leander WWTP and to the Brushy Creek Regional Wastewater System (BCRWWS), and evaluation of the additional wastewater treatment capacity required through the study period.

- Analysis of proposed improvements to convey and treat future wastewater flows.

- Preparation of cost estimates of the proposed improvements required over the study period.

During the study period Leander is expected to experience tremendous growth, with the total population expected to increase from nearly 25,000 currently to over 180,000 in 2027. Recent and pending transportation options to and within the City including the 183A toll road, the Ronald Reagan Boulevard extension, and proposed commuter rail, are expected to fuel this growth. Additionally, the large amount of undeveloped land in Leander's ETJ, the proposed high density Transit Oriented Development (TOD), and overall population trends in Central Texas are also expected to stimulate intensive development.

Population projections for the City were broken into several Sub-Regions (downtown, TOD, Crystal Falls, Brushy Creek, and Northwest) to further define the development patterns within the study area. Drainage basins were then created based on the topography of the area, and based on existing service areas of the existing infrastructure. Utilizing this data and Leander's wastewater design criteria, year by year flow projections were made for existing and planned infrastructure elements.

Currently, all of Leander's wastewater is delivered to and treated at the 2.25 MGD Leander WWTP. The City is in negotiation to tie onto the BCRWWS, which will ultimately have a capacity of 5.24 MGD for Leander. This master plan assumes that these two treatment alternatives will be used to their full capacity prior to adding treatment capacity. Additional treatment capacity would then be added within the South San Gabriel River drainage basin. This plan assumes that a new WWTP would be constructed, although there have been preliminary discussions with the Brazos River Authority and the City of Georgetown regarding the possibility of a regional system in the South San Gabriel basin. As the total flows in the Brushy Creek basin exceed the capacity of the existing Leander WWTP and BCRWWS, the Leander WWTP would need to be expanded. Flow projections for 2027 for the Leander service area total approximately 11.6 MGD and result in flows at each delivery point of:

- Leander WWTP = 5.0 MGD
- BCRWWS = 4.7 MGD
- South San Gabriel WWTP = 1.9 MGD

Paralleling and existing wastewater mains, construction of new mains, and lift station improvements will also be required during the study period to transport effluent to the delivery points. Detail on these improvements can be found in Section 5 of this report.

Cost estimates for each of the proposed improvements during the 20-year period of this study have also been prepared and are discussed in Section 6 and Appendix B. The total estimated cost of wastewater improvements through 2027 is $400,000 (2007 dollars).

1.0 INTRODUCTION

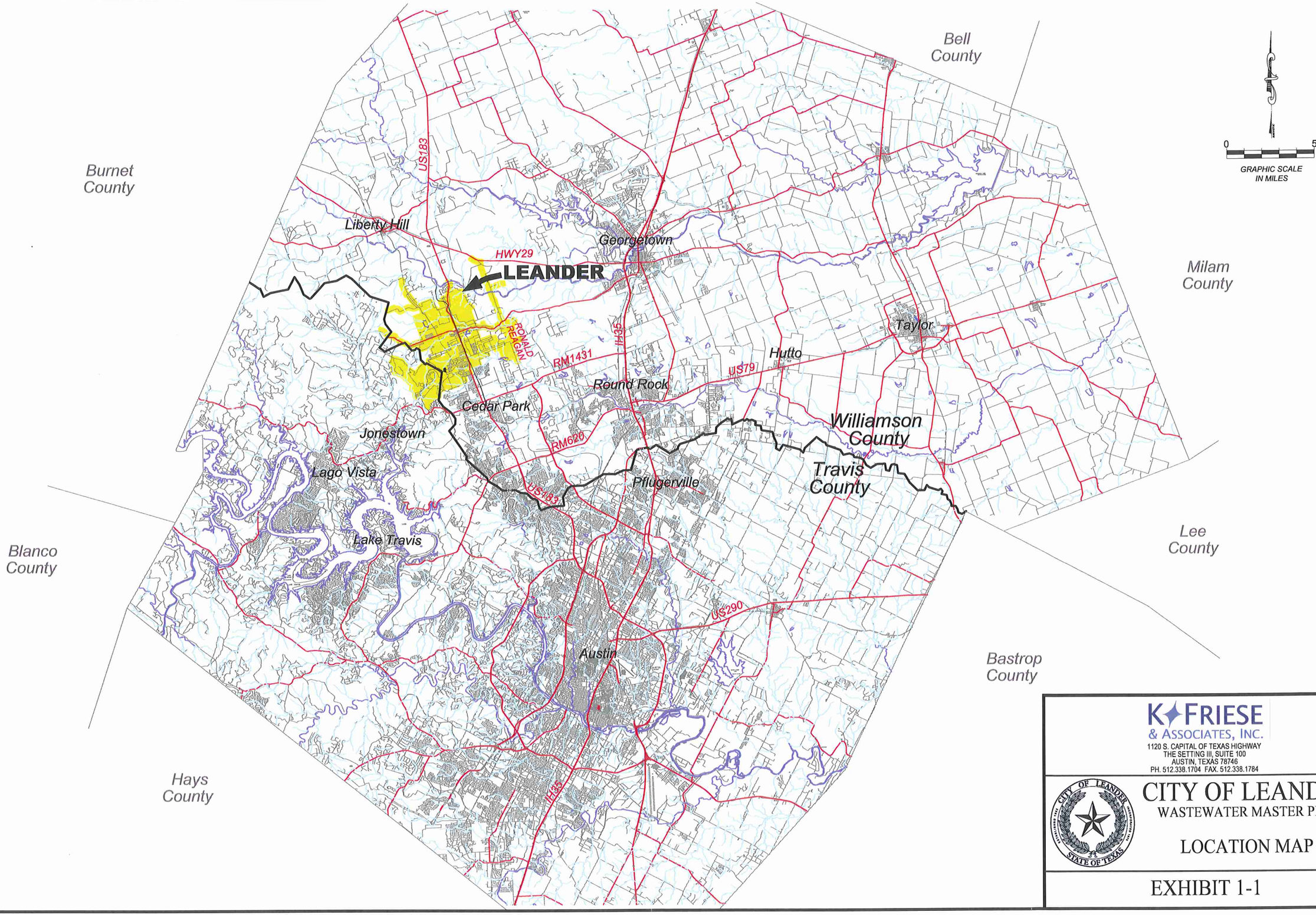
K Friese & Associates, Inc. (KFA) was retained by the City of Leander in 2005 to develop a Wastewater Master Plan for Leander's proposed wastewater service area (as further defined below). KFA has prepared interim draft reports between 2005 and 2007 and evaluated various issues related to wastewater during that span, culminating in this final wastewater master plan. In general, the study consists of developing population and wastewater flow projections for the service area through year 2027 and determining transport and treatment improvements necessary to serve the projected growth. As of the date of this study, the City of Leander's current population is approximately 25,000 people and steady growth is anticipated over the next twenty-years. In order to meet short term needs, special emphasis has been placed on the Ronald Reagan Blvd. corridor and Transit Oriented Development (TOD) area. These portions of the City are showing signs of rapid and significant development.

The City of Leander is located northwest of Austin in the vicinity of US 183 and FM 2243 in southwestern Williamson County and northwestern Travis County. Leander's extraterritorial jurisdiction (ETJ) borders the city limits and/or ETJs of Cedar Park, Round Rock, Georgetown, Liberty Hill and Jonestown. An overall Location Map is presented as Exhibit 1-1.

1.1 Background

Leander's wastewater system is currently comprised of a series of gravity interceptors (ranging in size from 12-inch to 36-inch), lift stations, and force mains which transport all of the wastewater to the City's 2.25-million-gallon-per-day (MGD) wastewater treatment plant. The plant, almost centrally located within the Leander ETJ, is on FM 2243 at Brushy Creek approximately 0.7 miles east of US 183.

The City applied to the Texas Commission for Environmental Quality (TCEQ) in 1999 (TNRCC at the time) for a permit amendment to allow an annual average discharge of 2.25 MGD into Brushy Creek from an expanded plant. Although the City's permit existing at the time would allow an average annual discharge of 3.75 MGD in the facility's ultimate phase, the permit did not contain provisions for an interim phase between the then existing capacity of 0.75 MGD and the ultimate phase. The City requested the amendment to 2.25 MGD as more in keeping with its needs and



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CITY OF LEANDER
WASTEWATER MASTER PLAN

LOCATION MAP

EXHIBIT 1-1

financial considerations. The permit amendment was opposed by downstream landowners, including the City of Cedar Park, on the basis that development of the Brushy Creek Regional Wastewater System (BCRWWS) offered an alternative to increased future discharge to Brushy Creek, the effect of the expansion on water quality, and the need for TCEQ to monitor downstream water quality. The City of Leander received a permit for 2.25 MGD in April of 2000 and also agreed to investigate their treatment alternatives, which they did in a study conducted by PBS&J in December 2002 (reference "Wastewater Feasibility Study" PBS&J Document No. 020069).

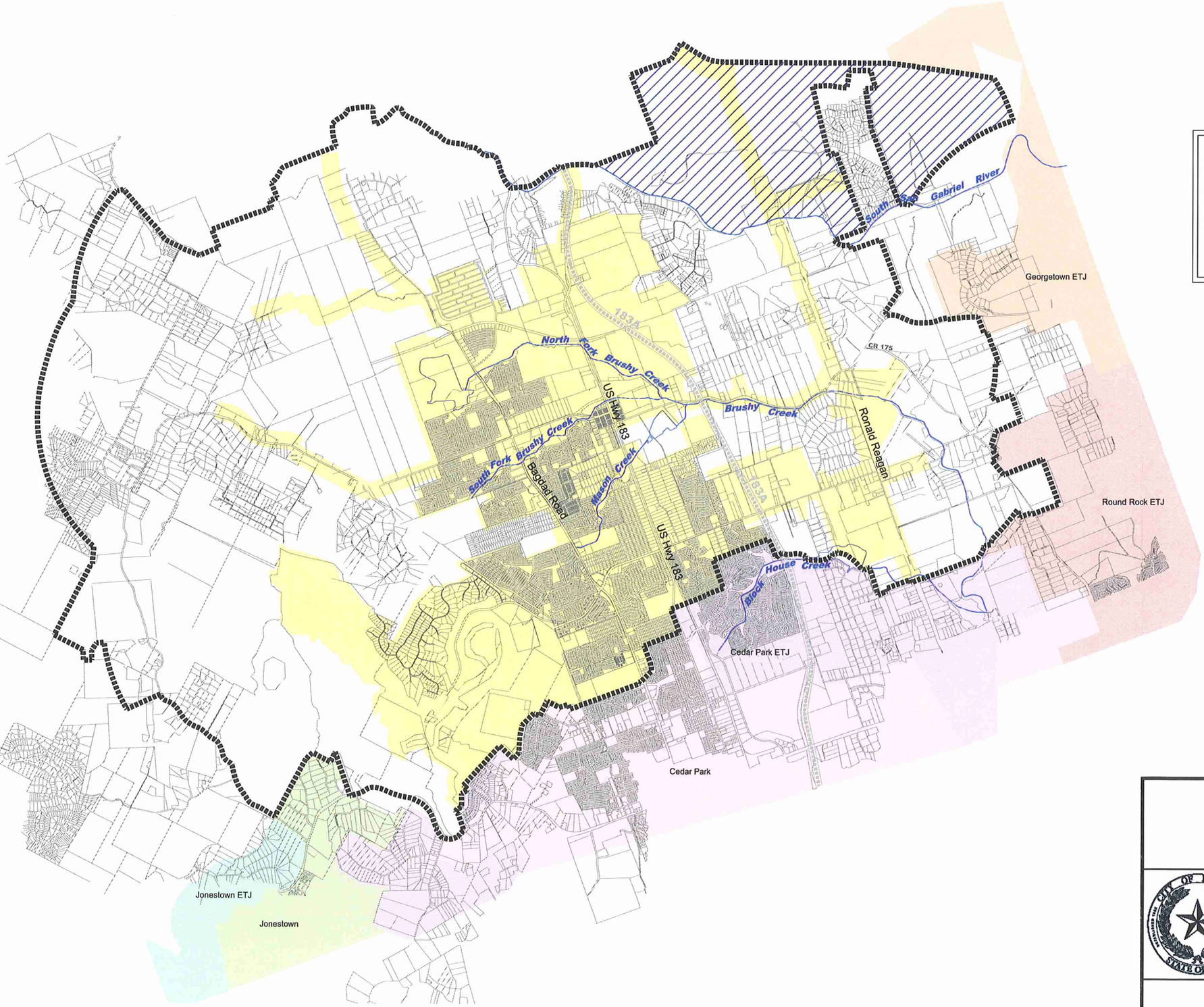
That study concluded the following when comparing the alternatives of expanding the wastewater treatment plant to 10.7 MGD and joining the BCRWWS:

1. There are limited reuse opportunities for the City of Leander.
2. Similar opposition to higher flow permit applications would occur as had occurred in the past.
3. Combined treatment and transport costs were estimated to be about $9.0 million higher for participation in the BCRWWS versus expansion of the municipal system.

The construction of the BCRWWS collection system is complete and the City has updated population projections, established development zones such as the Transit-Oriented Development (TOD), and imminent transportation infrastructure such as the extension of the US 183A toll road, in order to assist them in evaluating the best wastewater transport and treatment alternatives. At the time of this study, the City of Leander is proceeding with plans to join the BCRWWS, is evaluating options in the South San Gabriel River basin, and is also simultaneously evaluating constructing additional capacity at their existing plant.

1.2 Service Area

The City of Leander currently consists of about 5,000 acres. The majority of the current Leander wastewater service area is comprised of the city limits and extra-territorial jurisdiction, which together occupy a total of approximately 39,800 acres (approximately 36,000 acres in the wastewater service area). Portions of Leander's ETJ north of the South San Gabriel River lie within the service area of the Chisholm Trail SUD. In general, Leander's service area is bordered on the south by the Cedar Park ETJ, to the east by the Round Rock and Georgetown ETJs, and on the north by the Liberty Hill ETJ. The proposed service area may be found on Exhibit 1-2.



0 2000 4000 6000

SCALE IN FEET

LEGEND

- LEANDER CITY LIMITS
- LEANDER EXTRA TERRITORIAL JURISDICTION
- LEANDER EXTRA TERRITORIAL JURISDICTION OUTSIDE OF SERVICE AREA
- SERVICE AREA BOUNDARY

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CITY OF LEANDER

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SERVICE AREA MAP

EXHIBIT 1-2

2.0 PLANNING AND DESIGN CRITERIA

Through several meetings and discussions between KFA and City of Leander staff, essential planning and design criteria were established for the purpose of both analyzing existing and proposing future wastewater facilities. In order to develop these criteria, staff considered current densities, current and proposed city design criteria, regional design criteria, and proposed development criteria obtained from local developers. These criteria were used consistently throughout preparation of this master plan and are shown in Table 2-1.

TABLE 2-1 **PLANNING AND DESIGN CRITERIA**

Criteria	Value
Persons/LUE	2.8
Average Dry Weather Flow (ADWF)	*ADWF* = 70 gallons/person
Peaking Factor (PF) (reference the City of Austin Peaking Factor formula)	$PF = \frac{\left[18 + \sqrt{0.0206 x ADWF_{gpm}}\right]}{\left[4 + \sqrt{0.0206 x ADWF_{gpm}}\right]}$
Peak Dry Weather Flow (PDWF)	*PDWF* = ADWF x PF
Inflow and Infiltration (I&I)	750 gallons/acre
Peak Wet Weather Flow (PWWF)	$PWWF_{gpm} = (PDWF_{gpm}) + I/I_{gpm}$
Gravity Pipe Capacity	$Q_{cap} = \frac{1.49}{n} x Area\ x \left(\frac{Area}{Perimeter}\right)^{0.67} x\sqrt{Slope}$
Manning's n	n = 0.013
Gravity Pipe Velocity Range	Min Velocity = 2 fps Max Velocity = 8 fps
Force Main Velocity Range	Min Velocity = 3 fps Max Velocity = 8 fps

These criteria were used to generate wastewater flows for the service area for the study period. Once wastewater flows were determined, the design criteria were utilized to calculate capacities of existing facilities and to size planned facilities.

3.0 LAND USE, POPULATION, AND WASTEWATER FLOW PROJECTIONS

3.1 Land Use and Population Projections

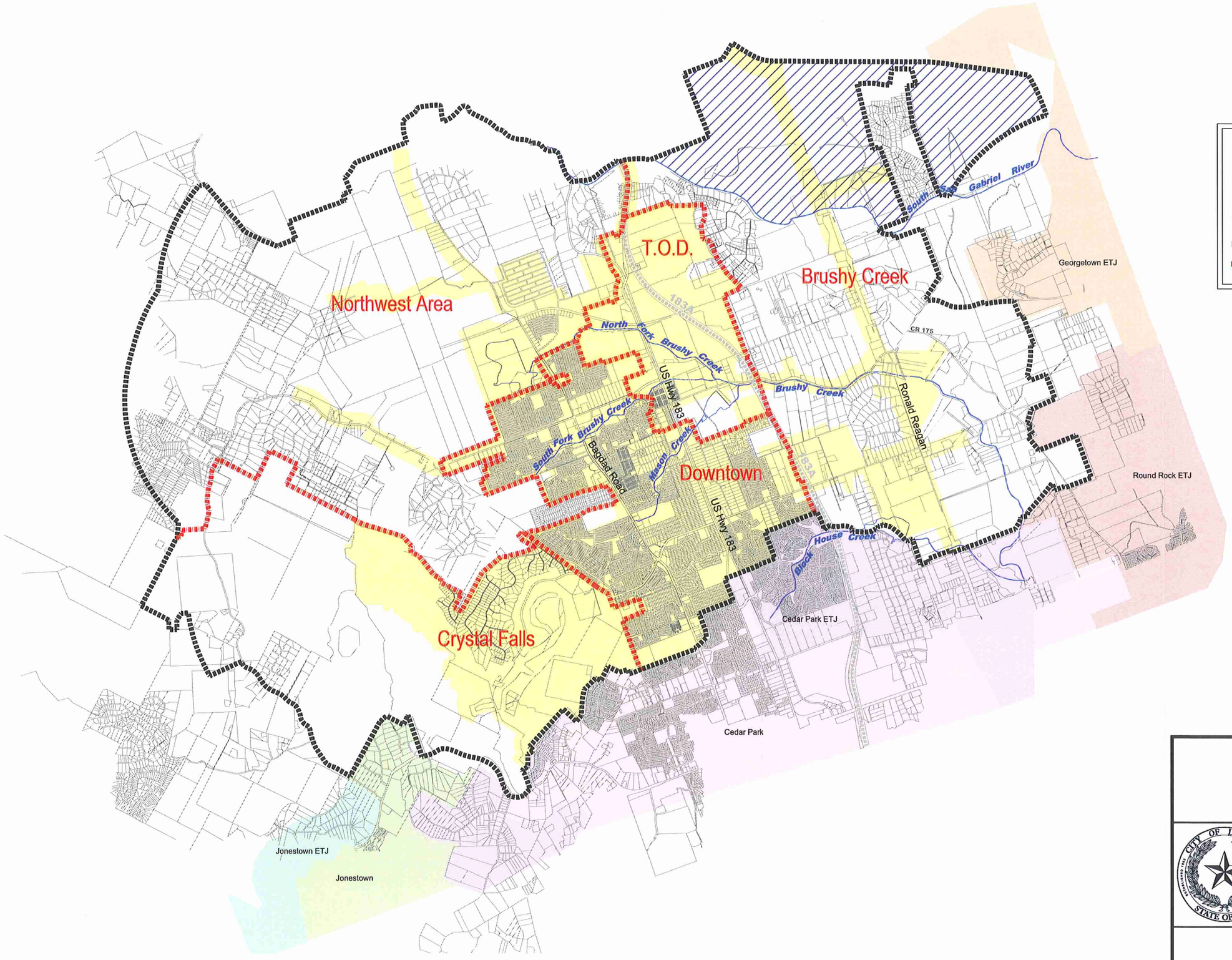
Population projections and distribution throughout the service area were developed in large part through the guidance of City of Leander engineering and planning staff. Several Sub-Regions were identified, each with their own independently analyzed projections. The ultimate population projections and growth rate in each area were based on staff input, existing or proposed zoning, density, developer projections, market studies, and topography. Exhibit 3-1 depicts these Sub-Region boundaries.

3.1.1 Total Leander Service Area

The current Leander ETJ and proposed Service Area lie within two counties – Williamson and Travis. The Williamson/Travis county line closely follows the ridgeline between two major river basins – the Brazos River Basin and the Colorado River basin. Within these basins, Leander then falls into several topographic watersheds. Approximately 49% of the service area is within the Brushy Creek watershed, and 16% is in the San Gabriel watershed (both of which lie within the Brazos River Basin). Finally, approximately 35% lies within the Big Sandy Creek basin within the Colorado River Basin.

There is a noticeable difference in terrain between the Colorado and Brazos basins in this area. Steep slopes with small plateau areas characterize the Colorado portion, while more gentle slopes are typical in the Brazos portion. The milder slopes in the east are conducive to more intensive development, while land use in the Colorado basin to the west is tending toward low density large-lot residential development with on-site wastewater disposal.

As of October 2007, there are 8,265 water service accounts in Leander and an approximately 25,000 residents. To project population growth to year 2027, the City looked at recent trends, neighboring city growth trends, and proposed development plans. They developed annual growth rates projected in certain years, for various areas within the City. These projections were modified to include TOD projections as prepared by Bury + Partners, Inc., with the final projections as shown in Table 3-1. Per the City's projections, the estimated total Leander population for the year 2027 is 186,402 people; with 166,158 people being served by Leander's wastewater system.



0 2000 4000 6000

SCALE IN FEET

LEGEND

- LEANDER CITY LIMITS
- LEANDER EXTRA TERRITORIAL JURISDICTION
- LEANDER EXTRA TERRITORIAL JURISDICTION OUTSIDE OF SERVICE AREA
- SERVICE AREA BOUNDARY
- SUB-REGIONS BOUNDARY

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WASTEWATER MASTER PLAN

SERVICE AREA SUB-REGIONS

EXHIBIT 3-1

TABLE 3-1 **POPULATION PROJECTIONS**

Year	Leander's Population Projections		
	Estimated Wastewater Connections	Total Population	Average Annual Growth Rate
1980*	N/A	2,179	
1990*	N/A	3,398	4.34%
2000*	N/A	9,884	9.77%
2003**	5,760	17,280	15.20%
2004**	6,185	18,555	7.37%
2005**	6,618	19,854	7%
2007**	8,265	23,898	12%
2012***	15,345	47,549	14%
2017***	27,022	86,430	12%
2022***	42,912	136,452	9.7%
2027***	59,342	186,402	6.7%

* U. S. Census
** City of Leander (Based on Active Water Taps)
*** City of Leander Projection (Using 2.8 people/connection & the Growth Rate is Compounded)

Table 3-2 shows a year by year population distribution for the wastewater service area and each sub-region, not all of the Leander population will be served by the wastewater system as areas are outside Leander's service area or will be treated by on-site sewage facilities.

3.1.2 Downtown Sub-Region

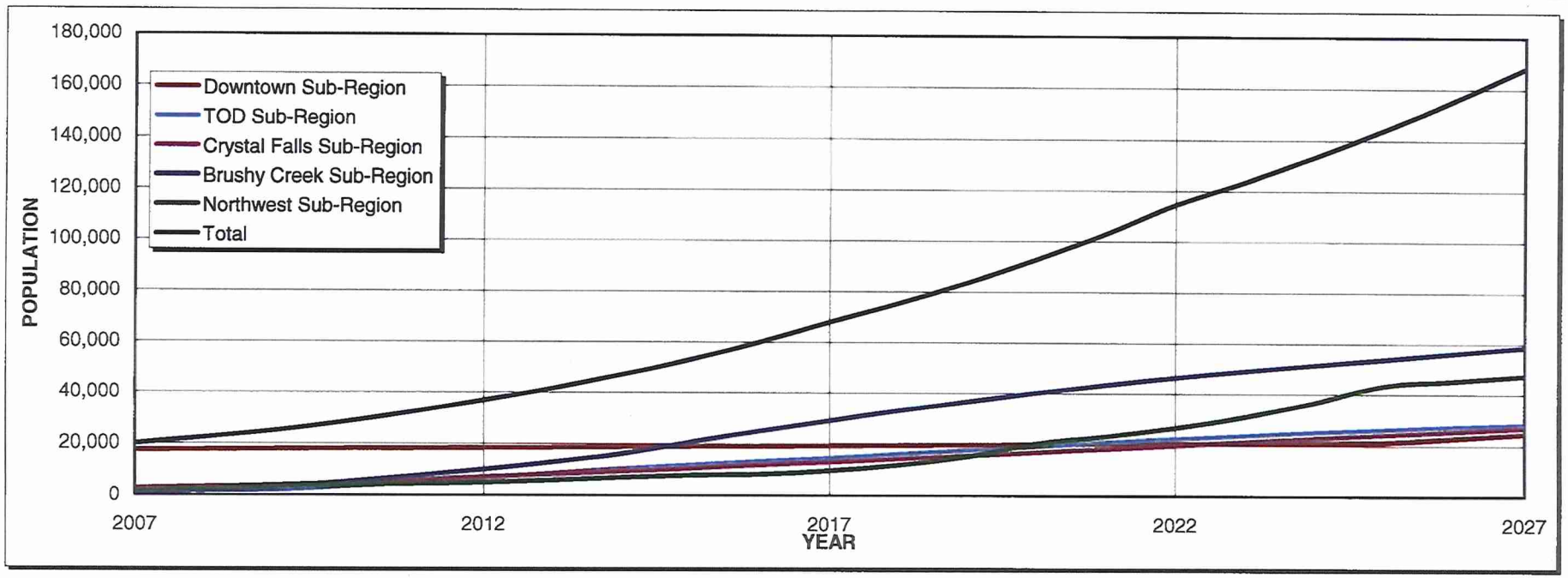
For the purposes of this study, the Downtown sub-region has been defined as that area within the city limits of Leander as it existed in 2005, excluding the proposed Transit Oriented Development area, the Crystal Falls area and the strip annexation more appropriately assigned to the Brushy Creek Sub-Region. This area has been previously developed for the most part. It includes a mix of established commercial and residential development.

The year 2007 population of this area is estimated to be approximately 17,490 people. This was calculated by subtracting the 2007 populations within the TOD and Crystal Falls areas from the Leander service area 2007 population.

TABLE 3-2

SUB-REGION POPULATION GROWTH

Year	Downtown Sub-Region		TOD Sub-Region		Crystal Falls Sub-Region		Brushy Creek Sub-Region		Northwest Sub-Region	
	Cumulative Population	Annual Growth Rate	Cumulative Population	Annual Growth Rate	Cumulative Population	Annual Growth Rate	Cumulative Population	Annual Growth Rate	Cumulative Population	Annual Growth Rate
2007	17,490	--	1,087	--	2,895	--	740	--	1,685	--
2008	17,687	1.1%	1,586	45.9%	3,455	19.3%	1,770	--	2,590	--
2009	17,885	1.1%	2,085	31.5%	4,015	16.2%	3,240	83.1%	3,525	36.1%
2010	18,086	1.1%	3,550	70.3%	4,855	20.9%	5,150	59.0%	4,280	21.4%
2011	18,288	1.1%	5,014	41.3%	5,975	23.1%	7,500	45.6%	4,563	6.6%
2012	18,494	1.1%	6,841	36.4%	7,095	18.7%	10,000	33.3%	5,120	12.2%
2013	18,701	1.1%	8,667	26.7%	8,215	15.8%	12,940	29.4%	5,922	15.7%
2014	18,911	1.1%	10,494	21.1%	9,335	13.6%	16,320	26.1%	7,061	19.2%
2015	19,123	1.1%	11,976	14.1%	10,595	13.5%	20,720	27.0%	7,920	12.2%
2016	19,338	1.1%	13,458	12.4%	11,995	13.2%	25,120	21.2%	8,281	4.5%
2017	19,554	1.1%	14,777	9.8%	13,115	9.3%	29,282	16.6%	9,702	17.2%
2018	19,774	1.1%	16,354	10.7%	14,515	10.7%	33,205	13.4%	11,976	23.4%
2019	19,996	1.1%	17,931	9.6%	15,915	9.6%	36,891	11.1%	15,482	29.3%
2020	20,220	1.1%	19,476	8.6%	17,301	8.7%	40,338	9.3%	20,349	31.4%
2021	20,447	1.1%	21,022	7.9%	18,701	8.1%	43,547	8.0%	23,232	14.2%
2022	20,676	1.1%	22,436	6.7%	20,101	7.5%	46,517	6.8%	26,721	15.0%
2023	20,908	1.1%	23,851	6.3%	21,501	7.0%	49,250	5.9%	31,217	16.8%
2024	21,143	1.1%	25,266	5.9%	22,901	6.5%	51,744	5.1%	36,791	17.9%
2025	21,380	1.1%	26,384	4.4%	24,301	6.1%	54,000	4.4%	43,506	18.3%
2026	23,023	7.7%	27,502	4.2%	25,701	5.8%	56,354	4.4%	45,485	4.5%
2027	24,666	7.1%	28,359	3.1%	27,101	5.4%	58,811	4.4%	47,464	4.4%



The Downtown sub-region is currently the densest within the service area as it represents the majority of the existing population. However, a relatively small portion of the overall service area's population growth is anticipated in the area considering the new development anticipated in the TOD and Ronald Reagan Blvd. corridor. An annual growth rate (AGR) of approximately 1.12% for the majority of the planning period results in a 2027 population of 24,666.

3.1.3 TOD Sub-Region

The proposed Transit Oriented Development is located in the north central portion of the Leander service area. It is comprised of 2,300 acres, and is a proposed master-planned community of mixed residential, commercial and recreational components. A report entitled "Leander Transit Oriented Development – Market Analysis" authored by Capital Market Research in January 2005 summarizes a planned growth pattern for this area using market demographics and independently developed regional population projections. Additionally, Bury + Partners, Inc. (BPI) has been contracted by the City to create a Water and Wastewater Master Plan for the TOD sector that has refined population projections. Using the growth patterns obtained from BPI, there is an existing population within the TOD of 1,087 people in year 2007 and a projected population of 28,359 people in year 2027.

3.1.4 Crystal Falls Sub-Region

The Crystal Falls sub-region encompasses 5,049 acres and is located on the western side of the Leander service area. It currently consists of single-family residential subdivisions and the Crystal Falls golf course. Specifically, the subdivisions within this sub-region include Grand Mesa, the Fairways and the proposed Key Deer Ranch – a 580 acre development. There has recently been discussion of large master planned communities proposed for this area although nothing has been determined. Based on possible developments in this area, a density of the undeveloped areas of 2.5 LUEs/acre has been assumed as it builds out through 2027, resulting in a total population of 27,101.

The existing and proposed phases of the Grand Mesa development are not included in wastewater flow projections as this development consists of septic systems on large lots and will not contribute to the system. Therefore, the total year 2027 population considered to develop wastewater flow projections is 25,726 people.

A Section of ETJ northwest of Crystal Falls consisting of approximately 2,677 acres is currently undeveloped and it has been assumed that this area will not develop during the study period.

3.1.5 Brushy Creek Sub-Region

The Brushy Creek sub-region is generally located in the eastern side of the service area. In 2007, there were no service connections in this region as no service is yet provided to this area. Currently, construction of an extension of the BCRWWS is completing construction which will provide service to this area. It is anticipated, through discussions with local developers and city staff, that the Brushy Creek sub-region will realize a total population of 58,811 people in the year 2027, although only 39,942 people are expected to be within Leander's service area (the remaining in the Chisholm Trail SUD service area). The population growth from 2007 to 2027 for this sub-region was fit to a normal distribution, or bell curve. This distribution was then adjusted to fit within the established growth curve for the entire service area.

3.1.6 Northwest Sub-Region

The Northwest sub-region is located in the northwestern portion of the Leander ETJ with portions of the area within the Colorado River, South San Gabriel River, and Brushy Creek drainage basins, consisting of a total of 13,283 acres. Very few current wastewater service connections exist in the Northwest sub-region although it is anticipated that new developments will be coming soon, including the planned Texas X Park. Growth for this area was calculated by assigning the remainder of the Leander service area growth after subtracting the other four population regions.

3.2 Wastewater Flow Projections

Using the planning criteria discussed in Section 2, wastewater flow projections have been prepared for the Leander service area and each sub-region. These flow projections were used to analyze existing facilities and to determine size and timing of future Capital Improvement Projects. Table 3-3 summarizes these results.

Using the yearly population projection figures the ADWF was determined by multiplying the population by 70 gallons per person per day and converting the flow rate to gallons per minute. The ADWF was then used to determine the wastewater peaking factor.

In order to determine the Inflow and Infiltration (I/I) flow rate, the service area must be determined for each year for each region. The total area boundaries were measured in acres. These area boundaries represent the "built-out" service area in year 2027. To determine the area for each preceding year, the population for that particular year was divided by the year 2027 total population to determine the percentage of the total area that is developed through that year. This percentage was then multiplied by the total area to yield the service area in acres. This area was then multiplied by 750 gallons per day and converted to gallons per minute.

Multiplying the ADWF by the calculated peaking factor and adding the I/I flow rate equals PWWF in gallons per minute.

TABLE 3-3

YEARLY WASTEWATER FLOW PROJECTIONS

Year	Colorado River Basin								Brushy Creek West								Brushy Creek Block House Area							
	Cumulative Population	LUEs	Developed Acres (3.5 LUEs)	ADWF (gpm)	Peaking Factor	I/I (gpm)	PWWF (gpm)	PWWF (mgd)	Cumulative Population	LUEs	Developed Acres (3.5 LUEs)	ADWF (gpm)	Peaking Factor	I/I (gpm)	PWWF (gpm)	PWWF (mgd)	Cumulative Population	LUEs	Developed Acres (3.5 LUEs)	ADWF (gpm)	Peaking Factor	I/I (gpm)	PWWF (gpm)	PWWF (mgd)
2007	2,118	756	216	103	3.57	113	480	0.7	12,192	4,354	1,244	593	2.87	648	2,348	3.4	6,722	2,401	686	327	3.12	357	1,378	2.0
2008	3,012	1,076	307	146	3.44	160	664	1.0	12,982	4,636	1,325	631	2.84	690	2,483	3.6	6,818	2,435	696	331	3.12	362	1,395	2.0
2009	3,918	1,399	400	190	3.34	208	845	1.2	13,783	4,923	1,406	670	2.81	733	2,618	3.8	6,914	2,469	706	336	3.11	367	1,413	2.0
2010	5,017	1,792	512	244	3.24	267	1,058	1.5	15,225	5,437	1,554	740	2.77	809	2,860	4.1	7,023	2,508	717	341	3.10	373	1,433	2.1
2011	6,192	2,212	632	301	3.16	329	1,279	1.8	16,516	5,898	1,685	803	2.74	878	3,074	4.4	7,142	2,551	729	347	3.10	380	1,455	2.1
2012	7,477	2,670	763	363	3.08	397	1,516	2.2	18,159	6,485	1,853	883	2.69	965	3,343	4.8	7,263	2,594	741	353	3.09	386	1,477	2.1
2013	8,861	3,165	904	431	3.01	471	1,766	2.5	19,885	7,102	2,029	967	2.65	1,057	3,623	5.2	7,384	2,637	753	359	3.08	392	1,499	2.2
2014	10,379	3,707	1,059	505	2.94	552	2,034	2.9	21,725	7,759	2,217	1,056	2.62	1,155	3,917	5.6	7,507	2,681	766	365	3.08	399	1,522	2.2
2015	11,919	4,257	1,216	579	2.88	633	2,301	3.3	23,227	8,295	2,370	1,129	2.59	1,234	4,155	6.0	7,635	2,727	779	371	3.07	406	1,545	2.2
2016	13,390	4,782	1,366	651	2.83	712	2,552	3.7	24,567	8,774	2,507	1,194	2.56	1,306	4,366	6.3	7,770	2,775	793	378	3.06	413	1,569	2.3
2017	15,022	5,365	1,533	730	2.78	798	2,826	4.1	26,140	9,336	2,667	1,271	2.54	1,389	4,611	6.6	7,895	2,820	806	384	3.06	420	1,592	2.3
2018	17,262	6,165	1,761	839	2.72	917	3,197	4.6	28,188	10,067	2,876	1,370	2.50	1,498	4,928	7.1	8,031	2,868	820	390	3.05	427	1,617	2.3
2019	19,998	7,142	2,041	972	2.65	1,063	3,641	5.2	30,648	10,946	3,127	1,490	2.47	1,629	5,305	7.6	8,169	2,917	834	397	3.04	434	1,642	2.4
2020	23,266	8,309	2,374	1,131	2.59	1,237	4,161	6.0	33,540	11,979	3,422	1,630	2.43	1,783	5,743	8.3	8,307	2,967	848	404	3.03	441	1,666	2.4
2021	25,751	9,197	2,628	1,252	2.54	1,369	4,551	6.6	35,774	12,776	3,650	1,739	2.40	1,901	6,078	8.8	8,446	3,016	862	411	3.03	449	1,692	2.4
2022	28,480	10,171	2,906	1,384	2.50	1,514	4,973	7.2	38,116	13,613	3,889	1,853	2.38	2,026	6,427	9.3	8,586	3,067	876	417	3.02	456	1,717	2.5
2023	31,613	11,290	3,226	1,537	2.45	1,680	5,452	7.9	40,795	14,570	4,163	1,983	2.35	2,168	6,823	9.8	8,728	3,117	891	424	3.01	464	1,742	2.5
2024	35,178	12,564	3,590	1,710	2.41	1,870	5,989	8.6	43,835	15,655	4,473	2,131	2.32	2,330	7,268	10.5	8,870	3,168	905	431	3.01	471	1,767	2.5
2025	39,203	14,001	4,000	1,906	2.36	2,083	6,588	9.5	47,043	16,801	4,800	2,287	2.29	2,500	7,734	11.1	9,013	3,219	920	438	3.00	479	1,793	2.6
2026	41,325	14,759	4,217	2,009	2.34	2,196	6,901	9.9	49,544	17,694	5,056	2,408	2.27	2,633	8,095	11.7	9,692	3,462	989	471	2.97	515	1,913	2.8
2027	43,446	15,517	4,433	2,112	2.32	2,309	7,211	10.4	51,858	18,521	5,292	2,521	2.25	2,756	8,426	12.1	10,371	3,704	1,058	504	2.94	551	2,033	2.9

Year	Brushy Creek Parmer								San Gabriel West								San Gabriel East							
	Cumulative Population	LUEs	Developed Acres (3.5 LUEs)	ADWF (gpm)	Peaking Factor	I/I (gpm)	PWWF (gpm)	PWWF (mgd)	Cumulative Population	LUEs	Developed Acres (3.5 LUEs)	ADWF (gpm)	Peaking Factor	I/I (gpm)	PWWF (gpm)	PWWF (mgd)	Cumulative Population	LUEs	Developed Acres (3.5 LUEs)	ADWF (gpm)	Peaking Factor	I/I (gpm)	PWWF (gpm)	PWWF (mgd)
2007	413	147	42	20	4.02	22	102	0.1	447	160	46	22	4.00	24	111	0.2	395	141	40	19	4.02	21	98	0
2008	987	353	101	48	3.80	52	235	0.3	687	245	70	33	3.90	37	167	0.2	660	236	67	32	3.91	35	160	0.2
2009	1,807	645	184	88	3.62	96	414	0.6	935	334	95	45	3.82	50	223	0.3	978	349	100	48	3.81	52	233	0.3
2010	2,872	1,026	293	140	3.46	153	635	0.9	1,135	405	116	55	3.76	60	268	0.4	1,620	579	165	79	3.65	86	374	0.5
2011	4,183	1,494	427	203	3.32	222	896	1.3	1,210	432	124	59	3.74	64	285	0.4	2,316	827	236	113	3.53	123	521	0.8
2012	5,578	1,992	569	271	3.20	296	1,164	1.7	1,358	485	139	66	3.71	72	317	0.5	3,132	1,119	320	152	3.43	166	688	1.0
2013	7,217	2,578	736	351	3.09	384	1,469	2.1	1,571	561	160	76	3.66	83	363	0.5	4,001	1,429	408	195	3.33	213	861	1.2
2014	9,103	3,251	929	442	2.99	484	1,809	2.6	1,873	669	191	91	3.61	100	428	0.6	4,924	1,758	502	239	3.25	262	1,040	1.5
2015	11,557	4,127	1,179	562	2.89	614	2,239	3.2	2,101	750	214	102	3.57	112	476	0.7	5,873	2,098	599	286	3.18	312	1,220	1.8
2016	14,011	5,004	1,430	681	2.81	745	2,657	3.8	2,196	784	224	107	3.55	117	496	0.7	6,823	2,437	696	332	3.12	363	1,396	2.0
2017	16,332	5,833	1,667	794	2.74	868	3,044	4.4	2,573	919	263	125	3.50	137	574	0.8	7,698	2,749	786	374	3.07	409	1,556	2.2
2018	18,520	6,614	1,890	900	2.69	984	3,402	4.9	3,176	1,134	324	154	3.42	169	697	1.0	8,617	3,077	879	419	3.02	458	1,722	2.5
2019	20,576	7,349	2,100	1,000	2.64	1,094	3,734	5.4	4,106	1,467	419	200	3.32	218	881	1.3	9,506	3,395	970	462	2.98	505	1,880	2.7
2020	22,499	8,035	2,296	1,094	2.60	1,196	4,040	5.8	5,397	1,928	551	262	3.21	287	1,130	1.6	10,358	3,699	1,057	504	2.94	550	2,030	2.9
2021	24,288	8,674	2,478	1,181	2.57	1,291	4,322	6.2	6,162	2,201	629	300	3.16	327	1,274	1.8	11,181	3,993	1,141	544	2.91	594	2,174	3.1
2022	25,945	9,266	2,647	1,261	2.54	1,379	4,581	6.6	7,087	2,531	723	345	3.10	377	1,445	2.1	11,938	4,264	1,218	580	2.88	634	2,304	3.3
2023	27,469	9,810	2,803	1,335	2.51	1,460	4,817	6.9	8,280	2,957	845	402	3.04	440	1,662	2.4	12,667	4,524	1,293	616	2.85	673	2,429	3.5
2024	28,860	10,307	2,945	1,403	2.49	1,534	5,032	7.2	9,758	3,485	996	474	2.96	519	1,925	2.8	13,366	4,774	1,364	650	2.83	710	2,548	3.7
2025	30,119	10,757	3,073	1,464	2.47	1,601	5,224	7.5	11,539	4,121	1,177	561	2.89	613	2,236	3.2	13,953	4,983	1,424	678	2.81	742	2,647	3.8
2026	31,432	11,226	3,207	1,528	2.46	1,670	5,424	7.8	12,064	4,309	1,231	586	2.87	641	2,326	3.3	14,553	5,197	1,485	707	2.79	773	2,748	4.0
2027	32,802	11,715	3,347	1,595	2.44	1,743	5,632	8.1	12,589	4,496	1,285	612	2.85	669	2,416	3.5	15,091	5,390	1,540	734	2.77	802	2,838	4.1

4.0 EXISTING WASTEWATER INFRASTRUCTURE

4.1 Existing Infrastructure

Information regarding the location and design capacity of existing wastewater infrastructure was provided to KFA by the City and Eco Resources. The information was obtained from archived plans and maps depicting the City's wastewater system, as well as verbal and written communication with utility staff. Exhibit 4-1 depicts the major existing wastewater infrastructure identified and evaluated during this study.

4.1.1 Wastewater Treatment Plant

All of the wastewater in the City of Leander is currently sent to and treated by the Leander WWTP, which is currently permitted for an average flow of 2.25 MGD. The WWTP is located in the south of FM 2243 on Brushy Creek, east of downtown Leander. Effluent limits are as follows:

Carbonaceous Biochemical Oxygen Demand (5-day)	5 mg/l
Total Suspended Solids	5 mg/l
Ammonia Nitrogen	2 mg/l
Total Phosphorous	1 mg/l

Permit No. 12644-001 was issued July 19, 2004 and expires December 1, 2008. Flows to the WWTP for the period from October 2006 to October 2007 had an average daily flow of approximately 1.599 MGD. Average daily flows for the 2008 year are expected to be 1.71 MGD.

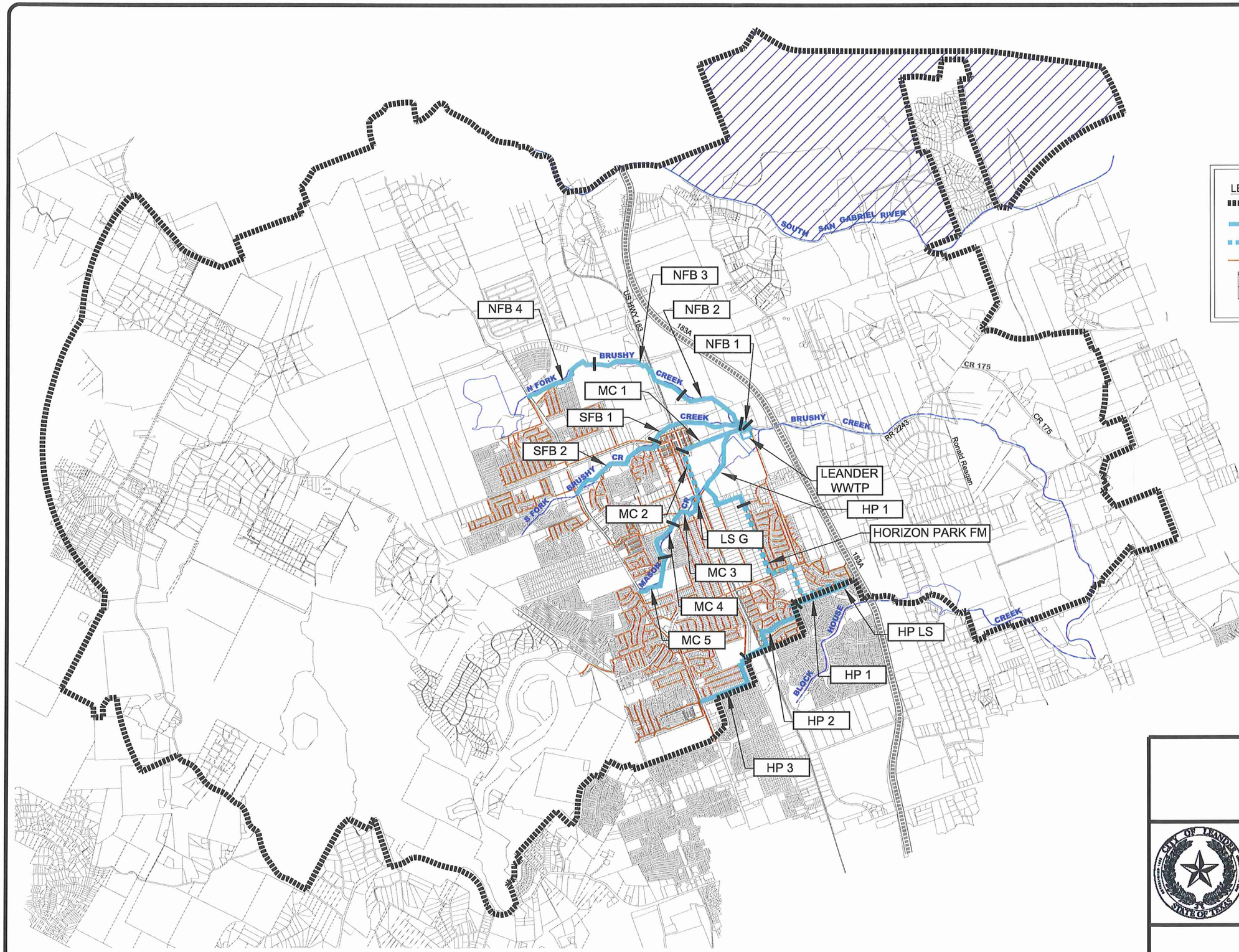
4.1.2 Interceptors and Lift Stations

The primary gravity wastewater lines in Leander run along Mason Creek, the South Fork of Brushy Creek and the North Fork of Brushy Creek. Additionally, a large gravity main drains to the Horizon Park Lift Station in the southern portion of the City. Therefore, for the purposes of this study, the existing interceptors have been named Mason Creek, Brushy Creek South, Brushy Creek North and Horizon Park. The existing interceptors were broken into segments based on pipe diameter (refer to Exhibit 4-1); the limiting slope for each segment was found; and the resulting minimum capacity of the segment was calculated. Table 4-1 provides the existing capacity of each pipe segment.

- *Mason Creek Interceptor* – The existing Mason Creek Interceptor runs from Bagdad Road to Lift Station 'G' along the alignment of Mason Creek, which pumps through a 12-inch force main to a 21-inch gravity main in FM 2243 and finally to the WWTP. The gravity segments consist of 15-inch, 18-inch, and 21-inch diameter pipes.

- *Brushy Creek South Interceptor* – The existing Brushy Creek South Interceptor runs along the South Fork of Brushy Creek from Bagdad Road until it ties into the Brushy Creek North Interceptor. The segments consist of 12-inch, and 18-inch diameter gravity pipes.

- *Brushy Creek North Interceptor* – The existing Brushy Creek North Interceptor runs along the North Fork of Brushy Creek from Bagdad Road to the Leander WWTP. The segments consist of 15-inch, 21-inch, 27-inch and 30-inch diameter gravity pipes.



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GRAPHIC SCALE IN 1000 FT

LEGEND

- 2025 SERVICE AREA BOUNDARY
- EXISTING INTERCEPTOR
- EXISTING FORCE MAIN
- EXISTING LINES
- OUTSIDE OF SERVICE AREA

ABBREVIATION LIST

SFB	South Brushy Creek Segment
NFB	North Brushy Creek Segment
MC	Mason Creek Segment
HP	Horizon Park Segment
LS	Lift Station

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CITY OF LEANDER

WASTEWATER MASTER PLAN

EXISTING WASTEWATER INFRASTRUCTURE

EXHIBIT 4-1

TABLE 4-1 **EXISTING INTERCEPTOR CAPACITIES**

Segment Number	Size	Flow Type	Segment	Limiting Slope (%)	Line Capacity (gpm)	Line Capacity (MGD)	Length (ft)
MASON CREEK INTERCEPTOR / FORCE MAIN							
MC1	21"	Gravity	From FM2243 @ WWTP to US 183	0.35	3,786	5.5	3,763
MC2	12"	Force	From Intersection of 183/2243 to Lift Station "G"	NA	2,635	5.9	3,042
MC3	21"	Gravity	From LS "G" to 12"/18" Junction	0.2	2,862	4.1	2,226
MC4	18"	Gravity	From 12"/18" Junction to 8"/15" Junction	0.3	2,324	3.3	2,362
MC5	15"	Gravity	From 8"/15" Junction to Bagdad Road	0.5	1,845	2.7	2,869
BRUSHY CREEK NORTH INTERCEPTOR							
NBC1	30"	Gravity	FM 2243 to 18"/27" Junction	0.25	8,284	11.9	676
NBC2	27"	Gravity	From 18"/30" Junction to 21"/27" Junction	0.3	6,852	9.9	4,610
NBC3	21"	Gravity	From 21"/27" Junction to 21"/15" Junction	0.3	3,506	5	5,673
NBC4	15"	Gravity	From 21"/15" Junction to Bagdad Road	0.4	1,429	2.1	4,500
BRUSHY CREEK SOUTH INTERCEPTOR							
SBC1	18"	Gravity	18"/27" Junction to 12"/18" Junction	0.5	3,000	4.3	5,165
SBC2	12"	Gravity	12"/18" Junction to Bagdad Road	0.3	788	1.1	5,769
HORIZON PARK INTERCEPTOR / FORCE MAIN							
HP1	24"	Gravity	From Horizon Park LS to Fall Creek Drive	0.1	2,890	4.2	2,492
HP2	18"	Gravity	From Fall Creek Drive to Hwy 183	0.3	2,324	3.3	5,193

- *Horizon Park Interceptor* – The existing Horizon Park Interceptor runs from east of Hwy 183 to the Horizon Park Lift Station which pumps to a gravity main before connecting with the WWTP. There are currently planned improvements to the interceptor. These improvements will extend the interceptor upstream approximately 1,000 feet to an existing main west of Hwy 183, thereby picking up flow from the existing Timberline subdivisions and future development of Key Dear Ranch. Since this improvement is considered imminent, this evaluation assumes that the planned improvements are in place. Additionally, the Block House Creek Interceptor is currently in the design stage and will extend from the BCRWWS to the Horizon Park Lift Station, tying into the Horizon Park Interceptor and abandoning the lift station. Therefore, no upgrades to the lift station or force main are evaluated as part of this study. The gravity segments include 15-inch, 18-inch and 24-inch diameter pipes.

Two lift stations directly serve portions of the interceptors being evaluated.

- *Lift Station 'G'* - The Mason Creek Interceptor flows to Lift Station 'G' where it is pumped to a gravity main prior to entering the WWTP. According to the plans, Lift Station 'G' consists of 3 – 7.5 hp pumps with a capacity of 175 gpm each, resulting in a firm capacity for the station of 350 gpm.

- *Horizon Park Lift Station and Force Main* – Per JAECO, the existing Horizon Park Lift Station has a capacity of 1,300 gpm. The existing 12-inch force main runs from the lift station to a 10-inch gravity main on CR 273. As described above, this lift station is planned to be abandoned with the construction of the Block House Creek Interceptor that is currently in design. Therefore, no evaluation of expanding the lift station or force main is included in this study.

5.0 EXPANSION OF WASTEWATER TRANSPORT AND TREATMENT CAPACITY

KFA and City staff developed sub-regions for the purpose of clearly deriving population projections for the service area, however as we began developing projected wastewater flows for new facilities, each sub-region naturally fell into several different drainage basins. These basins were divided into sub-basins and are depicted on Exhibit 5-1. The population projections were disaggregated to the sub-basins to develop wastewater flows. Appendix A contains flow projections and capacity calculations for each of the infrastructure elements evaluated in this study. Each proposed project for the service area, as described below, is shown on Exhibit 5-2.

5.1 Wastewater Treatment Improvements and Options

Currently, all wastewater flows in the City of Leander are received at the Leander WWTP, which has a current capacity of 2.25 MGD. The WWTP is located on Brushy Creek just west of downtown Leander and is able to serve the North and South Forks of Brushy Creek, and Mason Creek basins upstream of the WWTP. Ultimate plans for wastewater treatment for Leander include expansion of the existing plant, participation in the BCRWWS, and either a new WWTP in the South San Gabriel River basin or participation in a regional system for that basin.

The overall treatment strategy used in this evaluation is prioritized as follows:

1. Utilize the existing 2.25 MGD WWTP and the 5.24 MGD BCRWWS capacities first. Extending a main up Brushy Creek to the WWTP will allow flow above the 2.25 MGD capacity of the WWTP to be diverted to the BCRWWS.
2. Build a South San Gabriel basin WWTP. Participation in a regional San Gabriel system is also an option, but for purposes of this study a new WWTP has been assumed.
3. Expand the existing Leander WWTP.

See Table 5-1 for a year by year breakdown of flows from each basin and their treatment destination.

TABLE 5-1

TOTAL LEANDER AVERAGE DAY FLOWS BY BASIN

Year	Total Leander Average Day Flows By Basin (MGD)																		Total Leander Average Day Flows (MGD)	Totals at Destination (MGD)		
	Colorado Basin			Brushy Creek West			Brushy Creek Block House			Brushy Creek Parmer			S. San Gabriel West			S. San Gabriel East							
	Leander WWTP	BCRI	Total Flow	Leander WWTP	BCRI	Total Flow	Leander WWTP	BCRI	Total Flow	Leander WWTP	BCRI	Total Flow	Leander WWTP	SSG WWTP	Total Flow	BCRI	SSG WWTP	Total Flow		Leander WWTP	BCRI	SSG WWTP
2007	0.15	0.00	0.15	0.85	0.00	0.85	0.47	0.00	0.47	0.03	0.00	0.03	0.03	0.00	0.03	0.00	0.00	0.03	1.56	1.53	0.00	0.00
2008	0.00	0.21	0.21	0.91	0.00	0.91	0.00	0.48	0.48	0.00	0.07	0.07	0.05	0.00	0.05	0.00	0.00	0.05	1.76	0.96	0.76	0.00
2009	0.00	0.27	0.27	0.96	0.00	0.96	0.00	0.48	0.48	0.00	0.13	0.13	0.07	0.00	0.07	0.07	0.00	0.07	1.98	1.03	0.95	0.00
2010	0.06	0.29	0.35	1.07	0.00	1.07	0.00	0.49	0.49	0.00	0.20	0.20	0.08	0.00	0.08	0.11	0.00	0.11	2.30	1.21	1.10	0.00
2011	0.14	0.29	0.43	1.16	0.00	1.16	0.00	0.50	0.50	0.00	0.29	0.29	0.08	0.00	0.08	0.16	0.00	0.16	2.63	1.38	1.24	0.00
2012	0.23	0.29	0.52	1.27	0.00	1.27	0.00	0.51	0.51	0.00	0.39	0.39	0.10	0.00	0.10	0.22	0.00	0.22	3.01	1.60	1.41	0.00
2013	0.33	0.29	0.62	1.39	0.00	1.39	0.00	0.52	0.52	0.00	0.51	0.51	0.11	0.00	0.11	0.28	0.00	0.28	3.42	1.83	1.59	0.00
2014	0.44	0.29	0.73	1.52	0.00	1.52	0.00	0.53	0.53	0.00	0.64	0.64	0.13	0.00	0.13	0.34	0.00	0.34	3.89	2.09	1.80	0.00
2015	0.54	0.29	0.83	1.56	0.07	1.63	0.00	0.53	0.53	0.00	0.81	0.81	0.15	0.00	0.15	0.41	0.00	0.41	4.36	2.25	2.11	0.00
2016	0.65	0.29	0.94	1.45	0.27	1.72	0.00	0.54	0.54	0.00	0.98	0.98	0.15	0.00	0.15	0.48	0.00	0.48	4.81	2.25	2.56	0.00
2017	0.76	0.29	1.05	1.31	0.52	1.83	0.00	0.55	0.55	0.00	1.14	1.14	0.18	0.00	0.18	0.54	0.00	0.54	5.30	2.25	3.05	0.00
2018	0.92	0.29	1.21	1.11	0.86	1.97	0.00	0.56	0.56	0.00	1.30	1.30	0.22	0.00	0.22	0.60	0.00	0.60	5.87	2.25	3.62	0.00
2019	1.11	0.29	1.40	0.85	1.29	2.15	0.00	0.57	0.57	0.00	1.44	1.44	0.29	0.00	0.29	0.67	0.00	0.67	6.51	2.25	4.26	0.00
2020	1.34	0.29	1.63	0.91	1.44	2.35	0.00	0.58	0.58	0.00	1.57	1.57	0.00	0.38	0.38	0.00	0.73	0.73	7.24	2.25	3.88	1.10
2021	1.51	0.29	1.80	0.74	1.77	2.50	0.00	0.59	0.59	0.00	1.70	1.70	0.00	0.43	0.43	0.00	0.78	0.78	7.81	2.25	4.35	1.21
2022	1.70	0.29	1.99	0.55	2.12	2.67	0.00	0.60	0.60	0.00	1.82	1.82	0.00	0.50	0.50	0.00	0.84	0.84	8.41	2.25	4.83	1.33
2023	1.92	0.29	2.21	2.58	0.28	2.86	0.00	0.61	0.61	0.00	1.92	1.92	0.00	0.58	0.58	0.00	0.89	0.89	9.07	4.50	3.10	1.47
2024	2.17	0.29	2.46	2.33	0.74	3.07	0.00	0.62	0.62	0.00	2.02	2.02	0.00	0.68	0.68	0.00	0.94	0.94	9.79	4.50	3.67	1.62
2025	2.45	0.29	2.74	2.05	1.25	3.29	0.00	0.63	0.63	0.00	2.11	2.11	0.00	0.81	0.81	0.00	0.98	0.98	10.56	4.50	4.28	1.78
2026	2.60	0.29	2.89	1.90	1.57	3.47	0.00	0.68	0.68	0.00	2.20	2.20	0.00	0.84	0.84	0.00	1.02	1.02	11.10	4.50	4.74	1.86
2027	2.75	0.29	3.04	2.25	1.38	3.63	0.00	0.73	0.73	0.00	2.30	2.30	0.00	0.88	0.88	0.00	1.06	1.06	11.63	5.00	4.69	1.94

Methodology:

1. Assume Block House Creek Interceptor online in 2008.
2. Assume construction of North Brushy Creek Interceptor to Leander WWTP where flow will be split between the WWTP and BCRS. The capacity in the BCRS will be utilized prior to expanding the Leander WWTP.
3. Construct South San Gabriel WWTP when capacity of BCRS, Leander WWTP, and Colo WWTP have been reached.
4. Leander's capacity in the BCRS is 4.96 MGD Average Day Flow based on Leander's criteria for calculating PWWF and the planned design capacity in the system.

5.1.1 Leander WWTP

The average daily flows to the wastewater treatment plant include all flows in the service area from 2005 to 2007, in 2008 it is assumed that the Horizon Park Lift Station will be abandoned and flows from that area will be redirected to the Brushy Creek Regional Wastewater System via the Block House Creek Interceptor. In 2008 it is assumed that the flows in the Ronald Reagan Corridor will also be directed to the BCRWWS.

With these assumptions, the current 2.25 MGD capacity of the plant is exceeded in 2014, but capacity in the BCRWWS is still available. Therefore, the extension of a Brushy Creek Interceptor to the Leander WWTP must be completed by 2014, so that flows above 2.25 MGD can be diverted to the BCRWWS. Expansion of the Leander WWTP is further delayed if treatment options become available in the South San Gabriel Basin by 2020.

The flow projections show that a plant expansion to 4.50 MGD should be completed prior to 2023. In 2027, a second plant expansion will be required as the flows exceed the 4.50 MGD capacity. This Master Plan assumes an expansion to 6.75 MGD although the actual phasing and sizing of plant expansions will require further study as population projections are updated. The anticipated average daily flows and peak flows are shown for each of the years from 2007 to 2027 in Table A-1. Table A-1 also indicates the years of planned plant expansions.

5.1.2 Participation in the Brushy Creek Regional Wastewater System

As referenced previously, the City investigated the feasibility of participating in the Brushy Creek Regional Wastewater System (BCRWWS) ("Wastewater Feasibility Study", PBS&J, December 2002). The BCRWWS is a regional wastewater system owned by the LCRA, with participation by the cities of Cedar Park, Round Rock, Austin, as well as the Brushy Creek MUD. The flows in this system ultimately are received at the Brushy Regional WWTP near the Dell Diamond in Round Rock. The BCRWWS currently has a capacity of 5.25 MGD (ADWF) reserved for The City of Leander, although Leander has yet to officially become a participant in the system. Cedar Park has extended the North Brushy Creek Interceptor up to the southern border of Leander at Brushy Creek. The City is currently in negotiation with the City of Cedar Park and the BCRWWS to tie on to the

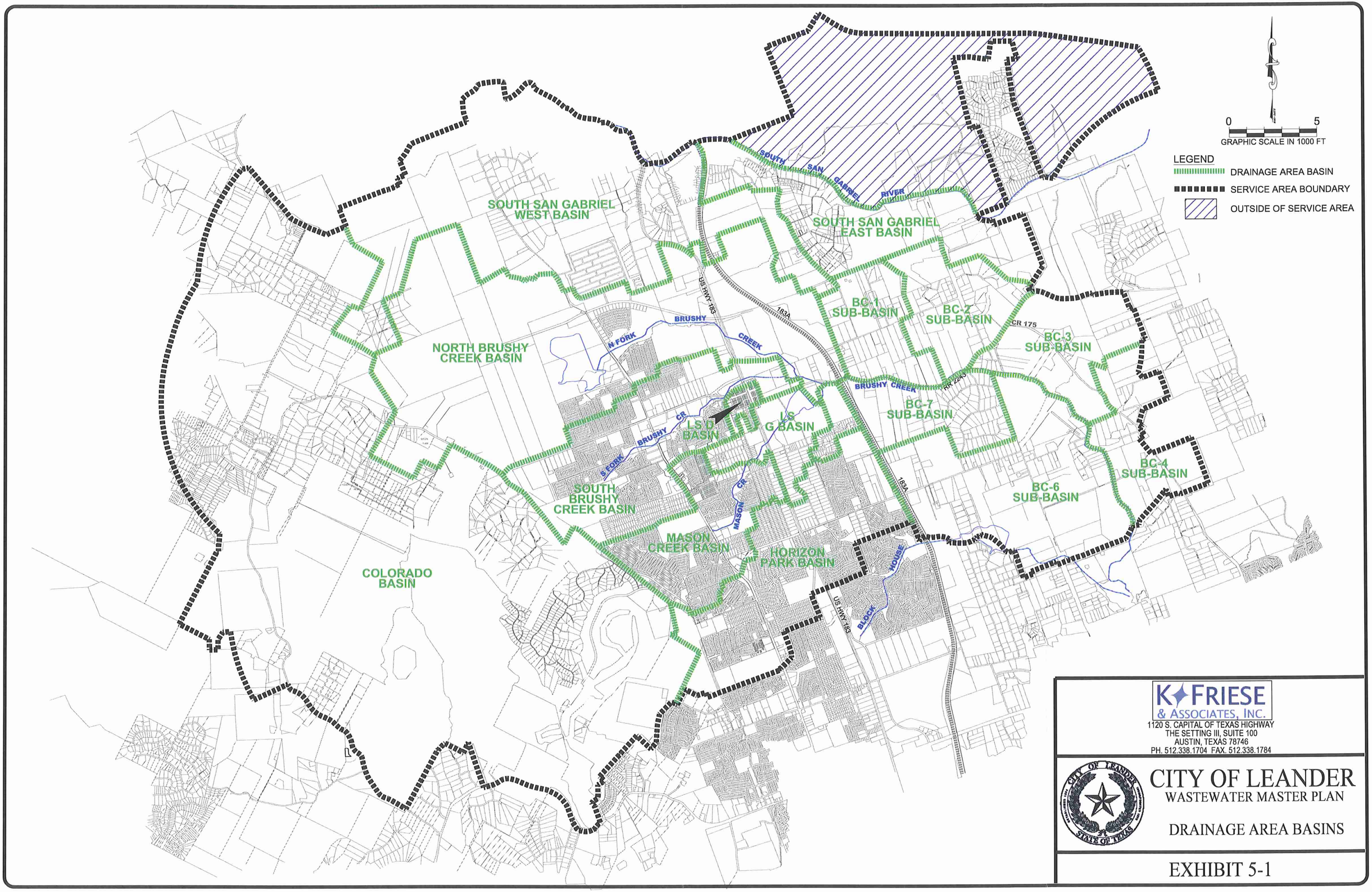
regional system, and connection to the system is likely to occur in the next year via the Block House Creek Interceptor. Capital costs for Leander's inclusion in the BCRWWS has been based on LCRA's January 2007 proforma for the transmission costs, and an assumption of $7/gallon of treatment capacity in the regional WWTP.

Due to the Brushy Creek System's location southeast of the City, it is most suited to receive the wastewater flows from the Brushy Creek sub-region. Additionally, flows from the Horizon Park Basin, via the Block House Creek Interceptor, and flows diverted from the Leander WWTP are anticipated to be sent to regional system. And until treatment options become available in the South San Gabriel basin, these flows will likely be pumped to Brushy Creek basin and will flow to the regional system as well.

Conveyance to the existing BCRWWS would be facilitated by the construction of a new wastewater interceptor within the City, hereinafter called the Brushy Creek Interceptor. This new interceptor would primarily follow the alignment of Brushy Creek, and due to this location is well suited to serve the Brushy Creek sub-region. Exhibit 5-2 shows a preliminary alignment for this proposed interceptor.

5.1.3 South San Gabriel River Basin Treatment Options

As the area in the City of Leander's service area within the South San Gabriel River Basin is built out, Leander will need to evaluate methods to treat this area's wastewater flows. Initially, it is anticipated that flows from this basin will be pumped to either the Leander WWTP or the BCRWWS via 2 lift stations. Eventually, flows from this area are expected to either be treated by a new Leander WWTP along the river, or by participating in a new regional system. The Brazos River Authority has had very preliminary discussions with Leander, Liberty Hill, Georgetown and the Chisholm Trail SUD regarding a possible regional interceptor to serve this drainage basin. Further evaluation by the City will be required to determine the most cost effective and prudent course for treatment in this basin. For purposes of this Master Plan, it has been assumed that a Leander owned WWTP will be constructed to treat wastewater from this basin as capacity in the existing Leander WWTP and the BCRWWS is reached.



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CITY OF LEANDER
WASTEWATER MASTER PLAN

DRAINAGE AREA BASINS

EXHIBIT 5-1

SAN GABRIEL EAST

SAN GABRIEL WEST

BRUSHY CREEK WEST

BRUSHY CREEK/ PARMER

BRUSHY CREEK/ BLOCK HOUSE

COLORADO BASIN

SGWI2 SGWLS SGWI1 SGW FM SGEI2 TDDLS SGEI1 SGWWTP SGELS SGE FM

SOUTH SAN GABRIEL RIVER

NFB8 NFB6 NFB5 NFB4 NFB3 NFB2 NFB1 NFB7

N FORK BRUSHY CREEK

US HWY 183 183A

CNI1 CNI2 CNFM CNLS

SFB1 SFB2 S FORK BRUSHY CR

MCI1 MCI2 MCI3 MCI4 MCI5 MCI6 MCLS MASON CR

WWTP

BCS1 BCRI4 BCS4 BCRI3 BCRI2 BCS5A BCRI1 BCS5B BCSCB BCSGB BHCI3 BHCI2 BHCI1

CR 175 RR 2243

HPLS HPI1 HPI2 HPI3 HPI4 HOUSE BLOCK

CFEM CFLS

BRUSHY CREEK REGIONAL SYSTEM

0 5

GRAPHIC SCALE IN 1000 FT

LEGEND

- SERVICE AREA BOUNDARY
- BASIN BOUNDARY
- FUTURE INTERCEPTOR
- FUTURE FORCE MAIN
- EXISTING INTERCEPTOR
- EXISTING FORCE MAIN
- TEMPORARY INFRASTRUCTURE
- EXISTING LIFT STATION
- FUTURE LIFT STATION
- TEMPORARY LIFT STATION

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CITY OF LEANDER

WASTEWATER MASTER PLAN

PROPOSED 2007 THRU 2027
WASTEWATER SYSTEM

EXHIBIT 5-2

5.2 Ronald Reagan Boulevard Corridor Conveyance

The extension of Ronald Reagan Boulevard into the Leander Service Area will be a catalyst for a significant portion of the area's growth. This corridor coincides with the Brushy Creek sub-region discussed in Section 3, and it is expected that the population within Leander's service area will increase to 39,942 in 2027. The majority of this area drains towards Brushy Creek downstream of the existing Leander WWTP, and the remaining northern area drains to toward the South San Gabriel River. Currently, the City is planning to serve this area through connection to the Brushy Creek Wastewater System (BCRWWS), construction of the Block House Creek Interceptor and the Brushy Creek Interceptor. Several wastewater improvements are recommended to serve this future population.

5.2.1 Brushy Creek Sub-Basin Interceptors

In order to convey wastewater flows to the Brushy Creek Interceptor, the Brushy Creek sub-region has been divided into six sub-basins, with each sub-basin being served by a sub-basin interceptor which will connect to the proposed Brushy Creek Interceptor. Each sub-basin interceptor has been sized according to the population and area contained within each sub-basin using the year 2027 values. The sizes shown are based on the average size over the length of the interceptor as the size will likely vary from one end to the other. For purposes of this study, a topographical map has been used to estimate the minimum slope along each interceptor. Table A-2 shows the calculations for the sub-basin interceptors and Exhibit 5-2 shows the preliminary alignments of each interceptor.

- *Sub-Basin BCS-1* – Sub-basin BCS-1 is located in the northwest portion of the Brushy Creek sub-region. Fully developed, the sub-basin comprises 1,614 acres. Using engineering criteria discussed in Section 3, the BCR-1 Interceptor was preliminarily sized as a 15-inch diameter pipe with a length of 13,400 feet.

- *Sub-Basin BCS-2* – Consisting of 1,594 acres, BCS-2 will be served directly by the Brushy Creek Interceptor without a sub-basin interceptor.

- *Sub-Basin BCS-3* – Consisting of 736 acres, BCS-3 will be served directly by the Brushy Creek Interceptor without a sub-basin interceptor.

- *Sub-Basin BCS-4* – Sub-basin BCS-4 contains an area of 1,347 acres and will be served by its own interceptor. Using engineering criteria discussed in Section 3, the BCR-4 Interceptor was preliminarily sized as a 12-inch diameter pipe with a length of 8,500 feet.

- *Sub-Basin BCS-5* – Sub-basin BCS-5 contains an area of 1,674 acres and will be served by two separate interceptors. The BCS-5A interceptor will be 6,500 feet long and have a diameter of 8-inches. The BCS-5B interceptor will be 6,500 feet long and have a diameter of 12-inches.

- *Sub-Basin BCS-6* – Sub-basin BCS-6 contains an area of 2,361 acres and will be served by two separate sub-basin interceptors and the Block House Creek Interceptor. The BCS-6A interceptor will be 5,700 feet long and have a diameter of 15-inches. The BCS-6B interceptor will be 5,500 feet long and have a diameter of 18-inches.

5.2.2 Brushy Creek Interceptor

The Brushy Creek Interceptor in Leander will run from the southern border of Leander's intersection with Brushy Creek northwest along the alignment of Brushy Creek, tying into the North Brushy Creek Interceptor that is currently nearing completion. The North Brushy Creek Interceptor is within the City of Cedar Park and ties to the BCRWWS. The City of Leander is negotiating capacity in both the City of Cedar Park infrastructure and the BCRWWS.

The first phase of this project is beginning the design phase, and will include Segment 1 and Segment 2 with construction completion scheduled for 2010. The Brushy Creek Interceptor will receive its contributing flows from the connections of the various Brushy Creek sub-basin interceptors, from pumped flow from the San Gabriel Basin (prior to construction of treatment in the San Gabriel), and from flows diverted from the existing Leander WWTP. The design calculations for each segment of the Brushy Creek Interceptor are summarized in Table A-3. Refer to Exhibit 5-2 for segment delineation.

5.2.3 Block House Creek Interceptor

The Block House Creek Interceptor is currently being designed and will run primarily along the alignment of Block House Creek from the intersection with Brushy Creek to the existing Horizon Park

Lift Station. Construction of this interceptor is planned for 2008. This interceptor will allow the Horizon Park Lift Station to be abandoned and will serve the area that was served by this lift station, the Block House Creek basin, and approximately 1,500 LUEs that is planned to be pumped from the Crystal Falls area.

Flow in this interceptor will be delivered to the BCRWWS, and will reduce flows to the existing Leander WWTP when it is completed. The design calculations for each segment of the Block House Creek Interceptor are summarized in Table A-4. Refer to Exhibit 5-2 for segment delineation.

5.3 South San Gabriel Basin Conveyance

Portions of the Northwest Area, TOD, and Ronald Reagan Corridor lie in the drainage basin of the South San Gabriel River. Currently no City of Leander collection system exists in this basin. As development occurs it is anticipated that an interceptor for this basin will be constructed, generally along the alignment of the South San Gabriel River. It is anticipated that the interceptors there will be 3 lift stations that will initially pump the flow to either the Leander WWTP or the BCRWWS. Ultimately these lift stations would be abandoned and the interceptors would feed a future San Gabriel WWTP.

5.3.1 South San Gabriel Interceptor – East and West

The anticipated flows to and the capacity of each segment for each year from 2007 to 2027 have been calculated and are shown in Tables A-5 and A-6. The alignment and sizing of this future interceptor are only for purposes of this study, a detailed examination has not taken place. The timing and phasing of the construction of the interceptor is dependant on the actual build out pattern of the area.

5.3.2 South San Gabriel Lift Stations

To transport the flows to the existing WWTP site and BCRWWS, 3 lift stations are anticipated. The one within the TOD area and the one near Highway 183 at the South San Gabriel River will pump their flows to the North Brushy Creek Interceptor and the Leander WWTP. A third lift station at the far eastern edge of Leander's service area along the South San Gabriel would pump into Leander's

system for delivery to the BCRWWS. It is projected that each of these lift stations would be abandoned as the interceptors are completed and treatment in this basin becomes available.

The TOD Lift Station is currently in its final design and should be constructed in 2008 as part of the Villages of Messina development. The preliminary plans indicate a 2 pump system with a firm capacity of 1,355 gpm. It is anticipated that this lift station would be abandoned in 2020 as the new San Gabriel WWTP is constructed. The anticipated flows to and the capacity of the lift station for each year from 2007 to 2027 have been calculated and are shown in Table A-7.

The San Gabriel West lift station would pump flows from the South San Gabriel basin to the North Brushy Creek Basin is anticipated to be a 2 pump system, providing a 900 gpm firm capacity. It is anticipated that this lift station would be abandoned in 2020 as the new San Gabriel WWTP is constructed. The anticipated flows to and the capacity of the lift station for each year from 2007 to 2027 have been calculated and are shown in Table A-8.

The San Gabriel East lift station would pump flows from the South San Gabriel basin to the Brushy Creek basin and BCRWWS is anticipated to be a 2 pump system, providing a 1,500 gpm firm capacity. It is anticipated that this lift station would be abandoned in 2020 as the new San Gabriel WWTP is constructed. The anticipated flows to and the capacity of the lift station for each year from 2007 to 2027 have been calculated and are shown in Table A-9.

5.4 Crystal Falls Area Conveyance

The Crystal Falls area is almost entirely in within the Colorado basin and will be required to be pumped to reach Leander's treatment facilities. Currently, the existing developments in this area are either on septic systems or on Low Pressure Sewer (LPS) systems. The LPS systems pump to existing mains that flow to the Leander WWTP. Based on agreements already in place between the City of Leander and developers in the Crystal Falls area, a total of 1,500 LUEs will be sent to the BCRWWS via the Horizon Park and Block House Creek Interceptors. Remaining flows would sent to the Leander WWTP by constructing a large lift station to serve this area.

The Crystal Falls lift station is anticipated to initially be constructed in 2011 with a capacity of 1,850 gpm, and would need to be doubled in size to a 3,750 gpm station in 2019. The anticipated flows to and

the capacity of the lift station for each year from 2007 to 2027 have been calculated and are shown in Table A-10.

5.5 Colorado North Area Conveyance

The portion of the Northwest Area sub-region within the Colorado Basin is referred to as the Colorado North area. As wastewater discharge is not permitted in the Colorado Basin it is anticipated that wastewater flows will be pumped to the Brushy Creek Basin for treatment at either the Leander WWTP or at the BCRWWS. A single interceptor and lift station are included in this report through the end of the study period. Actual timing of these improvements will entirely depend on development in this area.

The anticipated flows to and the capacity of the Colorado North Interceptor and lift station for each year from 2007 to 2027 have been calculated and are shown in Tables A-11 and A-12.

5.6 Improvements to Existing Interceptors and Lift Stations

Wastewater flows to each of the existing interceptors for the study period have been calculated using the population and wastewater flow projections discussed in Section 3 in combination with the existing drainage basins for each of the interceptors. Each development sub-region was broken into drainage sub-basins so that wastewater projections for each sub-basin could be calculated. The flows to each interceptor segment were determined by summing the flows from each sub-basin that contributes to the segment. Exhibit 5-1 shows the drainage basins and development areas used in this study.

5.6.1 North Fork Brushy Creek Interceptor

The North Fork of Brushy Creek and South San Gabriel Basins flow to the North Fork Brushy Creek Interceptor. These flows were distributed to each of the interceptor's segments. The anticipated flows to and the capacity of each existing segment for each year from 2007 to 2027 have been calculated and are shown in Table A-13. The existing capacity is exceeded for Segment 1 in 2022, Segment 2 in 2020, Segment 3 in 2017 and Segment 4 in 2010.

Additionally, future segments of the North Fork Brushy Creek Interceptor have been evaluated. Assumptions for their alignment, slope and timing of construction have been made. Future Segment 5 is a 30-inch constructed in 2011, Segment 6 is a 24-inch constructed in 2018, Segment 7 is an 18-inch constructed in 2011, and Segment 8 is a 15-inch constructed in 2008 (paralleled with a 12-inch in 2012). Sizing of the mains has been based on expected flows in 2027.

5.6.2 South Fork Brushy Creek Interceptor

The South Fork of Brushy Creek Basin flows to the South Fork Brushy Creek Interceptor. Additionally, the North Brushy Creek Interceptor (North Brushy Creek and South San Gabriel Basins) connects to the South Brushy Creek line north of RR 2243. The anticipated flows to and the capacity of each segment for each year from 2007 to 2027 have been calculated and are shown in Table A-14. The existing capacity is exceeded for Segment 2 in 2018. The capacity of Segment 1 is not exceeded during the study period.

5.6.3 Mason Creek Interceptor

The Mason Creek Basin flows to the Mason Creek Interceptor. The anticipated flows to and the capacity of each segment for each year from 2007 to 2027 have been calculated and are shown in Table A-15. It is suggested that Lift Station G (Mason Creek Lift Station) is abandoned and a new gravity main is run along Mason Creek to the WWTP. A study of the profile of this proposed improvement is required to determine for certain if this is feasible. The current capacity of Lift Station G is exceeded in 2011, an therefore Segment 1 to the WWTP should be completed by then. Segment 2 is the force main from Lift Station G and would be abandoned as well in 2011. The capacity of Segment 3 is exceeded in 2018, Segment 4 is exceeded in 2013, and Segment 5 is exceeded in 2011.

Additionally, a future Segment 6 of the Mason Creek Interceptor has been evaluated. Assumptions for its alignment, slope and timing of construction have been made. This segment will receive flows from the proposed Crystal Falls Lift Station. A 24-inch gravity main is shown for Segment 6 with construction complete by 2011. Sizing of the main has been based on expected flows in 2027.

5.6.4 Horizon Park Interceptor

The Horizon Park Basin currently drains to the Horizon Park Interceptor which then flows to the Horizon Park Lift Station. The Horizon Park Lift Station pump flows north to the Leander WWTP. The proposed (currently in design) Block House Creek Interceptor will abandon this lift station and take these flows to the BCRWWS. Construction is pending on a connection across Highway 183 that will abandon a lift station on the west side of 183 and connect to the Horizon Park Interceptor. As that work is pending, this master plan assumed that it is in place and the evaluation is based on that. Additionally, no evaluation of the soon to be abandoned Horizon Park Lift Station has been included in the master plan.

The anticipated flows to and the capacity of each segment for each year from 2007 to 2027 have been calculated and are shown in Table A-16. The existing capacity of Segment 3 is exceeded in 2010, no other segments' capacities are exceeded during the study period.

Additionally, a future Segment 4 of the Horizon Park Interceptor has been evaluated. Assumptions for its alignment, slope and timing of construction have been made. This segment will receive flows from the areas within the Crystal Falls/Key Deer Ranch developments. A 15-inch gravity main is shown for Segment 3 with construction complete by 2010. Sizing of the main has been based on expected flows in 2027.

5.6.5 Mason Creek Lift Station

Mason Creek Lift Station is an existing 3 pump lift station. The current firm capacity of the station is 2,400 gpm with 2 pumps operating per pump curves supplied by Smith Pump. The anticipated flows to and the capacity of the lift station for each year from 2007 to 2027 have been calculated and are shown in Table A-17. With the addition of flows from the Crystal Falls area, the Mason Creek Lift Station's capacity is exceeded in 2010. The master plan assumes that the lift station will be abandoned and a new interceptor will be extended to the Leander WWTP along Mason Creek. Further evaluation of the proposed route and profile of this interceptor will be required to determine for certain if this is feasible.

6.0 IMPROVEMENTS IMPLEMENTATION SCHEDULE AND COSTS

6.1 Implementation Schedule

Based on the wastewater flow projections for each element of the infrastructure examined in this report, a Capital Improvement Program schedule has been created and a summary is shown in Table 6-1. This table lists the expected wastewater infrastructure improvements required during the study period and the year in which they are expected to be completed.

6.2 Cost Estimates

Table 6-1 also includes preliminary cost estimates for each of the proposed projects. All costs shown are in 2007 equivalent dollar values and are based on current construction costs for similar projects in Central Texas. Estimated costs for proposed easements have been included in the cost estimates based on approximately 35% of the current appraised property values. Detailed construction cost estimates for each of the projects listed in Table 6-1 are included in Appendix B.

TABLE 6-1 **CAPITAL IMPROVEMENTS PROGRAM LIST**

CIP #	Year	Infrastructure Element	Description	Estimated Construction Cost (2007 $$)	Net Present Value
Improvements to Existing Infrastructure					
1	2010	Horizon Park Interceptor	Segment 3 - Install Parallel 12" Gravity Main	$ 1,527,897	$ 1,439,771
2	2010	North Fork Brushy Creek Interceptor	Segment 4 - Install Parallel 30" Gravity Main	$ 2,112,249	$ 1,990,420
3	2011	Lift Station "G"	Decommission Lift Station	$ 140,400	$ 129,708
4	2011	Mason Creek Interceptor	Segment 1 - Install New 30" Gravity Main	$ 1,759,327	$ 1,625,347
5	2011	Mason Creek Interceptor	Segment 5 - Install Parallel 18" Gravity Main	$ 810,079	$ 748,388
6	2013	Mason Creek Interceptor	Segment 4 - Install Parallel 21" Gravity Main	$ 797,480	$ 708,139
7	2017	North Fork Brushy Creek Interceptor	Segment 3 - Install Parallel 24" Gravity Main	$ 2,125,867	$ 1,743,951
8	2018	Mason Creek Interceptor	Segment 3 - Install Parallel 21" Gravity Main	$ 671,736	$ 540,253
9	2018	South Fork Brushy Creek Interceptor	Segment 2 - Install Parallel 15" Gravity Main	$ 1,435,184	$ 1,154,266
10	2021	North Fork Brushy Creek Interceptor	Segment 2 - Install Parallel 18" Gravity Main	$ 1,329,140	$ 1,007,322
11	2022	North Fork Brushy Creek Interceptor	Segment 1 - Install Parallel 18" Gravity Main	$ 220,006	$ 163,468
12	2023	Leander WWTP	Expand Existing Leander WWTP to 4.5 MGD	$ 17,718,750	$ 12,907,149
13	2025	Leander WWTP	Expand Existing Leander WWTP to 6.75 MGD	$ 17,718,750	$ 12,405,949
Planned Infrastructure*					
14	2008	Block House Creek Interceptor	Segment 1 - Install 30" Gravity Main	$ 1,840,192	$ 1,804,110
15	2008	Block House Creek Interceptor	Segment 2 - Install 27" Gravity Main	$ 3,322,833	$ 3,257,680
16	2008	Block House Creek Interceptor	Segment 3 - Install 27" Gravity Main	$ 1,979,949	$ 1,941,127
17	2008	North Fork Brushy Creek Interceptor	Segment 8 - Install 15" Gravity Main	$ 1,339,552	$ 1,313,286
18	2008	TOD Force Main	Install 12" Force Main	$ 937,044	$ 918,670
19	2008	TOD Lift Station	Install 1,355 GPM Lift Station	$ 577,620	$ 566,294
20	2010	Brushy Creek Interceptor	Segment 1 - Install 30" Gravity Main	$ 3,097,840	$ 2,919,163
21	2010	Brushy Creek Interceptor	Segment 2 - Install 30" Gravity Main	$ 3,163,019	$ 2,980,583
22	2010	Brushy Creek Interceptor	Segment 4 - Install 15" Gravity Main	$ 1,686,061	$ 1,588,813
23	2010	Brushy Creek Sub-Basin BCR 6-B Interceptor	Install 18" Gravity Main	$ 1,580,988	$ 1,489,800
24	2010	Horizon Park Interceptor	Segment 4 - Install 15" Gravity Main	$ 1,513,375	$ 1,426,087
25	2011	Brushy Creek Sub-Basin 5-B Interceptor	Install 12" Gravity Main	$ 1,527,897	$ 1,411,540
26	2011	Crystal Falls Force Main	Install 16" Force Main	$ 2,990,949	$ 2,763,175
27	2011	Crystal Falls Lift Station	Phase I - Install 1,850 GPM Lift Station	$ 640,620	$ 591,834
28	2011	Mason Creek Interceptor	Segment 6 - Install 24" Gravity Main	$ 2,043,296	$ 1,887,690
29	2011	North Fork Brushy Creek Interceptor	Segment 5 - Install 30" Gravity Main	$ 1,633,314	$ 1,508,930
30	2011	North Fork Brushy Creek Interceptor	Segment 7 - Install 18" Gravity Main	$ 3,202,883	$ 2,958,969
31	2011	San Gabriel East Force Main	Install 16" Force Main	$ 1,318,792	$ 1,218,360
32	2011	San Gabriel East Interceptor	Segment 1 - Install 27" Gravity Main	$ 3,145,676	$ 2,906,119
33	2011	San Gabriel East Lift Station	Install 1,500 GPM Lift Station	$ 577,620	$ 533,632

TABLE 6-1 **CAPITAL IMPROVEMENTS PROGRAM LIST**

CIP #	Year	Infrastructure Element	Description	Estimated Construction Cost (2007 $$)	Net Present Value
34	2012	Brushy Creek Interceptor	Segment 3 - Install 30" Gravity Main	$ 5,334,777	$ 4,831,872
35	2012	North Fork Brushy Creek Interceptor	Segment 8 - Install Parallel 12" Gravity Main	$ 1,339,552	$ 1,213,274
36	2012	San Gabriel West Force Main	Install 10" Force Main	$ 1,150,826	$ 1,042,339
37	2012	San Gabriel West Interceptor	Segment 1 - Install 18" Gravity Main	$ 683,651	$ 619,204
38	2012	San Gabriel West Lift Station	Install 900 GPM Lift Station	$ 451,620	$ 409,046
39	2013	Brushy Creek Sub-Basin BCR 6-A Interceptor	Install 15" Gravity Main	$ 1,528,748	$ 1,357,485
40	2014	San Gabriel West Interceptor	Segment 2 - Install 15" Gravity Main	$ 3,074,348	$ 2,676,405
41	2016	Brushy Creek Sub-Basin BCR 4 Interceptor	Install 12" Gravity Main	$ 1,992,494	$ 1,667,230
42	2016	Brushy Creek Sub-Basin BCR 5-A Interceptor	Install 8" Gravity Main	$ 1,165,282	$ 975,056
43	2017	Brushy Creek Sub-Basin BCR-1 Interceptor	Install 15" Gravity Main	$ 3,564,135	$ 2,923,832
44	2018	Colorado North Force Main	Install 18" Force Main	$ 2,830,509	$ 2,276,474
45	2018	Colorado North Lift Station	Install 3,500 GPM Lift Station	$ 703,620	$ 565,896
46	2018	North Fork Brushy Creek Interceptor	Segment 6 - Install 24" Gravity Main	$ 4,911,186	$ 3,949,886
47	2018	San Gabriel East Interceptor	Segment 2 - Install 24" Gravity Main	$ 4,368,100	$ 3,513,102
48	2019	Crystal Falls Force Main	Install 12" Parallel Force Main	$ 2,464,798	$ 1,943,477
49	2019	Crystal Falls Lift Station	Phase 2 - Expand Lift Station to 3,700 GPM Capacity	$ 140,400	$ 110,704
50	2019	South San Gabriel WWTP	Install 2.0 MGD WWTP	$ 15,907,500	$ 12,542,955
51	2024	Colorado North Interceptor	Segment 1 - Install 15" Gravity Main	$ 1,175,297	$ 839,353
52	2027	Colorado North Interceptor	Segment 2 - Install 12" Gravity Main	$ 2,119,869	$ 1,426,611
Brushy Creek Regional Wastewater System Costs					
53	2008	North Brushy System Costs	Buy Capacity in North Brushy Lines from Cedar Park	$ 7,284,475	$ 7,141,642
54	2008	Brushy Creek Regional System	Transmission Costs	$ 6,026,813	$ 5,908,641
55	2008	Brushy Creek Regional System	700,000 gpd Capacity	$ 4,900,000	$ 4,803,922
56	2011	Brushy Creek Regional System	Increase to 5.25 MGD Capacity	$ 31,850,000	$ 29,424,477
			Total =	**$ 141,393,102**	**$ 117,434,192**

*The exact schedule for construction of planned infrastructure has not been determined. Construction will depend on development timing and location. Current timing estimates are based on assumption of development patterns.

RATES	
Inflation =	3.00%
Interest Rate =	5.00%
Discount Rate =	2.00%

APPENDIX A

INFRASTRUCTURE FLOW PROJECTION AND CAPACITY TABLES

TABLE A-1 **PROJECTED LEANDER WWTP FLOWS AND CAPACITY**

Year	Flows Served by Leander WWTP				Plant Capacity (MGD)	Notes
	Pop.	LUEs	ADWF (MGD)	PWWF (MGD)		
2007	21,891	7,818	1.53	6.13	2.25	Existing Capacity
2008	13,681	4,886	0.96	3.83	2.25	Block House Creek Int. Complete
2009	14,779	5,278	1.03	4.14	2.25	
2010	17,234	6,155	1.21	4.83	2.25	
2011	19,776	7,063	1.38	5.54	2.25	
2012	22,851	8,161	1.60	6.40	2.25	
2013	26,173	9,348	1.83	7.33	2.25	
2014	29,834	10,655	2.09	8.35	2.25	
2015	32,143	11,480	2.25	9.00	2.25	Divert excess flow to BCRWWS
2016	32,143	11,480	2.25	9.00	2.25	
2017	32,143	11,480	2.25	9.00	2.25	
2018	32,143	11,480	2.25	9.00	2.25	
2019	32,143	11,480	2.25	9.00	2.25	
2020	32,143	11,480	2.25	9.00	2.25	
2021	32,143	11,480	2.25	9.00	2.25	
2022	32,143	11,480	2.25	9.00	2.25	
2023	64,286	22,959	4.50	18.00	4.50	Plant Expansion to 4.5 MGD
2024	64,286	22,959	4.50	18.00	4.50	
2025	64,286	22,959	4.50	18.00	4.50	
2026	64,286	22,959	4.50	18.00	4.50	
2027	71,429	25,510	5.00	20.00	6.75	Plant Expansion to 6.75 MGD

*PWWF to WWTP are found using a 4.0 peaking factor

*Brushy Creek Interceptor assumed to be constructed in 2009 and those flows are removed from flows to WWTP

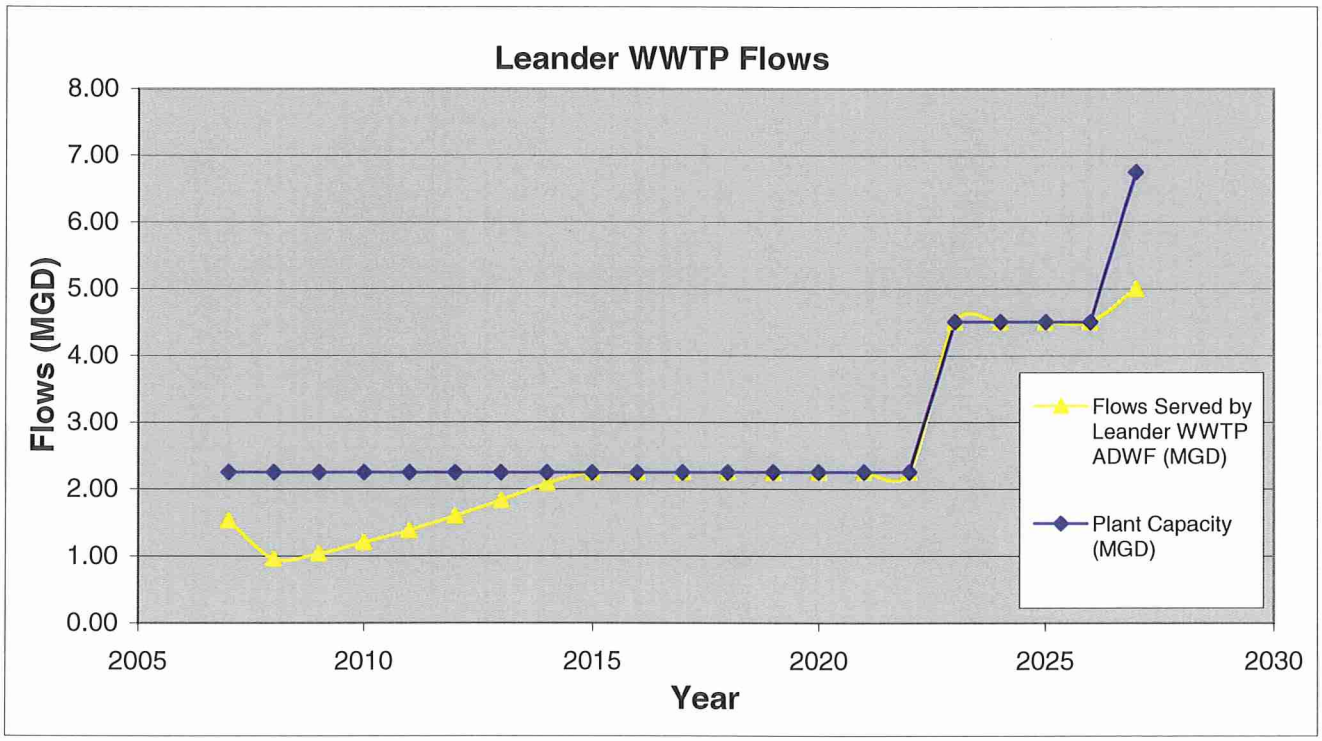

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TABLE A-2 **PROJECTED BRUSHY CREEK SUB-BASIN INTERCEPTORS FLOWS AND CAPACITY**

		BCS-1						BCS-4					
Year	BC Parmer Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	413	70	7	4.28	18	0		62	6	4.29	16	0	
2008	987	168	17	4.17	43	0		148	15	4.19	38	0	
2009	1,807	307	31	4.07	77	0		271	28	4.10	68	0	
2010	2,872	488	50	3.98	120	0		431	44	4.01	107	0	
2011	4,183	711	73	3.89	172	0		627	64	3.92	153	0	
2012	5,578	948	97	3.81	226	0		837	85	3.85	201	0	
2013	7,217	1,227	125	3.74	288	0		1,083	110	3.78	256	0	
2014	9,103	1,547	158	3.67	358	0		1,365	139	3.71	319	0	
2015	11,557	1,965	200	3.59	447	0		1,734	177	3.63	398	0	
2016	14,011	2,382	243	3.53	535	0		2,102	214	3.57	476	1,521	Install 12"
2017	16,332	2,776	283	3.47	616	1,548	Install 15"	2,450	250	3.52	549	1,521	
2018	18,520	3,148	321	3.42	691	1,548		2,778	283	3.47	616	1,521	
2019	20,576	3,498	357	3.38	761	1,548		3,086	315	3.43	679	1,521	
2020	22,499	3,825	390	3.35	826	1,548		3,375	344	3.40	737	1,521	
2021	24,288	4,129	421	3.32	886	1,548		3,643	372	3.37	790	1,521	
2022	25,945	4,411	450	3.29	941	1,548		3,892	397	3.34	839	1,521	
2023	27,469	4,670	477	3.27	991	1,548		4,120	420	3.32	884	1,521	
2024	28,860	4,906	501	3.25	1,036	1,548		4,329	442	3.30	925	1,521	
2025	30,119	5,120	522	3.23	1,077	1,548		4,518	461	3.28	962	1,521	
2026	31,432	5,343	545	3.22	1,120	1,548		4,715	481	3.27	1,000	1,521	
2027	32,802	5,576	569	3.20	1,164	1,548		4,920	502	3.25	1,039	1,521	

		BCS-5A						BCS-5B					
Year	BC Parmer Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	413	37	4	4.34	10	0		37	4	4.34	10	0	
2008	987	89	9	4.26	23	0		89	9	4.26	23	0	
2009	1,807	163	17	4.18	42	0		163	17	4.18	42	0	
2010	2,872	259	26	4.11	65	0		259	26	4.11	65	0	
2011	4,183	376	38	4.03	94	0		376	38	4.03	94	1,216	Install 12"
2012	5,578	502	51	3.97	124	0		502	51	3.97	124	1,216	
2013	7,217	650	66	3.91	158	0		650	66	3.91	158	1,216	
2014	9,103	819	84	3.85	197	0		819	84	3.85	197	1,216	
2015	11,557	1,040	106	3.79	247	0		1,040	106	3.79	247	1,216	
2016	14,011	1,261	129	3.73	296	692	Install 8"	1,261	129	3.73	296	1,216	
2017	16,332	1,470	150	3.69	341	692		1,470	150	3.69	341	1,216	
2018	18,520	1,667	170	3.65	384	692		1,667	170	3.65	384	1,216	
2019	20,576	1,852	189	3.61	423	692		1,852	189	3.61	423	1,216	
2020	22,499	2,025	207	3.58	460	692		2,025	207	3.58	460	1,216	
2021	24,288	2,186	223	3.55	494	692		2,186	223	3.55	494	1,216	
2022	25,945	2,335	238	3.53	525	692		2,335	238	3.53	525	1,216	
2023	27,469	2,472	252	3.51	553	692		2,472	252	3.51	553	1,216	
2024	28,860	2,597	265	3.49	579	692		2,597	265	3.49	579	1,216	
2025	30,119	2,711	277	3.48	602	692		2,711	277	3.48	602	1,216	
2026	31,432	2,829	289	3.46	627	692		2,829	289	3.46	627	1,216	
2027	32,802	2,952	301	3.45	652	692		2,952	301	3.45	652	1,216	

		BCS-6A						BCS-6B					
Year	BC Parmer Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	413	54	5	4.31	14	0		50	5	4.32	13	0	
2008	987	128	13	4.21	33	0		118	12	4.22	31	0	
2009	1,807	235	24	4.12	60	0		217	22	4.13	55	0	
2010	2,872	373	38	4.04	93	0		345	35	4.05	86	1,345	Install 18"
2011	4,183	544	55	3.95	133	0		502	51	3.97	124	1,345	
2012	5,578	725	74	3.89	175	0		669	68	3.91	163	1,345	
2013	7,217	938	96	3.82	224	1,655	Install 15"	866	88	3.84	208	1,345	
2014	9,103	1,183	121	3.75	279	1,655		1,092	111	3.77	258	1,345	
2015	11,557	1,502	153	3.68	349	1,655		1,387	142	3.70	323	1,345	
2016	14,011	1,821	186	3.62	417	1,655		1,681	172	3.64	387	1,345	
2017	16,332	2,123	217	3.56	481	1,655		1,960	200	3.59	446	1,345	
2018	18,520	2,408	246	3.52	540	1,655		2,222	227	3.55	502	1,345	
2019	20,576	2,675	273	3.48	595	1,655		2,469	252	3.51	553	1,345	
2020	22,499	2,925	298	3.45	646	1,655		2,700	275	3.48	600	1,345	
2021	24,288	3,157	322	3.42	693	1,655		2,915	297	3.45	644	1,345	
2022	25,945	3,373	344	3.40	736	1,655		3,113	318	3.43	684	1,345	
2023	27,469	3,571	364	3.38	776	1,655		3,296	336	3.41	721	1,345	
2024	28,860	3,752	383	3.36	812	1,655		3,463	353	3.39	754	1,345	
2025	30,119	3,915	400	3.34	844	1,655		3,614	369	3.37	785	1,345	
2026	31,432	4,086	417	3.32	878	1,655		3,772	385	3.36	816	1,345	
2027	32,802	4,264	435	3.31	912	1,655		3,936	402	3.34	848	1,345	

Segment	Brushy Creek West Contributing Flows	Notes
Segment BCS-1	17%	
Segment BCS-4	15%	
Segment BCS-5A	9%	
Segment BCS-5B	9%	
Segment BCS-6A	13%	
Segment BCS-6B	12%	

TABLE A-3

PROJECTED BRUSHY CREEK INTERCEPTOR FLOWS AND CAPACITY

				Segment 1						Segment 2					
Year	Diverted from Leander WWTP	BC Parmer Population	S San Gabriel East Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	0	413	0	310	32	4.07	78	0		268	27	4.10	68	0	
2008	0	987	0	740	76	3.88	179	0		642	65	3.92	156	0	
2009	0	1,807	0	1,355	138	3.71	317	0		1,175	120	3.75	277	0	
2010	0	2,872	625	2,154	220	3.56	487	11,747	Install 30"	1,867	191	3.61	427	11,747	Install 30"
2011	47	4,183	911	3,184	325	3.42	2,199	11,747	SGE LS - Online	2,766	282	3.47	2,114	11,747	SGE LS - Online
2012	188	5,578	1,214	4,371	446	3.30	2,433	11,747		3,813	389	3.35	2,324	11,747	
2013	362	7,217	1,571	5,775	589	3.19	2,701	11,747		5,053	516	3.24	2,565	11,747	
2014	600	9,103	1,981	7,427	758	3.08	3,007	11,747		6,517	665	3.14	2,840	11,747	
2015	898	11,557	2,515	9,565	976	2.97	3,391	11,747		8,410	858	3.03	3,185	11,747	
2016	998	14,011	3,050	11,506	1,174	2.89	3,730	11,747		10,105	1,031	2.95	3,486	11,747	
2017	1,227	16,332	3,555	13,476	1,375	2.82	4,066	11,747		11,843	1,208	2.88	3,788	11,747	
2018	1,473	18,520	4,031	15,364	1,568	2.77	4,383	11,747		13,512	1,379	2.82	4,072	11,747	
2019	193	20,576	0	15,625	1,594	2.76	4,427	11,747	SGE LS- Offline	13,568	1,384	2.82	4,082	11,747	SGE LS - Offline
2020	515	22,499	0	17,388	1,774	2.71	3,217	11,747		15,139	1,545	2.77	2,846	11,747	
2021	866	24,288	0	19,082	1,947	2.67	3,493	11,747		16,654	1,699	2.73	3,097	11,747	
2022	1,091	25,945	0	20,550	2,097	2.64	3,729	11,747		17,955	1,832	2.70	3,310	11,747	
2023	959	27,469	0	21,561	2,200	2.62	3,891	11,747		18,814	1,920	2.68	3,450	11,747	
2024	0	28,860	0	21,645	2,209	2.62	3,904	11,747		18,759	1,914	2.68	3,441	11,747	
2025	0	30,119	0	22,589	2,305	2.60	4,054	11,747		19,577	1,998	2.66	3,573	11,747	
2026	0	31,432	0	23,574	2,406	2.58	4,210	11,747		20,431	2,085	2.64	3,710	11,747	
2027	0	32,802	0	24,602	2,510	2.56	4,371	11,747		21,322	2,176	2.62	3,853	11,747	

				Segment 3						Segment 4					
Year	Diverted from Leander WWTP	BC Parmer Population	S San Gabriel East Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	0	413	0	144	15	4.20	37	0		41	4	4.33	11	0	
2008	0	987	0	346	35	4.05	86	0		99	10	4.24	26	0	
2009	0	1,807	0	632	65	3.92	154	0		181	18	4.16	46	0	
2010	0	2,872	625	1,005	103	3.80	239	0		287	29	4.09	72	2,616	Install 15"
2011	47	4,183	911	1,511	154	3.68	350	0		418	43	4.01	1,604	2,616	SGE LS - Online
2012	188	5,578	1,214	2,140	218	3.56	484	8,306	Install 30"	558	57	3.95	1,637	2,616	
2013	362	7,217	1,571	2,888	295	3.46	639	8,306		722	74	3.89	1,675	2,616	
2014	600	9,103	1,981	3,786	386	3.35	818	8,306		910	93	3.83	1,718	2,616	
2015	898	11,557	2,515	4,943	504	3.25	1,043	8,306		1,156	118	3.76	1,773	2,616	
2016	998	14,011	3,050	5,901	602	3.18	1,225	8,306		1,401	143	3.70	1,826	2,616	
2017	1,227	16,332	3,555	6,943	708	3.11	1,418	8,306		1,633	167	3.65	1,877	2,616	
2018	1,473	18,520	4,031	7,956	812	3.05	1,603	8,306		1,852	189	3.61	1,924	2,616	
2019	193	20,576	0	7,395	755	3.08	1,501	8,306		2,058	210	3.58	1,967	2,616	SGE LS - Offline
2020	515	22,499	0	8,389	856	3.03	1,681	8,306		2,250	230	3.54	507	2,616	
2021	866	24,288	0	9,367	956	2.98	1,856	8,306		2,429	248	3.52	544	2,616	
2022	1,091	25,945	0	10,172	1,038	2.95	1,998	8,306		2,595	265	3.49	579	2,616	
2023	959	27,469	0	10,573	1,079	2.93	2,068	8,306		2,747	280	3.47	610	2,616	
2024	0	28,860	0	10,101	1,031	2.95	1,985	8,306		2,886	294	3.46	638	2,616	
2025	0	30,119	0	10,542	1,076	2.93	2,062	8,306		3,012	307	3.44	664	2,616	
2026	0	31,432	0	11,001	1,123	2.91	2,142	8,306		3,143	321	3.42	690	2,616	
2027	0	32,802	0	11,481	1,172	2.89	2,225	8,306		3,280	335	3.41	718	2,616	

Segment	Diverted from Leander WWTP Flows	Brushy Creek Parmer Contributing Flows	Notes
Segment 1	100%	75%	
Segment 2	100%	65%	
Segment 3	100%	35%	
Segment 4	0%	10%	

TABLE A-4

PROJECTED BLOCK HOUSE CREEK INTERCEPTOR FLOWS AND CAPACITY

				Segment 1						Segment 2					
Year	Colorado Cont. Population	BC Parmer Population	BC Block House Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	1,441	413	6,722	8,265	843	3.04	1,659	0		8,245	841	3.04	1,655	0	
2008	1,971	987	6,818	9,036	922	3.00	1,797	5,253	Install 30"	8,986	917	3.00	1,788	3,967	Install 27"
2009	2,502	1,807	6,914	9,868	1,007	2.96	1,944	5,253		9,778	998	2.96	1,928	3,967	
2010	3,298	2,872	7,023	11,038	1,126	2.91	2,149	5,253		10,895	1,112	2.92	2,124	3,967	
2011	4,340	4,183	7,142	12,528	1,278	2.86	2,405	5,253		12,319	1,257	2.86	2,370	3,967	
2012	4,340	5,578	7,263	12,997	1,326	2.84	2,485	5,253		12,718	1,298	2.85	2,438	3,967	
2013	4,340	7,217	7,384	13,529	1,380	2.82	2,575	5,253		13,168	1,344	2.83	2,514	3,967	
2014	4,340	9,103	7,507	14,122	1,441	2.80	2,675	5,253		13,667	1,395	2.82	2,599	3,967	
2015	4,340	11,557	7,635	14,864	1,517	2.78	2,800	5,253		14,286	1,458	2.80	2,703	3,967	
2016	4,340	14,011	7,770	15,612	1,593	2.76	2,925	5,253		14,912	1,522	2.78	2,808	3,967	
2017	4,340	16,332	7,895	16,318	1,665	2.74	3,041	5,253		15,501	1,582	2.76	2,906	3,967	
2018	4,340	18,520	8,031	17,001	1,735	2.72	3,154	5,253		16,075	1,640	2.75	3,001	3,967	
2019	4,340	20,576	8,169	17,653	1,801	2.71	3,261	5,253		16,624	1,696	2.73	3,092	3,967	
2020	4,340	22,499	8,307	18,271	1,864	2.69	3,361	5,253		17,146	1,750	2.72	3,178	3,967	
2021	4,340	24,288	8,446	18,858	1,924	2.68	3,457	5,253		17,644	1,800	2.71	3,259	3,967	
2022	4,340	25,945	8,586	19,413	1,981	2.66	3,546	5,253		18,115	1,849	2.70	3,336	3,967	
2023	4,340	27,469	8,728	19,935	2,034	2.65	3,631	5,253		18,562	1,894	2.68	3,409	3,967	
2024	4,340	28,860	8,870	20,425	2,084	2.64	3,709	5,253		18,982	1,937	2.67	3,477	3,967	
2025	4,340	30,119	9,013	20,883	2,131	2.63	3,783	5,253		19,377	1,977	2.67	3,541	3,967	
2026	4,340	31,432	9,692	21,890	2,234	2.61	3,943	5,253		20,319	2,073	2.64	3,692	3,967	
2027	4,340	32,802	10,371	22,912	2,338	2.59	4,105	5,253		21,272	2,171	2.63	3,845	3,967	

				Segment 3											
Year	Colorado Cont. Population	BC Parmer Population	BC Block House Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	1,441	413	6,722	8,183	835	3.04	1,644	0							
2008	1,971	987	6,818	8,838	902	3.01	1,762	3,967	Install 27"						
2009	2,502	1,807	6,914	9,507	970	2.98	1,880	3,967							
2010	3,298	2,872	7,023	10,464	1,068	2.93	2,049	3,967							
2011	4,340	4,183	7,142	11,691	1,193	2.89	2,262	3,967							
2012	4,340	5,578	7,263	11,882	1,212	2.88	2,295	3,967							
2013	4,340	7,217	7,384	12,085	1,233	2.87	2,329	3,967							
2014	4,340	9,103	7,507	12,302	1,255	2.86	2,367	3,967							
2015	4,340	11,557	7,635	12,553	1,281	2.86	2,410	3,967							
2016	4,340	14,011	7,770	12,810	1,307	2.85	2,453	3,967							
2017	4,340	16,332	7,895	13,051	1,332	2.84	2,494	3,967							
2018	4,340	18,520	8,031	13,297	1,357	2.83	2,536	3,967							
2019	4,340	20,576	8,169	13,538	1,381	2.82	2,577	3,967							
2020	4,340	22,499	8,307	13,772	1,405	2.81	2,616	3,967							
2021	4,340	24,288	8,446	14,000	1,429	2.81	2,655	3,967							
2022	4,340	25,945	8,586	14,224	1,451	2.80	2,693	3,967							
2023	4,340	27,469	8,728	14,441	1,474	2.79	2,729	3,967							
2024	4,340	28,860	8,870	14,653	1,495	2.79	2,765	3,967							
2025	4,340	30,119	9,013	14,859	1,516	2.78	2,799	3,967							
2026	4,340	31,432	9,692	15,604	1,592	2.76	2,923	3,967							
2027	4,340	32,802	10,371	16,352	1,669	2.74	3,047	3,967							

Segment	Colorado Contributing Flows	Brushy Creek Parmer Contributing Flows	Brushy Creek Block House Contributing Flows	Notes
Segment 1	100%	25%	100%	
Segment 2	100%	20%	100%	
Segment 3	100%	5%	100%	

TABLE A-5

PROJECTED S SAN GABRIEL EAST INTERCEPTOR FLOWS AND CAPACITY

			Segment 1						Segment 2					
Year	S San Gabriel West Population	S San Gabriel East Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	0	90	90	9	4.26	23	0		36	4	4.34	9	0	
2008	0	215	215	22	4.14	55	0		86	9	4.26	22	0	
2009	0	393	393	40	4.03	98	0		157	16	4.18	40	0	
2010	0	625	625	64	3.92	152	0		250	26	4.11	63	0	
2011	0	911	911	93	3.83	218	5,366	Install 27"	364	37	4.04	91	0	
2012	0	1,214	1,214	124	3.74	285	5,366		486	50	3.98	120	0	
2013	0	1,571	1,571	160	3.66	363	5,366		628	64	3.92	153	0	
2014	0	1,981	1,981	202	3.59	451	5,366		793	81	3.86	191	0	
2015	0	2,515	2,515	257	3.51	562	5,366		1,006	103	3.80	239	0	
2016	0	3,050	3,050	311	3.44	671	5,366		1,220	124	3.74	287	0	
2017	0	3,555	3,555	363	3.38	773	5,366		1,422	145	3.70	331	0	
2018	0	4,031	4,031	411	3.33	867	5,366		1,613	165	3.66	372	3,822	Install 24"
2019	4,106	4,479	8,585	876	3.02	1,716	5,366		5,898	602	3.18	1,224	3,822	
2020	5,397	4,897	10,294	1,050	2.94	2,019	5,366		7,356	751	3.09	1,494	3,822	
2021	6,162	5,287	11,449	1,168	2.90	2,220	5,366		8,277	845	3.04	1,661	3,822	
2022	7,087	5,647	12,735	1,299	2.85	2,441	5,366		9,346	954	2.98	1,852	3,822	
2023	8,280	5,979	14,259	1,455	2.80	2,698	5,366		10,671	1,089	2.93	2,085	3,822	
2024	9,758	6,282	16,040	1,637	2.75	2,995	5,366		12,271	1,252	2.87	2,361	3,822	
2025	11,539	6,556	18,095	1,846	2.70	3,333	5,366		14,161	1,445	2.80	2,682	3,822	
2026	12,064	6,842	18,906	1,929	2.68	3,464	5,366		14,801	1,510	2.78	2,789	3,822	
2027	12,589	7,140	19,729	2,013	2.66	3,597	5,366		15,445	1,576	2.76	2,897	3,822	

Segment	S San Gabriel West Contributing Flows	S San Gabriel East Contributing Flows	Notes
Segment 1	100%	100%	
Segment 2	100%	40%	

TABLE A-6

PROJECTED S SAN GABRIEL WEST INTERCEPTOR FLOWS AND CAPACITY

		Segment 1						Segment 2					
Year	S San Gabriel West Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	447	447	46	4.00	111	0		291	30	4.08	73	0	
2008	687	687	70	3.90	167	0		447	46	4.00	111	0	
2009	935	935	95	3.82	223	0		608	62	3.93	148	0	
2010	1,135	1,135	116	3.76	268	0		738	75	3.88	178	0	
2011	1,210	1,210	124	3.74	285	0		787	80	3.86	190	0	
2012	1,358	1,358	139	3.71	317	3,363	Install 18"	883	90	3.83	211	0	
2013	1,571	1,571	160	3.66	363	3,363		1,021	104	3.79	243	0	
2014	1,873	1,873	191	3.61	428	3,363		1,217	124	3.74	286	1,224	Install 15"
2015	2,101	2,101	214	3.57	476	3,363		1,365	139	3.71	319	1,224	
2016	2,196	2,196	224	3.55	496	3,363		1,428	146	3.69	332	1,224	
2017	2,573	2,573	263	3.50	574	3,363		1,673	171	3.64	385	1,224	
2018	3,176	3,176	324	3.42	697	3,363		2,065	211	3.57	468	1,224	
2019	4,106	4,106	419	3.32	881	3,363		2,669	272	3.48	594	1,224	
2020	5,397	5,397	551	3.21	1,130	3,363		3,508	358	3.38	763	1,224	
2021	6,162	6,162	629	3.16	1,274	3,363		4,005	409	3.33	862	1,224	
2022	7,087	7,087	723	3.10	1,445	3,363		4,607	470	3.28	979	1,224	
2023	8,280	8,280	845	3.04	1,662	3,363		5,382	549	3.21	1,127	1,224	
2024	9,758	9,758	996	2.96	1,925	3,363		6,343	647	3.15	1,307	1,224	
2025	11,539	11,539	1,177	2.89	2,236	3,363		7,500	765	3.08	1,520	1,224	
2026	12,064	12,064	1,231	2.87	2,326	3,363		7,842	800	3.06	1,582	1,224	
2027	12,589	12,589	1,285	2.85	2,416	3,363		8,183	835	3.04	1,644	1,224	

Segment	Contributing Flows	Notes
Segment 1	100%	
Segment 2	65%	

TABLE A-7

PROJECTED TOD LIFT STATION FLOWS AND CAPACITY

TOD Lift Station Flows					Lift Station			Force Main		
	Total									
Year	Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	PWWF (gpm)	Capacity (gpm)	Notes	PWWF (gpm)	Capacity (gpm)	Notes
2007	305	31	4.08	77	77	0		0	0	
2008	445	45	4.00	110	110	1,355	Construct 1,355 LS	1,355	1,762	Construct 12" FM
2009	585	60	3.94	143	143	1,355		1,355	1,762	
2010	995	102	3.80	237	237	1,355		1,355	1,762	
2011	1,406	143	3.70	328	328	1,355		1,355	1,762	
2012	1,918	196	3.60	438	438	1,355		1,355	1,762	
2013	2,430	248	3.52	545	545	1,355		1,355	1,762	
2014	2,942	300	3.45	650	650	1,355		1,355	1,762	
2015	3,358	343	3.40	733	733	1,355		1,355	1,762	
2016	3,773	385	3.36	816	816	1,355		1,355	1,762	
2017	4,143	423	3.32	889	889	1,355		1,355	1,762	
2018	4,585	468	3.28	975	975	1,355		1,355	1,762	
2019	5,027	513	3.24	1,060	1,060	1,355		1,355	1,762	
2020	5,461	557	3.21	1,142	1,142	1,355		1,355	1,762	
2021	0	0	4.50	0	0	0	Abandon LS	0	1,762	
2022	0	0	4.50	0	0	0		0	1,762	
2023	0	0	4.50	0	0	0		0	1,762	
2024	0	0	4.50	0	0	0		0	1,762	
2025	0	0	4.50	0	0	0		0	1,762	
2026	0	0	4.50	0	0	0		0	1,762	
2027	0	0	4.50	0	0	0		0	1,762	

Segment	Contributing Flows	Notes
Lift Station	100%	
Force Main	100%	

TABLE A-8

PROJECTED S SAN GABRIEL WEST LIFT STATION FLOWS AND CAPACITY

San Gabriel West Lift Station Flows					Lift Station			Force Main		
	Total									
Year	Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	PWWF (gpm)	Capacity (gpm)	Notes	PWWF (gpm)	Capacity (gpm)	Notes
2007	447	46	4.00	111	111	0		0	0	
2008	687	70	3.90	167	167	0		0	0	
2009	935	95	3.82	223	223	0		0	0	
2010	1,135	116	3.76	268	268	0		0	0	
2011	1,210	124	3.74	285	285	0		0	0	
2012	1,358	139	3.71	317	317	900	Construct LS	900	1,224	10" FM
2013	1,571	160	3.66	363	363	900		900	1,224	
2014	1,873	191	3.61	428	428	900		900	1,224	
2015	2,101	214	3.57	476	476	900		900	1,224	
2016	2,196	224	3.55	496	496	900		900	1,224	
2017	2,573	263	3.50	574	574	900		900	1,224	
2018	3,176	324	3.42	697	697	900		900	1,224	
2019	4,106	419	3.32	881	881	900		900	1,224	
2020	5,397	551	3.21	1,130	1,130	0	Abandon LS	0	0	
2021	6,162	629	3.16	1,274	1,274	0		0	0	
2022	7,087	723	3.10	1,445	1,445	0		0	0	
2023	8,280	845	3.04	1,662	1,662	0		0	0	
2024	9,758	996	2.96	1,925	1,925	0		0	0	
2025	11,539	1,177	2.89	2,236	2,236	0		0	0	
2026	12,064	1,231	2.87	2,326	2,326	0		0	0	
2027	12,589	1,285	2.85	2,416	2,416	0		0	0	

Segment	Contributing Flows	Notes
Lift Station	100%	
Force Main	100%	

TABLE A-9 PROJECTED S SAN GABRIEL EAST LIFT STATION FLOWS AND CAPACITY

San Gabriel East Lift Station Flows					Lift Station			Force Main		
	Total									
Year	Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	PWWF (gpm)	Capacity (gpm)	Notes	PWWF (gpm)	Capacity (gpm)	Notes
2007	90	9	4.26	23	23	0		0	0	
2008	215	22	4.14	55	55	0		0	0	
2009	393	40	4.03	98	98	0		0	0	
2010	625	64	3.92	152	152	0		0	0	
2011	911	93	3.83	218	218	1,500	Construct LS	1,500	1,762	16" FM
2012	1,214	124	3.74	285	285	1,500		1,500	1,762	
2013	1,571	160	3.66	363	363	1,500		1,500	1,762	
2014	1,981	202	3.59	451	451	1,500		1,500	1,762	
2015	2,515	257	3.51	562	562	1,500		1,500	1,762	
2016	3,050	311	3.44	671	671	1,500		1,500	1,762	
2017	3,555	363	3.38	773	773	1,500		1,500	1,762	
2018	4,031	411	3.33	867	867	1,500		1,500	1,762	
2019	4,479	457	3.29	954	954	1,500		1,500	1,762	
2020	4,897	500	3.25	1,035	1,035	0	Abandon LS	0	0	Abandon LS
2021	5,287	539	3.22	1,109	1,109	0		0	0	
2022	5,647	576	3.20	1,177	1,177	0		0	0	
2023	5,979	610	3.17	1,240	1,240	0		0	0	
2024	6,282	641	3.15	1,296	1,296	0		0	0	
2025	6,556	669	3.13	1,347	1,347	0		0	0	
2026	6,842	698	3.12	1,400	1,400	0		0	0	
2027	7,140	729	3.10	1,455	1,455	0		0	0	

Segment	Contributing Flows	Notes
Lift Station	100%	
Force Main	100%	

TABLE A-10

PROJECTED CRYSTAL FALLS LIFT STATION FLOWS AND CAPACITY

Crystal Falls Lift Station Flows					Lift Station			Force Main		
	Total									
Year	Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	PWWF (gpm)	Capacity (gpm)	Notes	PWWF (gpm)	Capacity (gpm)	Notes
2007	0	0	4.50	0	0	0		0	0	
2008	0	0	4.50	0	0	0		0	0	
2009	0	0	4.50	0	0	0		0	0	
2010	0	0	4.50	0	0	0		0	0	
2011	159	16	4.18	41	41	1,850	Construct LS - Ph 1	1,850	3,133	16" FM
2012	1,220	125	3.74	287	287	1,850		1,850	3,133	
2013	2,281	233	3.54	514	514	1,850		1,850	3,133	
2014	3,343	341	3.40	730	730	1,850		1,850	3,133	
2015	4,536	463	3.28	965	965	1,850		1,850	3,133	
2016	5,863	598	3.18	1,218	1,218	1,850		1,850	3,133	
2017	6,924	707	3.11	1,415	1,415	1,850		1,850	3,133	
2018	8,251	842	3.04	1,656	1,656	1,850		1,850	3,133	
2019	9,577	977	2.97	1,893	1,893	3,700	Construct LS - Ph 2	3,700	4,896	Parallel 12" FM
2020	10,890	1,111	2.92	2,123	2,123	3,700		3,700	4,896	
2021	12,217	1,247	2.87	2,352	2,352	3,700		3,700	4,896	
2022	13,544	1,382	2.82	2,578	2,578	3,700		3,700	4,896	
2023	14,870	1,517	2.78	2,801	2,801	3,700		3,700	4,896	
2024	16,197	1,653	2.74	3,021	3,021	3,700		3,700	4,896	
2025	17,523	1,788	2.71	3,239	3,239	3,700		3,700	4,896	
2026	18,850	1,923	2.68	3,455	3,455	3,700		3,700	4,896	
2027	20,176	2,059	2.65	3,669	3,669	3,700		3,700	4,896	

Segment	Contributing Flows	Notes
Lift Station	100%	
Force Main	100%	

TABLE A-11

PROJECTED COLORADO BASIN NORTH INTERCEPTOR FLOWS AND CAPACITY

		Segment 1						Segment 2					
Year	Colorado North Area Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	357	250	26	4.11	63	0		179	18	4.17	46	0	
2008	549	384	39	4.03	96	0		274	28	4.09	69	0	
2009	747	523	53	3.96	129	0		373	38	4.04	93	0	
2010	907	635	65	3.92	155	0		453	46	4.00	112	0	
2011	967	677	69	3.90	164	0		483	49	3.98	119	0	
2012	1,085	759	77	3.87	183	0		542	55	3.96	133	0	
2013	1,255	878	90	3.84	210	0		627	64	3.92	153	0	
2014	1,496	1,047	107	3.79	248	0		748	76	3.88	181	0	
2015	1,678	1,175	120	3.75	277	0		839	86	3.85	202	0	
2016	1,754	1,228	125	3.74	289	0		877	90	3.84	210	0	
2017	2,056	1,439	147	3.69	335	0		1,028	105	3.79	244	0	
2018	2,537	1,776	181	3.62	407	0		1,269	129	3.73	297	0	
2019	3,280	2,296	234	3.54	517	0		1,640	167	3.65	378	0	
2020	4,311	3,018	308	3.44	665	0		2,156	220	3.56	488	0	
2021	4,922	3,446	352	3.39	751	0		2,461	251	3.51	551	0	
2022	5,661	3,963	404	3.34	853	0		2,831	289	3.46	627	0	
2023	6,614	4,630	472	3.28	983	0		3,307	337	3.41	723	0	
2024	7,795	5,456	557	3.21	1,141	1,743	Install 15"	3,897	398	3.34	840	0	
2025	9,218	6,452	658	3.14	1,328	1,743		4,609	470	3.28	979	0	
2026	9,637	6,746	688	3.12	1,382	1,743		4,818	492	3.26	1,020	0	
2027	10,056	7,039	718	3.10	1,436	1,743		5,028	513	3.24	1,060	1,500	Install 12"

Segment	Contributing Flows	Notes
Segment 1	70%	
Segment 2	50%	

TABLE A-12 PROJECTED COLORADO BASIN NORTH LIFT STATION FLOWS AND CAPACITY

Colorado North Lift Station Flows					Lift Station			Force Main		
	Total									
Year	Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	PWWF (gpm)	Capacity (gpm)	Notes	PWWF (gpm)	Capacity (gpm)	Notes
2007	677	69	3.90	164	164	0		164	0	
2008	1,041	106	3.79	247	247	0		247	0	
2009	1,416	145	3.70	330	330	0		330	0	
2010	1,719	175	3.64	395	395	0		395	0	
2011	1,834	187	3.61	420	420	0		420	0	
2012	2,057	210	3.58	467	467	0		467	0	
2013	2,379	243	3.53	534	534	0		534	0	
2014	2,837	289	3.46	628	628	0		628	0	
2015	3,182	325	3.42	698	698	0		698	0	
2016	3,327	339	3.40	727	727	0		727	0	
2017	3,898	398	3.34	841	841	0		841	0	
2018	4,812	491	3.26	1,018	1,018	3,500	Construct LS	1,018	3,965	18" FM
2019	6,220	635	3.16	1,285	1,285	3,500		1,285	3,965	
2020	8,176	834	3.04	1,643	1,643	3,500		1,643	3,965	
2021	9,334	952	2.98	1,850	1,850	3,500		1,850	3,965	
2022	10,736	1,096	2.92	2,096	2,096	3,500		2,096	3,965	
2023	12,543	1,280	2.86	2,408	2,408	3,500		2,408	3,965	
2024	14,782	1,508	2.78	2,786	2,786	3,500		2,786	3,965	
2025	17,480	1,784	2.71	3,232	3,232	3,500		3,232	3,965	
2026	18,275	1,865	2.69	3,362	3,362	3,500		3,362	3,965	
2027	19,070	1,946	2.67	3,491	3,491	3,500		3,491	3,965	

Segment	Contributing Flows	Notes
Lift Station	100%	
Force Main	100%	

TABLE A-13 **PROJECTED NORTH FORK BRUSHY CREEK INTERCEPTOR FLOWS AND CAPACITY**

				Segment 1						Segment 2					
Year	Colorado Cont. Population	BC West Population	San Gabriel West Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	677	12,192	447	9,144	933	2.99	1,816	8,284	Existing 30"	6,705	684	3.12	1,375	6,852	Existing 27"
2008	1,041	12,982	687	9,736	994	2.97	1,921	8,284		7,140	729	3.10	1,455	6,852	
2009	1,416	13,783	935	10,337	1,055	2.94	2,027	8,284		7,581	774	3.07	1,535	6,852	
2010	1,719	15,225	1,135	11,419	1,165	2.90	2,215	8,284		8,374	854	3.03	1,679	6,852	
2011	1,834	16,516	1,210	12,387	1,264	2.86	2,381	8,284		9,084	927	3.00	1,805	6,852	
2012	2,057	18,159	1,358	13,619	1,390	2.82	3,491	8,284	SGW LS - Online	9,987	1,019	2.95	2,865	6,852	SGW LS - Online
2013	2,379	19,885	1,571	14,914	1,522	2.78	3,708	8,284		10,937	1,116	2.92	3,031	6,852	
2014	2,837	21,725	1,873	16,294	1,663	2.74	3,937	8,284		11,949	1,219	2.88	3,206	6,852	
2015	3,182	23,227	2,101	17,420	1,778	2.71	4,123	8,284		12,775	1,304	2.85	3,347	6,852	
2016	3,327	24,567	2,196	18,425	1,880	2.69	4,287	8,284		13,512	1,379	2.82	3,473	6,852	
2017	3,898	26,140	2,573	19,605	2,001	2.66	4,478	8,284		14,377	1,467	2.80	3,618	6,852	
2018	4,812	28,188	3,176	21,141	2,157	2.63	8,224	8,284	CN LS - Online	15,504	1,582	2.76	7,306	6,852	CN LS - Online
2019	6,220	30,648	4,106	22,986	2,346	2.59	8,517	8,284	SGW LS - Offline	16,857	1,720	2.73	7,530	6,852	SGW LS - Offline
2020	8,176	33,540	5,397	25,155	2,567	2.55	7,958	8,284		18,447	1,882	2.69	6,890	9,182	Install Parallel 18"
2021	9,334	35,774	6,162	26,830	2,738	2.52	8,219	8,284		19,676	2,008	2.66	7,089	9,182	
2022	10,736	38,116	7,087	28,587	2,917	2.50	8,490	10,411	Parallel 18"	20,964	2,139	2.63	7,296	9,182	
2023	12,543	40,795	8,280	30,597	3,122	2.47	8,797	10,411		22,437	2,290	2.60	7,530	9,182	
2024	14,782	43,835	9,758	32,876	3,355	2.44	9,143	10,411		24,109	2,460	2.57	7,794	9,182	
2025	17,480	47,043	11,539	35,282	3,600	2.41	9,505	10,411		25,874	2,640	2.54	8,070	9,182	
2026	18,275	49,544	12,064	37,158	3,792	2.39	9,785	10,411		27,249	2,781	2.52	8,283	9,182	
2027	19,070	51,858	12,589	38,893	3,969	2.37	10,042	10,411		28,522	2,910	2.50	8,480	9,182	

				Segment 3						Segment 4					
Year	Colorado Cont. Population	BC West Population	San Gabriel West Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	677	12,192	447	5,486	560	3.21	1,147	3,506	Existing 21"	4,944	505	3.25	1,044	1,429	Existing 15"
2008	1,041	12,982	687	5,842	596	3.18	1,214	3,506		5,584	570	3.20	1,165	1,429	
2009	1,416	13,783	935	6,202	633	3.16	1,281	3,506		6,240	637	3.15	1,288	1,429	
2010	1,719	15,225	1,135	6,851	699	3.12	1,402	3,506		7,048	719	3.10	1,438	11,936	Install Parallel 30"
2011	1,834	16,516	1,210	7,432	758	3.08	1,508	3,506		7,614	777	3.07	1,541	11,936	
2012	2,057	18,159	1,358	8,171	834	3.04	2,542	3,506	SGW LS Online	8,413	858	3.03	1,685	11,936	SGW LS Online
2013	2,379	19,885	1,571	8,948	913	3.00	2,681	3,506		9,339	953	2.98	1,851	11,936	
2014	2,837	21,725	1,873	9,776	998	2.96	2,828	3,506		10,441	1,065	2.94	2,045	11,936	
2015	3,182	23,227	2,101	10,452	1,067	2.93	2,947	3,506		11,312	1,154	2.90	2,196	11,936	
2016	3,327	24,567	2,196	11,055	1,128	2.91	3,052	3,506		11,925	1,217	2.88	2,302	11,936	
2017	3,898	26,140	2,573	11,763	1,200	2.88	3,174	9,057	Install Parallel 24"	13,047	1,331	2.84	2,494	11,936	
2018	4,812	28,188	3,176	12,685	1,294	2.85	6,832	9,057	CN LS - Online	14,678	1,498	2.79	2,769	11,936	CN LS - Online
2019	6,220	30,648	4,106	13,792	1,407	2.81	7,020	9,057	SGW LS - Offline	16,947	1,729	2.72	3,145	11,936	SGW LS - Offline
2020	8,176	33,540	5,397	15,093	1,540	2.77	6,338	9,057		19,915	2,032	2.65	3,627	11,936	
2021	9,334	35,774	6,162	16,098	1,643	2.75	6,505	9,057		21,855	2,230	2.61	3,938	11,936	
2022	10,736	38,116	7,087	17,152	1,750	2.72	6,679	9,057		24,077	2,457	2.57	4,289	11,936	
2023	12,543	40,795	8,280	18,358	1,873	2.69	6,876	9,057		26,821	2,737	2.52	4,717	11,936	
2024	14,782	43,835	9,758	19,726	2,013	2.66	7,097	9,057		30,124	3,074	2.47	5,225	11,936	
2025	17,480	47,043	11,539	21,169	2,160	2.63	7,329	9,057		33,945	3,464	2.42	5,804	11,936	
2026	18,275	49,544	12,064	22,295	2,275	2.60	7,508	9,057		35,616	3,634	2.40	6,055	11,936	
2027	19,070	51,858	12,589	23,336	2,381	2.58	7,672	9,057		37,220	3,798	2.39	6,294	11,936	

				Segment 5						Segment 6					
Year	Colorado Cont. Population	BC West Population	San Gabriel West Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	2,118	12,192	447	6,385	652	3.14	1,315	0		4,132	422	3.32	887	0	
2008	3,012	12,982	687	7,556	771	3.07	1,531	0		5,006	511	3.24	1,055	0	
2009	3,918	13,783	935	8,742	892	3.01	1,745	0		5,891	601	3.18	1,223	0	
2010	5,017	15,225	1,135	10,346	1,056	2.94	2,028	0		7,059	720	3.10	1,440	0	
2011	6,192	16,516	1,210	11,973	1,222	2.88	2,310	12,889	Install 30"	8,257	843	3.04	1,658	0	
2012	7,477	18,159	1,358	13,833	1,412	2.81	2,627	12,889	SGW LS Online	9,614	981	2.97	1,899	0	SGW LS - Online
2013	8,861	19,885	1,571	15,820	1,614	2.75	2,959	12,889		11,065	1,129	2.91	2,154	0	
2014	10,379	21,725	1,873	17,983	1,835	2.70	3,315	12,889		12,649	1,291	2.85	2,426	0	
2015	11,919	23,227	2,101	20,048	2,046	2.65	3,649	12,889		14,180	1,447	2.80	2,685	0	
2016	13,390	24,567	2,196	21,988	2,244	2.61	3,959	12,889		15,625	1,594	2.76	2,927	0	
2017	15,022	26,140	2,573	24,171	2,466	2.57	4,304	12,889		17,246	1,760	2.72	3,194	0	
2018	17,262	28,188	3,176	27,128	2,768	2.52	4,765	12,889	CN LS - Online	19,448	1,984	2.66	3,552	7,481	Install 24"
2019	19,998	30,648	4,106	30,725	3,135	2.47	5,317	12,889	SGW LS - Offline	22,128	2,258	2.61	3,981	7,481	SGW LS - Offline
2020	23,266	33,540	5,397	35,005	3,572	2.41	5,963	12,889		25,321	2,584	2.55	4,484	7,481	
2021	25,751	35,774	6,162	38,272	3,905	2.37	6,450	12,889		27,756	2,832	2.51	4,862	7,481	
2022	28,480	38,116	7,087	41,820	4,267	2.34	6,974	12,889		30,407	3,103	2.47	5,268	7,481	
2023	31,613	40,795	8,280	45,891	4,683	2.30	7,567	12,889		33,449	3,413	2.43	5,730	7,481	
2024	35,178	43,835	9,758	50,521	5,155	2.26	8,235	12,889		36,910	3,766	2.39	6,248	7,481	
2025	39,203	47,043	11,539	55,668	5,680	2.22	8,969	12,889		40,771	4,160	2.35	6,819	7,481	
2026	41,325	49,544	12,064	58,665	5,986	2.20	9,392	12,889		42,969	4,385	2.33	7,142	7,481	
2027	43,446	51,858	12,589	61,597	6,285	2.18	9,804	12,889		45,129	4,605	2.31	7,456	7,481	

				Segment 7						Segment 8					
Year	Colorado Cont. Population	BC West Population	San Gabriel West Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	677	12,192	447	1,964	200	3.59	447	0		0	0	0.00	0	0	Flows from TOD LS
2008	1,041	12,982	687	2,155	220	3.56	488	0		0	0	0.00	1,355	1,696	Install 15"
2009	1,416	13,783	935	2,351	240	3.53	528	0		0	0	0.00	1,355	1,696	
2010	1,719	15,225	1,135	2,628	268	3.49	585	0		0	0	0.00	1,355	1,696	
2011	1,834	16,516	1,210	2,844	290	3.46	630	2,975	Install 18"	0	0	0.00	1,355	1,696	
2012	2,057	18,159	1,358	3,135	320	3.43	689	2,975		0	0	0.00	2,579	2,631	Install Parallel 12"
2013	2,379	19,885	1,571	3,459	353	3.39	754	2,975		0	0	0.00	2,579	2,631	
2014	2,837	21,725	1,873	3,826	390	3.35	826	2,975		0	0	0.00	2,579	2,631	
2015	3,182	23,227	2,101	4,121	420	3.32	884	2,975		0	0	0.00	2,579	2,631	
2016	3,327	24,567	2,196	4,350	444	3.30	929	2,975		0	0	0.00	2,579	2,631	
2017	3,898	26,140	2,573	4,701	480	3.27	997	2,975		0	0	0.00	2,579	2,631	
2018	4,812	28,188	3,176	5,191	530	3.23	1,091	2,975	CN LS - Online	0	0	0.00	2,579	2,631	
2019	6,220	30,648	4,106	5,841	596	3.18	1,214	2,975		0	0	0.00	2,579	2,631	
2020	8,176	33,540	5,397	6,666	680	3.13	1,367	2,975		0	0	0.00	1,355	2,631	
2021	9,334	35,774	6,162	7,233	738	3.09	1,472	2,975		0	0	0.00	0	2,631	
2022	10,736	38,116	0	7,865	803	3.06	1,587	2,975		0	0	0.00	0	2,631	
2023	12,543	40,795	0	8,628	880	3.02	1,724	2,975		0	0	0.00	0	2,631	
2024	14,782	43,835	0	9,532	973	2.97	1,885	2,975		0	0	0.00	0	2,631	
2025	17,480	47,043	0	10,552	1,077	2.93	2,064	2,975		0	0	0.00	0	2,631	
2026	18,275	49,544	0	11,087	1,131	2.91	2,157	2,975		0	0	0.00	0	2,631	
2027	19,070	51,858	0	11,593	1,183	2.89	2,245	2,975		0	0	0.00	0	2,631	

Segment		Colorado Contributing Flows	Brushy Creek West Contributing Flows	S San Gabriel West Contributing Flows	Notes
Segment 1		100%	75%	100%	Existing 30" at 0.25%
Segment 2		100%	55%	100%	Existing 27" at 0.30%
Segment 3		100%	45%	100%	Existing 21" at 0.30%
Segment 4		100%	35%	0%	Existing 15" at 0.40%
Segment 5		100%	35%	0%	
Segment 6		80%	20%	0%	
Segment 7		20%	15%	0%	

TABLE A-14

PROJECTED SOUTH FORK BRUSHY CREEK INTERCEPTOR FLOWS AND CAPACITY

		Segment 1						Segment 2					
Year	Brushy Creek West Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	12,192	2,438	249	3.52	546	3,000	Existing 18"	1,829	187	3.62	419	788	Existing 12"
2008	12,982	2,596	265	3.49	579	3,000		1,947	199	3.59	444	788	
2009	13,783	2,757	281	3.47	612	3,000		2,067	211	3.57	469	788	
2010	15,225	3,045	311	3.44	670	3,000		2,284	233	3.54	514	788	
2011	16,516	3,303	337	3.41	722	3,000		2,477	253	3.51	554	788	
2012	18,159	3,632	371	3.37	788	3,000		2,724	278	3.48	605	788	
2013	19,885	3,977	406	3.34	856	3,000		2,983	304	3.44	658	788	
2014	21,725	4,345	443	3.30	928	3,000		3,259	333	3.41	714	788	
2015	23,227	4,645	474	3.27	986	3,000		3,484	356	3.39	759	788	
2016	24,567	4,913	501	3.25	1,038	3,000		3,685	376	3.36	799	788	
2017	26,140	5,228	533	3.23	1,098	3,000		3,921	400	3.34	845	788	
2018	28,188	5,638	575	3.20	1,175	3,000		4,228	431	3.31	905	2,221	Install Parallel 15"
2019	30,648	6,130	625	3.16	1,268	3,000		4,597	469	3.28	977	2,221	
2020	33,540	6,708	684	3.12	1,375	3,000		5,031	513	3.24	1,060	2,221	
2021	35,774	7,155	730	3.10	1,457	3,000		5,366	548	3.22	1,124	2,221	
2022	38,116	7,623	778	3.07	1,543	3,000		5,717	583	3.19	1,190	2,221	
2023	40,795	8,159	833	3.04	1,640	3,000		6,119	624	3.16	1,266	2,221	
2024	43,835	8,767	895	3.01	1,749	3,000		6,575	671	3.13	1,351	2,221	
2025	47,043	9,409	960	2.98	1,863	3,000		7,056	720	3.10	1,439	2,221	
2026	49,544	9,909	1,011	2.96	1,951	3,000		7,432	758	3.08	1,508	2,221	
2027	51,858	10,372	1,058	2.94	2,033	3,000		7,779	794	3.06	1,571	2,221	

Segment	Contributing Flows	Notes
Segment 1	20%	Existing 18" at 0.50%
Segment 2	15%	Existing 12" at 0.30%

TABLE A-15

PROJECTED MASON CREEK INTERCEPTOR FLOWS AND CAPACITY

			Segment 1						Segment 2 - Force Main					
Year	Brushy Creek West Population	Crystal Falls Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	12,192	0	3,048	311	3.44	671	3,786	Existing 21"	2,195	224	3.55	496	1,762	12" FM Capacity
2008	12,982	0	3,245	331	3.41	711	3,786		2,337	238	3.53	525	1,762	
2009	13,783	0	3,446	352	3.39	751	3,786		2,481	253	3.51	555	1,762	
2010	15,225	0	3,806	388	3.35	822	3,786		2,740	280	3.47	609	1,762	
2011	16,516	159	4,129	421	3.32	2,736	7,421	New Alignment 30"	2,973	303	3.45	2,506	0	Abandon LS
2012	18,159	1,220	4,540	463	3.28	2,816	7,421		3,269	334	3.41	2,566	0	
2013	19,885	2,281	4,971	507	3.25	2,899	7,421		3,579	365	3.38	2,628	0	
2014	21,725	3,343	5,431	554	3.21	2,986	7,421		3,910	399	3.34	2,693	0	
2015	23,227	4,536	5,807	593	3.18	3,057	7,421		4,181	427	3.32	2,746	0	
2016	24,567	5,863	6,142	627	3.16	3,120	7,421		4,422	451	3.29	2,793	0	
2017	26,140	6,924	6,535	667	3.13	3,193	7,421		4,705	480	3.27	2,848	0	
2018	28,188	8,251	7,047	719	3.10	3,288	7,421		5,074	518	3.24	2,918	0	
2019	30,648	9,577	7,662	782	3.07	5,250	7,421		5,517	563	3.20	4,853	0	
2020	33,540	10,890	8,385	856	3.03	5,381	7,421		6,037	616	3.17	4,950	0	
2021	35,774	12,217	8,943	913	3.00	5,480	7,421		6,439	657	3.14	5,025	0	
2022	38,116	13,544	9,529	972	2.97	5,584	7,421		6,861	700	3.11	5,103	0	
2023	40,795	14,870	10,199	1,041	2.95	5,702	7,421		7,343	749	3.09	5,192	0	
2024	43,835	16,197	10,959	1,118	2.91	5,835	7,421		7,890	805	3.06	5,291	0	
2025	47,043	17,523	11,761	1,200	2.88	5,974	7,421		8,468	864	3.03	5,395	0	
2026	49,544	18,850	12,386	1,264	2.86	6,081	7,421		8,918	910	3.00	5,476	0	
2027	51,858	20,176	12,964	1,323	2.84	6,180	7,421		9,334	952	2.98	5,550	0	

			Segment 3						Segment 4					
Year	Brushy Creek West Population	Crystal Falls Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	12,192	0	2,195	224	3.55	496	2,862	Existing 21"	1,463	149	3.69	340	2,324	Existing 18"
2008	12,982	0	2,337	238	3.53	525	2,862		1,558	159	3.67	360	2,324	
2009	13,783	0	2,481	253	3.51	555	2,862		1,654	169	3.65	381	2,324	
2010	15,225	0	2,740	280	3.47	609	2,862		1,827	186	3.62	418	2,324	
2011	16,516	159	2,973	303	3.45	2,506	2,862		1,982	202	3.59	2,301	2,324	
2012	18,159	1,220	3,269	334	3.41	2,566	2,862		2,179	222	3.56	2,342	2,324	
2013	19,885	2,281	3,579	365	3.38	2,628	2,862		2,386	243	3.52	2,386	5,839	Parallel 21"
2014	21,725	3,343	3,910	399	3.34	2,693	2,862		2,607	266	3.49	2,431	5,839	
2015	23,227	4,536	4,181	427	3.32	2,746	2,862		2,787	284	3.47	2,468	5,839	
2016	24,567	5,863	4,422	451	3.29	2,793	2,862		2,948	301	3.45	2,501	5,839	
2017	26,140	6,924	4,705	480	3.27	2,848	2,862		3,137	320	3.43	2,539	5,839	
2018	28,188	8,251	5,074	518	3.24	2,918	5,732	Parallel 21"	3,383	345	3.40	2,588	5,839	
2019	30,648	9,577	5,517	563	3.20	4,853	5,732		3,678	375	3.37	4,497	5,839	
2020	33,540	10,890	6,037	616	3.17	4,950	5,732		4,025	411	3.33	4,566	5,839	
2021	35,774	12,217	6,439	657	3.14	5,025	5,732		4,293	438	3.31	4,618	5,839	
2022	38,116	13,544	6,861	700	3.11	5,103	5,732		4,574	467	3.28	4,672	5,839	
2023	40,795	14,870	7,343	749	3.09	5,192	5,732		4,895	500	3.25	4,734	5,839	
2024	43,835	16,197	7,890	805	3.06	5,291	5,732		5,260	537	3.22	4,804	5,839	
2025	47,043	17,523	8,468	864	3.03	5,395	5,732		5,645	576	3.20	4,877	5,839	
2026	49,544	18,850	8,918	910	3.00	5,476	5,732		5,945	607	3.17	4,933	5,839	
2027	51,858	20,176	9,334	952	2.98	5,550	5,732		6,223	635	3.16	4,985	5,839	

			Segment 5						Segment 6					
Year	Brushy Creek West Population	Crystal Falls Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	12,192	0	853	87	3.84	205	1,845	Existing 15"	488	50	3.98	120	0	
2008	12,982	0	909	93	3.83	217	1,845		519	53	3.97	128	0	
2009	13,783	0	965	98	3.81	230	1,845		551	56	3.95	135	0	
2010	15,225	0	1,066	109	3.78	253	1,845		609	62	3.93	149	0	
2011	16,516	159	1,156	118	3.76	2,123	4,853	Parallel 18"	661	67	3.91	2,011	5,018	Install 24"
2012	18,159	1,220	1,271	130	3.73	2,148	4,853		726	74	3.88	2,026	5,018	
2013	19,885	2,281	1,392	142	3.70	2,174	4,853		795	81	3.86	2,042	5,018	
2014	21,725	3,343	1,521	155	3.67	2,202	4,853		869	89	3.84	2,058	5,018	
2015	23,227	4,536	1,626	166	3.65	2,225	4,853		929	95	3.82	2,072	5,018	
2016	24,567	5,863	1,720	175	3.64	2,245	4,853		983	100	3.80	2,084	5,018	
2017	26,140	6,924	1,830	187	3.62	2,269	4,853		1,046	107	3.79	2,098	5,018	
2018	28,188	8,251	1,973	201	3.59	2,299	4,853		1,128	115	3.77	2,116	5,018	
2019	30,648	9,577	2,145	219	3.56	4,185	4,853		1,226	125	3.74	3,988	5,018	
2020	33,540	10,890	2,348	240	3.53	4,228	4,853		1,342	137	3.71	4,013	5,018	
2021	35,774	12,217	2,504	256	3.51	4,260	4,853		1,431	146	3.69	4,033	5,018	
2022	38,116	13,544	2,668	272	3.48	4,294	4,853		1,525	156	3.67	4,053	5,018	
2023	40,795	14,870	2,856	291	3.46	4,332	4,853		1,632	167	3.65	4,076	5,018	
2024	43,835	16,197	3,068	313	3.43	4,375	4,853		1,753	179	3.63	4,103	5,018	
2025	47,043	17,523	3,293	336	3.41	4,420	4,853		1,882	192	3.61	4,130	5,018	
2026	49,544	18,850	3,468	354	3.39	4,455	4,853		1,982	202	3.59	4,151	5,018	
2027	51,858	20,176	3,630	370	3.37	4,488	4,853		2,074	212	3.57	4,171	5,018	

Segment	Brushy Creek West Contributing Flows	Notes
Segment 1	25%	Existing 21" at 0.35%
Segment 2	18%	Lift Station G and Force Main
Segment 3	18%	Existing 21" at 0.20%
Segment 4	12%	Existing 18" at 0.30%
Segment 5	7%	Existing 15" at 0.50%
Segment 6	4%	

TABLE A-16

PROJECTED HORIZON PARK INTERCEPTOR FLOWS AND CAPACITY

			Segment 1						Segment 2					
Year	Colorado Cont. Population	BC Block House Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	1,441	6,722	7,490	764	3.08	1,519	2,890	Existing 24"	6,482	661	3.14	1,333	2,324	Existing 18"
2008	1,971	6,818	8,107	827	3.04	1,630	2,890		7,084	723	3.10	1,444	2,324	
2009	2,502	6,914	8,725	890	3.01	1,741	2,890		7,688	784	3.07	1,555	2,324	
2010	3,298	7,023	9,618	981	2.97	1,900	2,890		8,565	874	3.02	1,713	2,324	
2011	4,340	7,142	10,768	1,099	2.92	2,102	2,890		9,697	989	2.97	1,914	2,324	
2012	4,340	7,263	10,877	1,110	2.92	2,121	2,890		9,787	999	2.96	1,930	2,324	
2013	4,340	7,384	10,986	1,121	2.91	2,140	2,890		9,878	1,008	2.96	1,946	2,324	
2014	4,340	7,507	11,096	1,132	2.91	2,159	2,890		9,970	1,017	2.96	1,962	2,324	
2015	4,340	7,635	11,212	1,144	2.90	2,179	2,890		10,066	1,027	2.95	1,979	2,324	
2016	4,340	7,770	11,333	1,156	2.90	2,200	2,890		10,167	1,037	2.95	1,997	2,324	
2017	4,340	7,895	11,445	1,168	2.90	2,219	2,890		10,261	1,047	2.94	2,013	2,324	
2018	4,340	8,031	11,568	1,180	2.89	2,241	2,890		10,363	1,057	2.94	2,031	2,324	
2019	4,340	8,169	11,692	1,193	2.89	2,262	2,890		10,467	1,068	2.93	2,049	2,324	
2020	4,340	8,307	11,816	1,206	2.88	2,283	2,890		10,570	1,079	2.93	2,067	2,324	
2021	4,340	8,446	11,941	1,219	2.88	2,305	2,890		10,675	1,089	2.93	2,086	2,324	
2022	4,340	8,586	12,068	1,231	2.87	2,326	2,890		10,780	1,100	2.92	2,104	2,324	
2023	4,340	8,728	12,195	1,244	2.87	2,348	2,890		10,886	1,111	2.92	2,122	2,324	
2024	4,340	8,870	12,323	1,257	2.86	2,370	2,890		10,993	1,122	2.91	2,141	2,324	
2025	4,340	9,013	12,452	1,271	2.86	2,392	2,890		11,100	1,133	2.91	2,160	2,324	
2026	4,340	9,692	13,063	1,333	2.84	2,496	2,890		11,609	1,185	2.89	2,248	2,324	
2027	4,340	10,371	13,674	1,395	2.82	2,600	2,890		12,119	1,237	2.87	2,335	2,324	

			Segment 3						Segment 4					
Year	Colorado Cont. Population	BC Block House Population	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes	Total Cont. Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	Capacity (gpm)	Notes
2007	1,441	6,722	4,801	490	3.26	1,016	1,305	Existing 15"	2,113	216	3.57	479	0	
2008	1,971	6,818	5,380	549	3.21	1,127	1,305		2,653	271	3.49	591	0	
2009	2,502	6,914	5,959	608	3.17	1,236	1,305		3,193	326	3.42	700	0	
2010	3,298	7,023	6,809	695	3.12	1,394	2,026	Parallel 12"	4,000	408	3.33	861	1,850	Install 15"
2011	4,340	7,142	7,911	807	3.05	1,595	2,026		5,054	516	3.24	1,065	1,850	
2012	4,340	7,263	7,971	813	3.05	1,606	2,026		5,066	517	3.24	1,067	1,850	
2013	4,340	7,384	8,032	820	3.05	1,617	2,026		5,078	518	3.24	1,069	1,850	
2014	4,340	7,507	8,093	826	3.04	1,628	2,026		5,091	519	3.24	1,072	1,850	
2015	4,340	7,635	8,158	832	3.04	1,640	2,026		5,104	521	3.24	1,074	1,850	
2016	4,340	7,770	8,225	839	3.04	1,652	2,026		5,117	522	3.24	1,077	1,850	
2017	4,340	7,895	8,287	846	3.03	1,663	2,026		5,129	523	3.23	1,079	1,850	
2018	4,340	8,031	8,356	853	3.03	1,675	2,026		5,143	525	3.23	1,082	1,850	
2019	4,340	8,169	8,424	860	3.03	1,688	2,026		5,157	526	3.23	1,084	1,850	
2020	4,340	8,307	8,493	867	3.02	1,700	2,026		5,171	528	3.23	1,087	1,850	
2021	4,340	8,446	8,563	874	3.02	1,712	2,026		5,185	529	3.23	1,090	1,850	
2022	4,340	8,586	8,633	881	3.02	1,725	2,026		5,199	530	3.23	1,092	1,850	
2023	4,340	8,728	8,704	888	3.01	1,738	2,026		5,213	532	3.23	1,095	1,850	
2024	4,340	8,870	8,775	895	3.01	1,750	2,026		5,227	533	3.23	1,098	1,850	
2025	4,340	9,013	8,847	903	3.01	1,763	2,026		5,241	535	3.23	1,100	1,850	
2026	4,340	9,692	9,186	937	2.99	1,824	2,026		5,309	542	3.22	1,113	1,850	
2027	4,340	10,371	9,526	972	2.98	1,884	2,026		5,377	549	3.22	1,126	1,850	

Segment	Colorado Contributing Flows	Brushy Creek Block House Contributing Flows	Notes
Segment 1	100%	90%	Existing 24" at 0.1%
Segment 2	100%	75%	Existing 18" at 0.30%
Segment 3	100%	50%	Existing 15" at 0.25%
Segment 4	100%	10%	

TABLE A-17

PROJECTED MASON CREEK LS FLOWS AND CAPACITY

Mason Creek Lift Station #1 Flows					Lift Station			Force Main		
	Total									
Year	Population	Developed Acres (3.5 LUEs)	Peaking Factor	PWWF (gpm)	PWWF (gpm)	Capacity (gpm)	Notes	PWWF (gpm)	Capacity (gpm)	Notes
2007	2,195	224	3.55	496	340	2,400		340	1,762	Existing 12" FM
2008	2,337	238	3.53	525	360	2,400		360	1,762	
2009	2,481	253	3.51	555	381	2,400		381	1,762	
2010	2,740	280	3.47	609	418	2,400		418	1,762	
2011	2,973	303	3.45	656	2,301	0	Abandon LS	0	0	Abandon LS
2012	3,269	334	3.41	716	2,342	0		0	0	
2013	3,579	365	3.38	778	2,386	0		0	0	
2014	3,910	399	3.34	843	2,431	0		0	0	
2015	4,181	427	3.32	896	2,468	0		0	0	
2016	4,422	451	3.29	943	2,501	0		0	0	
2017	4,705	480	3.27	998	2,539	0		0	0	
2018	5,074	518	3.24	1,068	2,588	0		0	0	
2019	5,517	563	3.20	1,153	4,497	0		0	0	
2020	6,037	616	3.17	1,250	4,566	0		0	0	
2021	6,439	657	3.14	1,325	4,618	0		0	0	
2022	6,861	700	3.11	1,403	4,672	0		0	0	
2023	7,343	749	3.09	1,492	4,734	0		0	0	
2024	7,890	805	3.06	1,591	4,804	0		0	0	
2025	8,468	864	3.03	1,695	4,877	0		0	0	
2026	8,918	910	3.00	1,776	4,933	0		0	0	
2027	9,334	952	2.98	1,850	4,985	0		0	0	

Segment	Contributing Flows	Notes
Lift Station	100%	
Force Main	100%	

APPENDIX B

CIP LIST COST ESTIMATES

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Construct 2.0 MGD South San Gabriel WWTP					
1	WWTP	$ 6.25	Gal/Day	2,000,000	$ 12,500,000.00
2	Decommission SGE LS	$ 125,000.00	LS	1	$ 125,000.00
SUBTOTAL					$ 12,625,000.00
	Mobilization (5% of Subtotal)				$ 631,250.00
	Contingency (20%)				$ 2,651,250.00
Total					$ 15,907,500.00

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Expand Existing Leander WWTP to 4.5 MGD					
1	WWTP	$ 6.25	Gal/Day	2,250,000	$ 14,062,500.00
SUBTOTAL					$ 14,062,500.00
	Mobilization (5% of Subtotal)				$ 703,125.00
	Contingency (20%)				$ 2,953,125.00
Total					$ 17,718,750.00

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Expand Existing Leander WWTP to 6.75 MGD					
1	WWTP	$ 6.25	Gal/Day	2,250,000	$ 14,062,500.00
SUBTOTAL					$ 14,062,500.00
	Mobilization (5% of Subtotal)				$ 703,125.00
	Contingency (20%)				$ 2,953,125.00
Total					$ 17,718,750.00

CONSTRUCTION COST ESTIMATE — BRUSHY CREEK REGIONAL INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Sub-Basin BCR-1 Interceptor					
1	Clearing and Grubbing	$ 6,000.00	AC	15	$ 92,286.50
2	Construction Staking	$ 3.25	LF	13400	$ 43,550.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	13400	$ 134,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	16080	$ 40,200.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	15	$ 115,358.13
7	Stabilized Construction Entrances	$ 4,000.00	EA	7	$ 28,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	34	$ 306,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	15-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 140.00	LF	13400	$ 1,876,000.00
SUBTOTAL					$ 2,652,894.63
	Easement Acquisition - Urban	$ 20,000.00	AC	9	$ 184,573.00
	Mobilization (5% of Subtotal)				$ 132,644.73
	Contingency (20%)				$ 594,022.47
Total					**$ 3,564,135**

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Sub-Basin BCR-5A Interceptor					
1	Clearing and Grubbing	$ 6,000.00	AC	7	$ 44,765.84
2	Construction Staking	$ 3.25	LF	6500	$ 21,125.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	6500	$ 65,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	7800	$ 19,500.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	7	$ 55,957.30
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	16	$ 144,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	8-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 100.00	LF	6500	$ 650,000.00
SUBTOTAL					$ 1,029,848.14
	Easement Acquisition - Urban	$ 20,000.00	AC	4	$ 89,531.68
	Mobilization (5% of Subtotal)				$ 51,492.41
	Contingency (20%)				$ 234,174.45
Total					**$ 1,405,047**

CONSTRUCTION COST ESTIMATE — BRUSHY CREEK REGIONAL INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Sub-Basin BCR-6A Interceptor					
1	Clearing and Grubbing	$ 6,000.00	AC	7	$ 39,407.71
2	Construction Staking	$ 3.25	LF	5722	$ 18,596.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	5722	$ 57,220.00
4	Silt Fence for Erosion Control	$ 2.50	LF	6866.4	$ 17,166.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	7	$ 49,259.64
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	14	$ 126,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	15-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 140.00	LF	5722	$ 801,080.00
SUBTOTAL					$ 1,138,229.86
	Easement Acquisition - Urban	$ 20,000.00	AC	4	$ 78,815.43
	Mobilization (5% of Subtotal)				$ 56,911.49
	Contingency (20%)				$ 254,791.36
Total					**$ 1,528,748**

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Sub-Basin BCR-6B Interceptor					
1	Clearing and Grubbing	$ 6,000.00	AC	6	$ 37,878.79
2	Construction Staking	$ 3.25	LF	5500	$ 17,875.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	5500	$ 55,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	6600	$ 16,500.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	6	$ 47,348.48
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	14	$ 126,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	18-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 155.00	LF	5500	$ 852,500.00
SUBTOTAL					$ 1,182,602.27
	Easement Acquisition - Urban	$ 20,000.00	AC	4	$ 75,757.58
	Mobilization (5% of Subtotal)				$ 59,130.11
	Contingency (20%)				$ 263,497.99
Total					**$ 1,580,988**

CONSTRUCTION COST ESTIMATE — BRUSHY CREEK REGIONAL INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Sub-Basin BCR-4 Interceptor					
1	Clearing and Grubbing	$ 6,000.00	AC	10	$ 58,539.94
2	Construction Staking	$ 3.25	LF	8500	$ 27,625.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	8500	$ 85,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	10200	$ 25,500.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	10	$ 73,174.93
7	Stabilized Construction Entrances	$ 4,000.00	EA	4	$ 16,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	21	$ 189,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	12-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 115.00	LF	8500	$ 977,500.00
SUBTOTAL					$ 1,469,839.88
	Easement Acquisition - Urban	$ 20,000.00	AC	6	$ 117,079.89
	Mobilization (5% of Subtotal)				$ 73,491.99
	Contingency (20%)				$ 332,082.35
Total					**$ 1,992,494**

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Sub-Basin BCR-5B Interceptor					
1	Clearing and Grubbing	$ 6,000.00	AC	7	$ 44,765.84
2	Construction Staking	$ 3.25	LF	6500	$ 21,125.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	6500	$ 65,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	7800	$ 19,500.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	7	$ 55,957.30
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	16	$ 144,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	12-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 115.00	LF	6500	$ 747,500.00
SUBTOTAL					$ 1,127,348.14
	Easement Acquisition - Urban	$ 20,000.00	AC	4	$ 89,531.68
	Mobilization (5% of Subtotal)				$ 56,367.41
	Contingency (20%)				$ 254,649.45
Total					$ 1,527,896.67

CONSTRUCTION COST ESTIMATE — BRUSHY CREEK REGIONAL INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #1 - 30" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	8	$ 45,454.55
2	Construction Staking	$ 3.25	LF	6600	$ 21,450.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	6600	$ 66,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	7920	$ 19,800.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	8	$ 56,818.18
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	17	$ 153,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	30-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 300.00	LF	6600	$ 1,980,000.00
SUBTOTAL					$ 2,372,022.73
	Easement Acquisition - Urban	$ 20,000.00	AC	5	$ 90,909.09
	Mobilization (5% of Subtotal)				$ 118,601.14
	Contingency (20%)				$ 516,306.59
Total					$ 3,097,839.55

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #2 - 30" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	8	$ 46,487.60
2	Construction Staking	$ 3.25	LF	6750	$ 21,937.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	6750	$ 67,500.00
4	Silt Fence for Erosion Control	$ 2.50	LF	8100	$ 20,250.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	8	$ 58,109.50
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	17	$ 153,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	21-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 300.00	LF	6750	$ 2,025,000.00
SUBTOTAL					$ 2,421,784.61
	Easement Acquisition - Urban	$ 20,000.00	AC	5	$ 92,975.21
	Mobilization (5% of Subtotal)				$ 121,089.23
	Contingency (20%)				$ 527,169.81
Total					$ 3,163,018.85

CONSTRUCTION COST ESTIMATE — BRUSHY CREEK REGIONAL INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #3 - 30" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	13	$ 78,512.40
2	Construction Staking	$ 3.25	LF	11400	$ 37,050.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	11400	$ 114,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	13680	$ 34,200.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	13	$ 98,140.50
7	Stabilized Construction Entrances	$ 4,000.00	EA	6	$ 24,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	29	$ 261,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	30-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 300.00	LF	11400	$ 3,420,000.00
SUBTOTAL					$ 4,084,402.89
	Easement Acquisition - Urban	$ 20,000.00	AC	8	$ 157,024.79
	Mobilization (5% of Subtotal)				$ 204,220.14
	Contingency (20%)				$ 889,129.57
Total					$ 5,334,777.40

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #4 - 15" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	7	$ 43,388.43
2	Construction Staking	$ 3.25	LF	6300	$ 20,475.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	6300	$ 63,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	7560	$ 18,900.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	7	$ 54,235.54
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	16	$ 144,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	15-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 140.00	LF	6300	$ 882,000.00
SUBTOTAL					$ 1,255,498.97
	Easement Acquisition - Urban	$ 20,000.00	AC	4	$ 86,776.86
	Mobilization (5% of Subtotal)				$ 62,774.95
	Contingency (20%)				$ 281,010.15
Total					$ 1,686,060.93

CONSTRUCTION COST ESTIMATE — BLOCK HOUSE CREEK INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #1 - 30" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	4	$ 26,859.50
2	Construction Staking	$ 3.25	LF	3900	$ 12,675.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	3900	$ 39,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	4680	$ 11,700.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	4	$ 33,574.38
7	Stabilized Construction Entrances	$ 4,000.00	EA	2	$ 8,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	10	$ 90,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	30-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 300.00	LF	3900	$ 1,170,000.00
SUBTOTAL					$ 1,409,308.88
	Easement Acquisition - Urban	$ 20,000.00	AC	3	$ 53,719.01
	Mobilization (5% of Subtotal)				$ 70,465.44
	Contingency (20%)				$ 306,698.67
Total					$ 1,840,192.00

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #2 - 27" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	9	$ 54,752.07
2	Construction Staking	$ 3.25	LF	7950	$ 25,837.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	7950	$ 79,500.00
4	Silt Fence for Erosion Control	$ 2.50	LF	9540	$ 23,850.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	9	$ 68,440.08
7	Stabilized Construction Entrances	$ 4,000.00	EA	4	$ 16,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	20	$ 180,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	27-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 260.00	LF	7950	$ 2,067,000.00
SUBTOTAL					$ 2,532,879.65
	Easement Acquisition - Urban	$ 20,000.00	AC	5	$ 109,504.13
	Mobilization (5% of Subtotal)				$ 126,643.98
	Contingency (20%)				$ 553,805.55
Total					$ 3,322,833.32

CONSTRUCTION COST ESTIMATE — BLOCK HOUSE CREEK INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #3 - 27" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	5	$ 30,991.74
2	Construction Staking	$ 3.25	LF	4500	$ 14,625.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	4500	$ 45,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	5400	$ 13,500.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	5	$ 38,739.67
7	Stabilized Construction Entrances	$ 4,000.00	EA	2	$ 8,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	11	$ 99,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	27-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 260.00	LF	4500	$ 1,170,000.00
11	Decommission Lift Station	$ 75,000.00	EA	1	$ 75,000.00
SUBTOTAL					$ 1,512,356.40
	Easement Acquisition - Urban	$ 20,000.00	AC	3	$ 61,983.47
	Mobilization (5% of Subtotal)				$ 75,617.82
	Contingency (20%)				$ 329,991.54
Total					$ 1,979,949.24

CONSTRUCTION COST ESTIMATE — SAN GABRIEL EAST INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #1 - 27" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	9	$ 52,685.95
2	Construction Staking	$ 3.25	LF	7650	$ 24,862.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	7650	$ 76,500.00
4	Silt Fence for Erosion Control	$ 2.50	LF	9180	$ 22,950.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	9	$ 65,857.44
7	Stabilized Construction Entrances	$ 4,000.00	EA	4	$ 16,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	19	$ 171,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	27-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 260.00	LF	7650	$ 1,989,000.00
SUBTOTAL					$ 2,436,355.89
	Easement Acquisition - Rural	$ 12,000.00	AC	5	$ 63,223.14
	Mobilization (5% of Subtotal)				$ 121,817.79
	Contingency (20%)				$ 524,279.36
Total					$ 3,145,676.19

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #2 - 24" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	13	$ 76,446.28
2	Construction Staking	$ 3.25	LF	11100	$ 36,075.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	11100	$ 111,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	13320	$ 33,300.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	13	$ 95,557.85
7	Stabilized Construction Entrances	$ 4,000.00	EA	6	$ 24,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	28	$ 252,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	24-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 235.00	LF	11100	$ 2,608,500.00
11	Decommission SGW Lift Station	$ 125,000.00	LS	1	$ 125,000.00
SUBTOTAL					$ 3,379,379.13
	Easement Acquisition - Rural	$ 12,000.00	AC	8	$ 91,735.54
	Mobilization (5% of Subtotal)				$ 168,968.96
	Contingency (20%)				$ 728,016.73
Total					$ 4,368,100.35

CONSTRUCTION COST ESTIMATE — SAN GABRIEL WEST INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #1 - 18" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	3	$ 16,528.93
2	Construction Staking	$ 3.25	LF	2400	$ 7,800.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	2400	$ 24,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	2880	$ 7,200.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	3	$ 20,661.16
7	Stabilized Construction Entrances	$ 4,000.00	EA	1	$ 4,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	6	$ 54,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	18-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 155.00	LF	2400	$ 372,000.00
SUBTOTAL					$ 523,690.08
	Easement Acquisition - Rural	$ 12,000.00	AC	2	$ 19,834.71
	Mobilization (5% of Subtotal)				$ 26,184.50
	Contingency (20%)				$ 113,941.86
Total					$ 683,651.16

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #2 - 15" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	14	$ 81,611.57
2	Construction Staking	$ 3.25	LF	11850	$ 38,512.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	11850	$ 118,500.00
4	Silt Fence for Erosion Control	$ 2.50	LF	14220	$ 35,550.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	14	$ 102,014.46
7	Stabilized Construction Entrances	$ 4,000.00	EA	6	$ 24,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	30	$ 270,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	15-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 140.00	LF	11850	$ 1,659,000.00
SUBTOTAL					$ 2,346,688.53
	Easement Acquisition - Rural	$ 12,000.00	AC	8	$ 97,933.88
	Mobilization (5% of Subtotal)				$ 117,334.43
	Contingency (20%)				$ 512,391.37
Total					$ 3,074,348.21

CONSTRUCTION COST ESTIMATE — TOD LIFT STATION

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Phase 1 - 1,355 GPM Lift Station					
1	Clearing and Grubbing	$ 6,000.00	AC	1	$ 6,000.00
2	Silt Fence for Erosion Control	$ 2.50	LF	800	$ 2,000.00
3	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
4	Restoration and Revegetation	$ 7,500.00	AC	1	$ 7,500.00
5	Stabilized Construction Entrances	$ 4,000.00	EA	1	$ 4,000.00
6	Lift Station Wet Well, Pumps and Electrical, including trench safety and dewatering	$ 425,000.00	LS	1	$ 425,000.00
SUBTOTAL					$ 447,000.00
	Easement Acquisition - Rural	$ 12,000.00	AC	1	$ 12,000.00
	Mobilization (5% of Subtotal)				$ 22,350.00
	Contingency (20%)				$ 96,270.00
Total					$ 577,620.00

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
12" Force Main					
1	Clearing and Grubbing	$ 6,000.00	AC	6	$ 33,057.85
2	Construction Staking	$ 3.25	LF	4800	$ 15,600.00
3	Trench Safety Systems (All Depths)	$ 5.00	LF	4800	$ 24,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	5760	$ 14,400.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	6	$ 41,322.31
7	Stabilized Construction Entrances	$ 4,000.00	EA	2	$ 8,000.00
8	Combination Air Valves	$ 5.00	EA	5	$ 25.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	12-Inch WW Force Main, including fittings	$ 115.00	LF	4800	$ 552,000.00
SUBTOTAL					$ 705,905.17
	Easement Acquisition - Rural	$ 12,000.00	AC	3	$ 39,669.42
	Mobilization (5% of Subtotal)				$ 35,295.26
	Contingency (20%)				$ 156,173.97
Total					$ 937,043.81

CONSTRUCTION COST ESTIMATE — SAN GABRIEL WEST LIFT STATION

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
900 GPM Lift Station					
1	Clearing and Grubbing	$ 6,000.00	AC	1	$ 6,000.00
2	Silt Fence for Erosion Control	$ 2.50	LF	800	$ 2,000.00
3	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
4	Restoration and Revegetation	$ 7,500.00	AC	1	$ 7,500.00
5	Stabilized Construction Entrances	$ 4,000.00	EA	1	$ 4,000.00
6	Lift Station Wet Well, Pumps and Electrical, including trench safety and dewatering	$ 325,000.00	LS	1	$ 325,000.00
SUBTOTAL					$ 347,000.00
	Easement Acquisition - Rural	$ 12,000.00	AC	1	$ 12,000.00
	Mobilization (5% of Subtotal)				$ 17,350.00
	Contingency (20%)				$ 75,270.00
Total					$ 451,620.00

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
10" Force Main					
1	Clearing and Grubbing	$ 6,000.00	AC	6	$ 38,567.49
2	Construction Staking	$ 3.25	LF	5600	$ 18,200.00
3	Trench Safety Systems (All Depths)	$ 5.00	LF	5600	$ 28,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	6720	$ 16,800.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	6	$ 48,209.37
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	Combination Air Valves	$ 3,000.00	EA	6	$ 18,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	8-Inch WW Force Main, including fittings	$ 120.00	LF	5600	$ 672,000.00
SUBTOTAL					$ 869,276.86
	Easement Acquisition - Rural	$ 12,000.00	AC	4	$ 46,280.99
	Mobilization (5% of Subtotal)				$ 43,463.84
	Contingency (20%)				$ 191,804.34
Total					$ 1,150,826.03

CONSTRUCTION COST ESTIMATE — SAN GABRIEL EAST LIFT STATION

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
1,500 GPM Lift Station					
1	Clearing and Grubbing	$ 6,000.00	AC	1	$ 6,000.00
2	Silt Fence for Erosion Control	$ 2.50	LF	800	$ 2,000.00
3	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
4	Restoration and Revegetation	$ 7,500.00	AC	1	$ 7,500.00
5	Stabilized Construction Entrances	$ 4,000.00	EA	1	$ 4,000.00
6	Lift Station Wet Well, Pumps and Electrical, including trench safety and dewatering	$ 425,000.00	LS	1	$ 425,000.00
SUBTOTAL					$ 447,000.00
	Easement Acquisition - Rural	$ 12,000.00	AC	1	$ 12,000.00
	Mobilization (5% of Subtotal)				$ 22,350.00
	Contingency (20%)				$ 96,270.00
Total					$ 577,620.00

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
16" Force Main					
1	Clearing and Grubbing	$ 6,000.00	AC	6	$ 33,057.85
2	Construction Staking	$ 3.25	LF	4800	$ 15,600.00
3	Trench Safety Systems (All Depths)	$ 5.00	LF	4800	$ 24,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	5760	$ 14,400.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	6	$ 41,322.31
7	Stabilized Construction Entrances	$ 4,000.00	EA	2	$ 8,000.00
8	Combination Air Valves	$ 3,000.00	EA	5	$ 15,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	16-Inch WW Force Main, including fittings	$ 175.00	LF	4800	$ 840,000.00
SUBTOTAL					$ 1,008,880.17
	Easement Acquisition - Rural	$ 12,000.00	AC	3	$ 39,669.42
	Mobilization (5% of Subtotal)				$ 50,444.01
	Contingency (20%)				$ 219,798.72
Total					$ 1,318,792.31

CONSTRUCTION COST ESTIMATE — CRYSTAL FALLS LIFT STATION

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Phase 1 - 1,850 GPM Lift Station					
1	Clearing and Grubbing	$ 6,000.00	AC	1	$ 6,000.00
2	Silt Fence for Erosion Control	$ 2.50	LF	800	$ 2,000.00
3	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
4	Restoration and Revegetation	$ 7,500.00	AC	1	$ 7,500.00
5	Stabilized Construction Entrances	$ 4,000.00	EA	1	$ 4,000.00
6	Lift Station Wet Well, Pumps and Electrical, including trench safety and dewatering	$ 475,000.00	LS	1	$ 475,000.00
SUBTOTAL					$ 497,000.00
	Easement Acquisition - Rural	$ 12,000.00	AC	1	$ 12,000.00
	Mobilization (5% of Subtotal)				$ 24,850.00
	Contingency (20%)				$ 106,770.00
Total					$ 640,620.00

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Phase 2 - Expand to 3,700 GPM					
1	Pumps and Electrical	$ 100,000.00	LS	1	$ 100,000.00
SUBTOTAL					$ 100,000.00
	Easement Acquisition - Rural	$ 12,000.00	AC	1	$ 12,000.00
	Mobilization (5% of Subtotal)				$ 5,000.00
	Contingency (20%)				$ 23,400.00
Total					$ 140,400.00

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
16" Force Main					
1	Clearing and Grubbing	$ 6,000.00	AC	13	$ 75,674.93
2	Construction Staking	$ 3.25	LF	10988	$ 35,711.00
3	Trench Safety Systems (All Depths)	$ 5.00	LF	10988	$ 54,940.00
4	Silt Fence for Erosion Control	$ 2.50	LF	13185.6	$ 32,964.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	13	$ 94,593.66
7	Stabilized Construction Entrances	$ 4,000.00	EA	5	$ 20,000.00
8	Combination Air Valves	$ 3,000.00	EA	11	$ 33,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	16-Inch WW Force Main, including fittings	$ 175.00	LF	10988	$ 1,922,900.00
SUBTOTAL					$ 2,287,283.60
	Easement Acquisition - Rural	$ 12,000.00	AC	8	$ 90,809.92
	Mobilization (5% of Subtotal)				$ 114,364.18
	Contingency (20%)				$ 498,491.54
Total					$ 2,990,949.23

CONSTRUCTION COST ESTIMATE — CRYSTAL FALLS LIFT STATION

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
12" Force Main					
1	Clearing and Grubbing	$ 6,000.00	AC	13	$ 75,674.93
2	Construction Staking	$ 3.25	LF	10988	$ 35,711.00
3	Trench Safety Systems (All Depths)	$ 5.00	LF	10988	$ 54,940.00
4	Silt Fence for Erosion Control	$ 2.50	LF	13185.6	$ 32,964.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	13	$ 94,593.66
7	Stabilized Construction Entrances	$ 4,000.00	EA	5	$ 20,000.00
8	Combination Air Valves	$ -	EA	11	$ -
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	12-Inch WW Force Main, including fittings	$ 140.00	LF	10988	$ 1,538,320.00
SUBTOTAL					$ 1,869,703.60
	Easement Acquisition - Rural	$ 12,000.00	AC	8	$ 90,809.92
	Mobilization (5% of Subtotal)				$ 93,485.18
	Contingency (20%)				$ 410,799.74
Total					$ 2,464,798.43

CONSTRUCTION COST ESTIMATE — COLORADO NORTH INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #1 - 15" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	5	$ 30,991.74
2	Construction Staking	$ 3.25	LF	4500	$ 14,625.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	4500	$ 45,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	5400	$ 13,500.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	5	$ 38,739.67
7	Stabilized Construction Entrances	$ 4,000.00	EA	2	$ 8,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	11	$ 99,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	15-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 140.00	LF	4500	$ 630,000.00
SUBTOTAL					$ 897,356.40
	Easement Acquisition - Rural	$ 12,000.00	AC	3	$ 37,190.08
	Mobilization (5% of Subtotal)				$ 44,867.82
	Contingency (20%)				$ 195,882.86
Total					$ 1,175,297.17

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #2 - 12" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	11	$ 64,049.59
2	Construction Staking	$ 3.25	LF	9300	$ 30,225.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	9300	$ 93,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	11160	$ 27,900.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	11	$ 80,061.98
7	Stabilized Construction Entrances	$ 4,000.00	EA	5	$ 20,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	23	$ 207,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	12-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 115.00	LF	9300	$ 1,069,500.00
SUBTOTAL					$ 1,609,236.57
	Easement Acquisition - Rural	$ 12,000.00	AC	6	$ 76,859.50
	Mobilization (5% of Subtotal)				$ 80,461.83
	Contingency (20%)				$ 353,311.58
Total					$ 2,119,869.48

CONSTRUCTION COST ESTIMATE — COLORADO NORTH LIFT STATION

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
3,500 GPM Lift Station					
1	Clearing and Grubbing	$ 6,000.00	AC	1	$ 6,000.00
2	Silt Fence for Erosion Control	$ 2.50	LF	800	$ 2,000.00
3	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
4	Restoration and Revegetation	$ 7,500.00	AC	1	$ 7,500.00
5	Stabilized Construction Entrances	$ 4,000.00	EA	1	$ 4,000.00
6	Lift Station Wet Well, Pumps and Electrical, including trench safety and dewatering	$ 525,000.00	LS	1	$ 525,000.00
SUBTOTAL					$ 547,000.00
	Easement Acquisition - Rural	$ 12,000.00	AC	1	$ 12,000.00
	Mobilization (5% of Subtotal)				$ 27,350.00
	Contingency (20%)				$ 117,270.00
Total					$ 703,620.00

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
18" Force Main					
1	Clearing and Grubbing	$ 6,000.00	AC	11	$ 64,049.59
2	Construction Staking	$ 3.25	LF	9300	$ 30,225.00
3	Trench Safety Systems (All Depths)	$ 5.00	LF	9300	$ 46,500.00
4	Silt Fence for Erosion Control	$ 2.50	LF	11160	$ 27,900.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	11	$ 80,061.98
7	Stabilized Construction Entrances	$ 4,000.00	EA	5	$ 20,000.00
8	Combination Air Valves	$ 3,000.00	EA	9	$ 27,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	18-Inch WW Force Main, including fittings	$ 200.00	LF	9300	$ 1,860,000.00
SUBTOTAL					$ 2,173,236.57
	Easement Acquisition - Rural	$ 12,000.00	AC	6	$ 76,859.50
	Mobilization (5% of Subtotal)				$ 108,661.83
	Contingency (20%)				$ 471,751.58
Total					$ 2,830,509.48

CONSTRUCTION COST ESTIMATE — NORTH FORK BRUSHY INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #1 - 18" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	1	$ 4,655.65
2	Construction Staking	$ 3.25	LF	676	$ 2,197.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	676	$ 6,760.00
4	Silt Fence for Erosion Control	$ 2.50	LF	811.2	$ 2,028.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	1	$ 5,819.56
7	Stabilized Construction Entrances	$ 4,000.00	EA	1	$ 4,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	2	$ 18,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	18-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 155.00	LF	676	$ 104,780.00
SUBTOTAL					$ 165,740.21
	Easement Acquisition - Urban	$ 20,000.00	AC	0	$ 9,311.29
	Mobilization (5% of Subtotal)				$ 8,287.01
	Contingency (20%)				$ 36,667.70
Total					**$ 220,006.21**

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #2 - 18" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	5	$ 31,749.31
2	Construction Staking	$ 3.25	LF	4610	$ 14,982.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	4610	$ 46,100.00
4	Silt Fence for Erosion Control	$ 2.50	LF	5532	$ 13,830.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	5	$ 39,686.64
7	Stabilized Construction Entrances	$ 4,000.00	EA	2	$ 8,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	12	$ 108,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	18-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 155.00	LF	4610	$ 714,550.00
SUBTOTAL					$ 994,398.45
	Easement Acquisition - Urban	$ 20,000.00	AC	3	$ 63,498.62
	Mobilization (5% of Subtotal)				$ 49,719.92
	Contingency (20%)				$ 221,523.40
Total					**$ 1,329,140.39**

CONSTRUCTION COST ESTIMATE — NORTH FORK BRUSHY INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #3 - 24" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	6	$ 37,692.84
2	Construction Staking	$ 3.25	LF	5473	$ 17,787.25
3	Trench Safety Systems (All Depths)	$ 10.00	LF	5473	$ 54,730.00
4	Silt Fence for Erosion Control	$ 2.50	LF	6567.6	$ 16,419.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	6	$ 47,116.05
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	14	$ 126,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	24-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 235.00	LF	5473	$ 1,286,155.00
SUBTOTAL					$ 1,615,400.13
	Easement Acquisition - Urban	$ 20,000.00	AC	4	$ 75,385.67
	Mobilization (5% of Subtotal)				$ 80,770.01
	Contingency (20%)				$ 354,311.16
Total					**$ 2,125,866.98**

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #4 - 30" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	5	$ 30,991.74
2	Construction Staking	$ 3.25	LF	4500	$ 14,625.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	4500	$ 45,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	5400	$ 13,500.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	5	$ 38,739.67
7	Stabilized Construction Entrances	$ 4,000.00	EA	2	$ 8,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	11	$ 99,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	30-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 300.00	LF	4500	$ 1,350,000.00
SUBTOTAL					$ 1,617,356.40
	Easement Acquisition - Urban	$ 20,000.00	AC	3	$ 61,983.47
	Mobilization (5% of Subtotal)				$ 80,867.82
	Contingency (20%)				$ 352,041.54
Total					**$ 2,112,249.24**

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #5 - 30" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	4	$ 23,760.33
2	Construction Staking	$ 3.25	LF	3450	$ 11,212.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	3450	$ 34,500.00
4	Silt Fence for Erosion Control	$ 2.50	LF	4140	$ 10,350.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	4	$ 29,700.41
7	Stabilized Construction Entrances	$ 4,000.00	EA	2	$ 8,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	9	$ 81,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	30-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 300.00	LF	3450	$ 1,035,000.00
SUBTOTAL					$ 1,251,023.24
	Easement Acquisition - Urban	$ 20,000.00	AC	2	$ 47,520.66
	Mobilization (5% of Subtotal)				$ 62,551.16
	Contingency (20%)				$ 272,219.01
Total					**$ 1,633,314.08**

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #6 - 24" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	15	$ 87,809.92
2	Construction Staking	$ 3.25	LF	12750	$ 41,437.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	12750	$ 127,500.00
4	Silt Fence for Erosion Control	$ 2.50	LF	15300	$ 38,250.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	15	$ 109,762.40
7	Stabilized Construction Entrances	$ 4,000.00	EA	6	$ 24,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	32	$ 288,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	24-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 235.00	LF	12750	$ 2,996,250.00
SUBTOTAL					$ 3,730,509.81
	Easement Acquisition - Urban	$ 20,000.00	AC	9	$ 175,619.83
	Mobilization (5% of Subtotal)				$ 186,525.49
	Contingency (20%)				$ 818,531.03
Total					**$ 4,911,186.17**

CONSTRUCTION COST ESTIMATE — NORTH FORK BRUSHY INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #7 - 18" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	13	$ 77,479.34
2	Construction Staking	$ 3.25	LF	11250	$ 36,562.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	11250	$ 112,500.00
4	Silt Fence for Erosion Control	$ 2.50	LF	13500	$ 33,750.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	13	$ 96,849.17
7	Stabilized Construction Entrances	$ 4,000.00	EA	6	$ 24,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	28	$ 252,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	18-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 155.00	LF	11250	$ 1,743,750.00
SUBTOTAL					$ 2,394,391.01
	Easement Acquisition - Urban	$ 20,000.00	AC	8	$ 154,958.68
	Mobilization (5% of Subtotal)				$ 119,719.55
	Contingency (20%)				$ 533,813.85
Total					**$ 3,202,883.09**

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #8 - 15" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	6	$ 34,090.91
2	Construction Staking	$ 3.25	LF	4950	$ 16,087.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	4950	$ 49,500.00
4	Silt Fence for Erosion Control	$ 2.50	LF	5940	$ 14,850.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	6	$ 42,613.64
7	Stabilized Construction Entrances	$ 4,000.00	EA	2	$ 8,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	12	$ 108,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	15-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 140.00	LF	1950	$ 273,000.00
11	18-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 155.00	LF	2200	$ 341,000.00
12	21-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 185.00	LF	800	$ 148,000.00
SUBTOTAL					$ 1,052,642.05
	Easement Acquisition - Urban	$ 20,000.00	AC	1	$ 11,019.28
	Mobilization (5% of Subtotal)				$ 52,632.10
	Contingency (20%)				$ 223,258.69
Total					**$ 1,339,552.12**

CONSTRUCTION COST ESTIMATE — NORTH FORK BRUSHY INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #8 - 12" Parallel Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	6	$ 34,090.91
2	Construction Staking	$ 3.25	LF	4950	$ 16,087.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	4950	$ 49,500.00
4	Silt Fence for Erosion Control	$ 2.50	LF	5940	$ 14,850.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	6	$ 42,613.64
7	Stabilized Construction Entrances	$ 4,000.00	EA	2	$ 8,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	12	$ 108,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	12-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 115.00	LF	4950	$ 569,250.00
SUBTOTAL					$ 859,892.05
	Easement Acquisition - Urban	$ 20,000.00	AC	3	$ 68,181.82
	Mobilization (5% of Subtotal)				$ 42,994.60
	Contingency (20%)				$ 194,213.69
Total					**$ 1,165,282.16**

CONSTRUCTION COST ESTIMATE — SOUTH FORK BRUSHY INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #2 - 15" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	6	$ 36,976.58
2	Construction Staking	$ 3.25	LF	5369	$ 17,449.25
3	Trench Safety Systems (All Depths)	$ 10.00	LF	5369	$ 53,690.00
4	Silt Fence for Erosion Control	$ 2.50	LF	6442.8	$ 16,107.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	6	$ 46,220.73
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	13	$ 117,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	15-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 140.00	LF	5369	$ 751,660.00
SUBTOTAL					$ 1,068,603.56
	Easement Acquisition - Urban	$ 20,000.00	AC	4	$ 73,953.17
	Mobilization (5% of Subtotal)				$ 53,430.18
	Contingency (20%)				$ 239,197.38
Total					$ 1,435,184.29

CONSTRUCTION COST ESTIMATE — MASON CREEK INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #1 - 30" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	4	$ 25,757.58
2	Construction Staking	$ 3.25	LF	3740	$ 12,155.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	3740	$ 37,400.00
4	Silt Fence for Erosion Control	$ 2.50	LF	4488	$ 11,220.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	4	$ 32,196.97
7	Stabilized Construction Entrances	$ 4,000.00	EA	2	$ 8,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	9	$ 81,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	30-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 300.00	LF	3740	$ 1,122,000.00
SUBTOTAL					$ 1,347,229.55
	Easement Acquisition - Urban	$ 20,000.00	AC	3	$ 51,515.15
	Mobilization (5% of Subtotal)				$ 67,361.48
	Contingency (20%)				$ 293,221.23
Total					$ 1,759,327.41

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #3 - 21" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	2	$ 13,980.72
2	Construction Staking	$ 3.25	LF	2030	$ 6,597.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	2030	$ 20,300.00
4	Silt Fence for Erosion Control	$ 2.50	LF	2436	$ 6,090.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	2	$ 17,475.90
7	Stabilized Construction Entrances	$ 4,000.00	EA	1	$ 4,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	5	$ 45,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	21-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 185.00	LF	2030	$ 375,550.00
SUBTOTAL					$ 506,494.11
	Easement Acquisition - Urban	$ 20,000.00	AC	1	$ 27,961.43
	Mobilization (5% of Subtotal)				$ 25,324.71
	Contingency (20%)				$ 111,956.05
Total					$ 671,736.30

CONSTRUCTION COST ESTIMATE — MASON CREEK INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #4 - 21" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	3	$ 16,701.10
2	Construction Staking	$ 3.25	LF	2425	$ 7,881.25
3	Trench Safety Systems (All Depths)	$ 10.00	LF	2425	$ 24,250.00
4	Silt Fence for Erosion Control	$ 2.50	LF	2910	$ 7,275.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	3	$ 20,876.38
7	Stabilized Construction Entrances	$ 4,000.00	EA	1	$ 4,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	6	$ 54,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	21-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 185.00	LF	2425	$ 448,625.00
SUBTOTAL					$ 601,108.73
	Easement Acquisition - Urban	$ 20,000.00	AC	2	$ 33,402.20
	Mobilization (5% of Subtotal)				$ 30,055.44
	Contingency (20%)				$ 132,913.27
Total					$ 797,479.64

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #5 - 18" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	3	$ 19,242.42
2	Construction Staking	$ 3.25	LF	2794	$ 9,080.50
3	Trench Safety Systems (All Depths)	$ 10.00	LF	2794	$ 27,940.00
4	Silt Fence for Erosion Control	$ 2.50	LF	3352.8	$ 8,382.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	3	$ 24,053.03
7	Stabilized Construction Entrances	$ 4,000.00	EA	1	$ 4,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	7	$ 63,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	18-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 155.00	LF	2794	$ 433,070.00
SUBTOTAL					$ 606,267.95
	Easement Acquisition - Urban	$ 20,000.00	AC	2	$ 38,484.85
	Mobilization (5% of Subtotal)				$ 30,313.40
	Contingency (20%)				$ 135,013.24
Total					$ 810,079.44

CONSTRUCTION COST ESTIMATE — MASON CREEK INTERCEPTOR

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #6 - 24" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	6	$ 36,301.65
2	Construction Staking	$ 3.25	LF	5271	$ 17,130.75
3	Trench Safety Systems (All Depths)	$ 10.00	LF	5271	$ 52,710.00
4	Silt Fence for Erosion Control	$ 2.50	LF	6325.2	$ 15,813.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	6	$ 45,377.07
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	13	$ 117,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	24-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 235.00	LF	5271	$ 1,238,685.00
SUBTOTAL					$ 1,552,517.47
	Easement Acquisition - Urban	$ 20,000.00	AC	4	$ 72,603.31
	Mobilization (5% of Subtotal)				$ 77,625.87
	Contingency (20%)				$ 340,549.33
Total					$ 2,043,295.98

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #3 - 12" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	7	$ 44,765.84
2	Construction Staking	$ 3.25	LF	6500	$ 21,125.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	6500	$ 65,000.00
4	Silt Fence for Erosion Control	$ 2.50	LF	7800	$ 19,500.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	7	$ 55,957.30
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	16	$ 144,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	12-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 115.00	LF	6500	$ 747,500.00
SUBTOTAL					$ 1,127,348.14
	Easement Acquisition - Urban	$ 20,000.00	AC	4	$ 89,531.68
	Mobilization (5% of Subtotal)				$ 56,367.41
	Contingency (20%)				$ 254,649.45
Total					$ 1,527,896.67

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Segment #4 - 15" Gravity Main					
1	Clearing and Grubbing	$ 6,000.00	AC	6	$ 38,953.17
2	Construction Staking	$ 3.25	LF	5656	$ 18,382.00
3	Trench Safety Systems (All Depths)	$ 10.00	LF	5656	$ 56,560.00
4	Silt Fence for Erosion Control	$ 2.50	LF	6787.2	$ 16,968.00
5	Tree Protection Fencing	$ 2,500.00	LS	1	$ 2,500.00
6	Restoration and Revegetation	$ 7,500.00	AC	6	$ 48,691.46
7	Stabilized Construction Entrances	$ 4,000.00	EA	3	$ 12,000.00
8	60-inch Concrete Manhole on Pre-Cast Base, including excavation, backfill, and coating	$ 9,000.00	EA	14	$ 126,000.00
9	Traffic Control	$ 15,000.00	LS	1	$ 15,000.00
10	15-inch WW-Line (All Depths), including fittings, excavation, backfill and de-watering	$ 140.00	LF	5656	$ 791,840.00
SUBTOTAL					$ 1,126,894.63
	Easement Acquisition - Urban	$ 20,000.00	AC	4	$ 77,906.34
	Mobilization (5% of Subtotal)				$ 56,344.73
	Contingency (20%)				$ 252,229.14
Total					$ 1,513,374.83

CONSTRUCTION COST ESTIMATE

MASON CREEK LIFT STATION

ITEM	DESCRIPTION	UNIT COST	UNIT	QTY	TOTAL COST
Decommission Lift Station					
1	Demolish and remove lift station components, including wet well, vault(s), electrical, site work and appurtenances	$ 100,000.00	LS	1	$ 100,000.00
SUBTOTAL					$ 100,000.00
	Easement Acquisition - Rural	$ 12,000.00	AC	1	$ 12,000.00
	Mobilization (5% of Subtotal)				$ 5,000.00
	Contingency (20%)				$ 23,400.00
Total					$ 140,400.00