FLORESVILLE

FLORESVILLE MASTER PLAN

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Overview

Introduction

The City of Floresville is a vibrant and growing community located in Wilson County, Texas. Situated strategically just outside of San Antonio and just north of the oil and gas boom along the Eagle Ford Shale, Floresville provides a culturally diverse home for an ever growing number of residents looking to escape some of the big city bustle for a more intimate community.

In an effort to maintain the integrity of this community, city staff and officials have been working tirelessly to positively manage the growth which has already come and plan wisely for the future expansion of the city so that generations of future residents can continue to enjoy all of the aspects which make Floresville a great place to live. To that end, in the latter part of 2011 the City instructed M&S Engineering (M&S) to complete a comprehensive Master Plan of the City. This Master Plan reviews the following 6 components of Floresville.

Population Projections

The City is growing rapidly with both permanent and itinerant workers. Key to understanding how to prepare for the future is differentiating between demands caused by temporary workers who will ultimately leave once the oil wells are established and permanent residents who will stay for years to come. Without proper population projecting, the City may fall prey to the "boom town" phenomenon and be left with oversized infrastructure, installed in a mad dash several years earlier, which is expensive to maintain and ultimately leads to long lasting headaches. On the other side of the coin maintaining a reactionary state in which needs are only addressed long after they arise will scare future residents and commercial development away and inhibit the ability of the City to grow in a healthy and productive manner. Accordingly the foundation of this Master Plan is Population Projections. M&S staff examined government data, made field observations and conducted interviews with local personnel. In addition research into other towns which have undergone an oil boom and their population statistics were researched and reviewed. The result is a set of population projections which represent the best-educated estimates developed to date for the City of Floresville's growth.

Road Conditions

Roadway infrastructure is an area which has received considerable attention by City staff. Multiple roadway projects were identified, funded and completed over the last 5 years. These projects have repaired many of the immediate maintenance issues within the City. As time passed, priorities have changed and some roads deteriorated faster than others. For this Master Plan M&S Staff conducted a surface review of main roadways within the City and also reviewed the completed projects. Guidance has also been given on how to address some of the drainage problems occurring on these streets.

Drinking Water

A primary area of concern whenever a city is experiencing growth is the drinking water infrastructure. Without an adequate supply, commercial and residential developments can be delayed or cancelled and existing customers may experience a decrease in the quality of service. M&S Engineering staff focused on determining whether the current supply of water available to the city will be adequate to maintain TCEQ compliance as the City grows in accordance with the population projections. Information on the maximum and average demands for the City was collected as well as the classifications and ratings for the City's supply wells. The population projections were then translated into future water demands and

these numbers were compared to the supply available to determine what the impact on the City's water supply is expected to be.

Wastewater

The City had a very thorough review of its wastewater system completed several years ago. That report contained a variety of recommendations on how to improve and expand the collection and treatment infrastructure. M&S staff reviewed the referenced report along with the completed recommended projects. With this data M&S created a summary of the updated status of the City's wastewater infrastructure. This was then compared to the population growth and revised recommendations were developed.

Parks

M&S staff compiled available data on the City's various parks. Numbers of certain types of facilities (ball fields, pools, etc.) were compared to neighboring cities and national recommendations. Based on the results of these findings, recommendations were developed and included in this report.

Zoning

One of the major concerns expressed early on by City staff was a need for increased level of detail as it related to zoning. As such, M&S reviewed the City's growth patterns and draft regulations. Some scenarios on how zoning could be done were presented along with some recommendations.

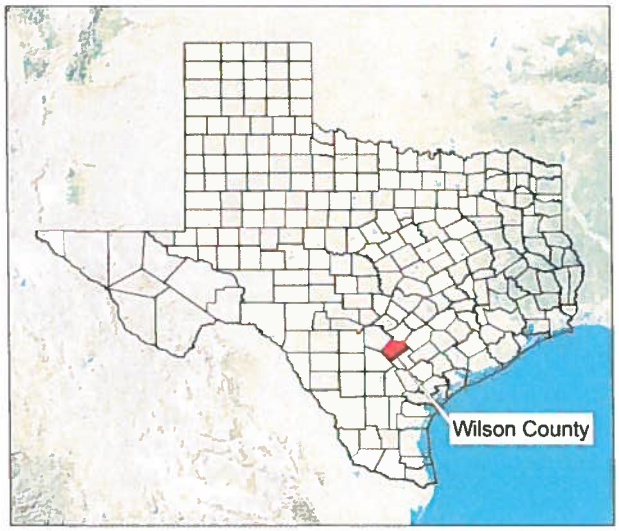
Public Input

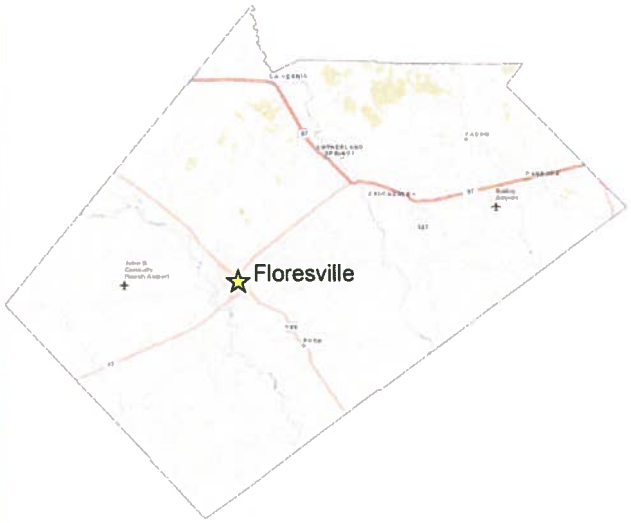
A public workshop was hosted at the Floresville City Hall on February 25, 2012 to gather input from the public. Participants were broken up into groups of up to 10 people and collaborated together to present their knowledge on different topics including: zoning, parks, water, wastewater, and streets & drainage. Information was collected through marking on maps and filling out forms provided to each group. This material was used to prepare the master plan and ultimately provide direction on where the city should spend its money.

Community Description

Floresville can be found near the center of Wilson County, Texas. Located near the intersection of HWY 97 and US-181, Floresville is approximately 30 miles from the center of San Antonio. The total area of Floresville is approximately 5.4 square miles.

Historically, the City was founded and named in 1867 after Don Francisco Flores de Abrego who established a ranch six miles northwest of what is now Floresville. In the 1870s Andrew G. Pickett started growing peanuts on his ranch there. By 1885, just two years after the San Antonio and Aransas Pass Railway made plans to build through Floresville, the town had two hotels, several stores, a weekly paper, a school, and two steam powered cotton gin-gristmills. When the population reached 1,500 in 1890 the town was incorporated. Today the town is a market center for peanut, small grain, and cattle producers who live in the area. Nicknamed as "the peanut capital of Texas," Floresville is well-known for its annual peanut festival.[1]

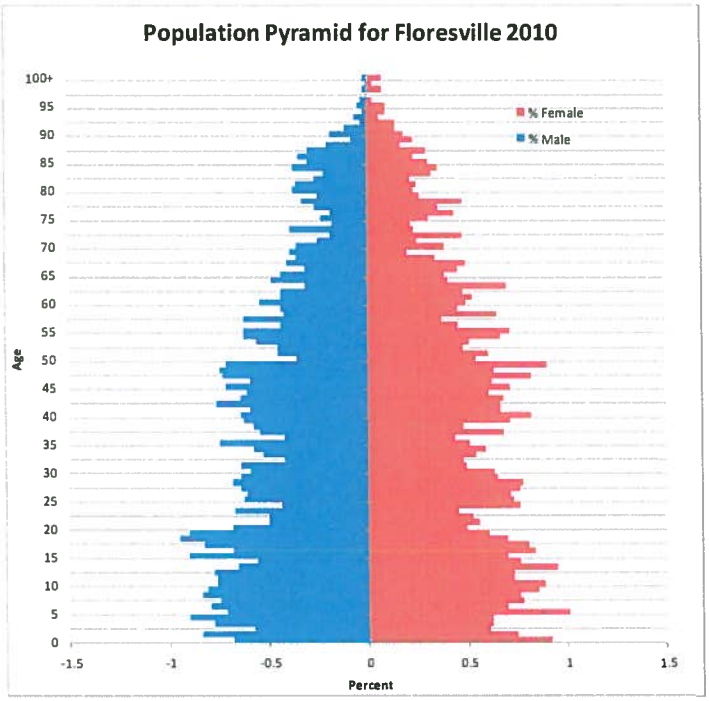




[1] Claudia Hazlewood, "FLORESVILLE, TX," *Handbook of Texas Online* (http://www.tshaonline.org/handbook/online/articles/hgf03), accessed January 10, 2012. Published by the Texas State Historical Association.

Population

Demographics



The population of Floresville during the 2010 census was 6,448. Within that population: 55.8% are of working age between 18 and 64, 27.6% are under 18, and 16.6% are 65 or older. Most of the people are white making up 85.6% of its citizens. There is a large Hispanic presence being 65.1% of persons in Floresville compared with 37.6% which is the average in Texas. This may account for the large percentage of households that normally speak a language other than English at home, being 46.7% compared with the Texas average of 33.6%. People living in Floresville have an average travel time to work of 21 minutes which is shorter than the rest of the county by 11 minutes. In fact, it is less than the average travel time in Texas. The percentage of people living below the poverty level is 17.9% which is in keeping with the average for Texas. Within Wilson County, however, the poverty level is 5.1% lower. The median household income in Floresville is at 34,291 dollars per year. The average household income in Wilson County is $55,829 and in all of Texas it is 48,199 dollars per year.[2] Approximately 70% of employed citizens work in the private sector and approximately 30% work for the government. Important industries to the area are: construction, retail trade, educational services, and health care.[3] Taking a look at the population pyramid the city exhibits a slow-but-steady growth rate and long life expectancies typical of other US cities. Overall these statistics indicate that Floresville is a healthy growing community.

Oil Boom

The Eagle Ford Shale oil boom has been changing the face of much of south Texas. Due to higher oil and gas prices as well as the advancement of technologies like horizontal drilling and hydraulic fracturing, the Eagle Ford Shale Play has become a frenzy of activity. Floresville will undoubtedly deal with issues such as water conservation, traffic, goods and services inflation, housing shortages, road wear caused by heavy truck activity, and challenges to economic stability when the oil boom disappears.

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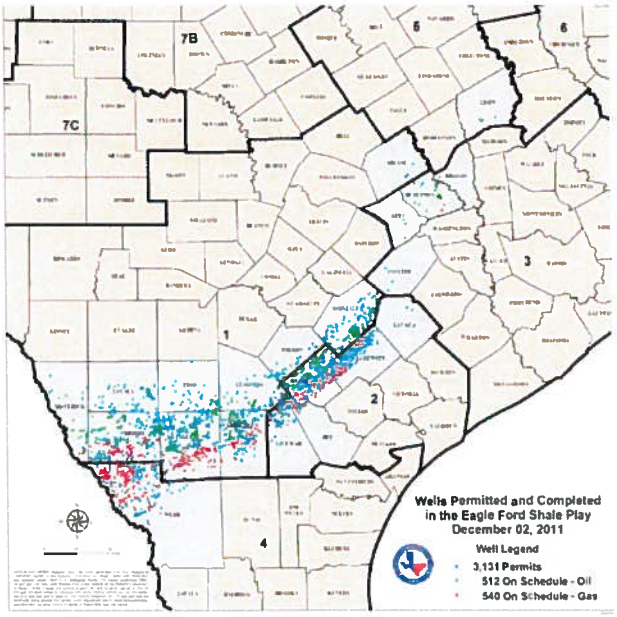
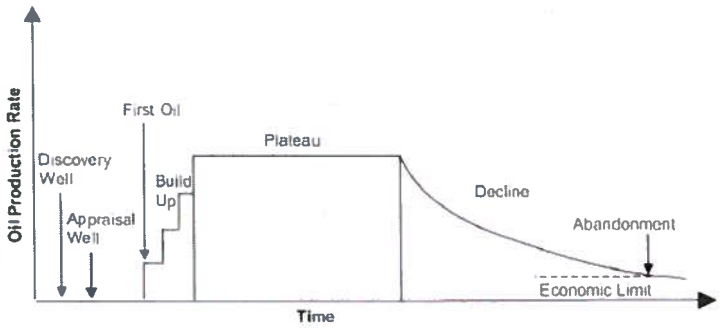
[2] Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, American Community Survey, Census of Population and Housing, Small Area Income and Poverty Estimates, County Business Patterns, Economic Census, Survey of Business Owners, Building Permits, Consolidated Federal Funds Report, Census of Governments. Last Revised: 12-23-2011

[3] Source: U.S. Census Bureau, 2006-2010 American Community Survey. http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_10_5YR_DP03&prodType=table



Discovery of the profitable gas and oil goes to Petrohawk who drilled the first discovery well in 2008. The shale gets its name from Eagle Ford, Texas which is located near Dallas, Texas, where the shale rises to the surface. The shale play, or favorable area for oil exploration, stretches from Mexico up into eastern Texas. It is about 50 miles wide and 400 miles long covering 24 counties including Wilson County.[4] Companies with current operations in Wilson County include: Bayshore Energy, Denali Oil, EOG Resources, First Rock, Forest Oil, Hunt Oil, Lucas Energy, Marathon Oil, Riley Exploration, and Tidal Petroleum.[5]

Many of the wells being drilled right now that affect Floresville are located in Karnes County. Floresville is an ideal spot for oil workers to raise families due to good schools and a split commute for families with some working in San Antonio and others working in Karnes County. While many oil field management and R&D services are being drawn to the San Antonio area with its large workforce and close proximity to universities, it is expected that manpower for drilling, pipeline construction, and services to support these oil workers will continue to affect Floresville. The graph below shows the typical life cycle of oil field production. Currently the Eagle Ford Shale is in the build up phase.



Source: Taken from *The Evolution of Giant Oil Field Production Behavior* by Mikael Hook, Bengt Soderbergh, Kristofer Jakobsson, and Kjell Aleklett, from Natural Resources Research, Vol. 18, No. 1, March 2009 (_ 2009) DOI: 10.1007/s11053-009-9087-z. online version

When the construction and drilling phase switches over to the oil production phase, oil employment dramatically drops. However, the construction and drilling phase is expected to last at least into the next 10 years with current oil prices.[6]

[4] Source: Railroad Commission of Texas. http://www.rrc.state.tx.us/eagleford/index.php Last Revised: 1-5-2012
[5] Source: Eagle Ford Shale Play. http://www.eaglefordshale.com/counties/wilson-county-tx/
[6] Source Center for Community and Business Research at UTSA: Economic Impact of the Eagle Ford Shale, February 2011

Population Projection Methodology

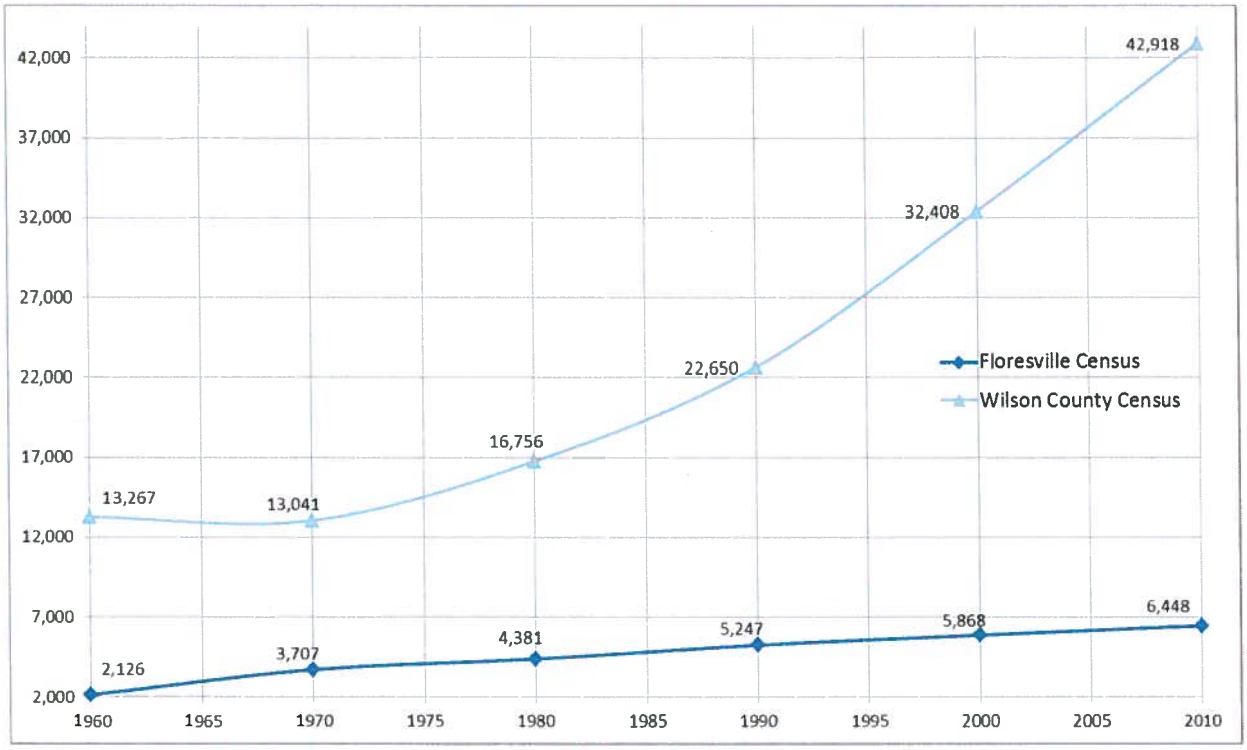
Due to the impact the oil boom has had on Floresville since the last census in 2010, it is difficult to get an accurate estimate of the population there now and into the future. To project the population to 2022, ten years from now, it was assumed that Floresville would continue growing at its normal rate if the Eagle Ford Shale Boom had not come. On top of this growth the increase in population due to the effects of oil is added. Population increase due to a business can be broken down into direct, indirect, and induced increases.

$$Total\ Population = base\ population + (direct + indirect + induced)_{oil\ population}$$

$$base\ population = Population_{census} + births - deaths + migration$$

Base Population Growth

While the exact amount of births, deaths, and migration cannot be found directly, the overall change can easily be estimated through population growth statistics. The base growth of Floresville has been fairly constant exhibiting a linear growth even as Wilson County portrays a more exponential growth.



The linear growth formula was used to obtain a growth rate between 1970 and 2010 as this most represented the current growth trend. It was found that Floresville grew an average of 68.5 people per year. This rate appears to be continuing into the future and thus was used to project the base population into the next decade.

Oil Population Growth

Direct population impacts due to the Eagle Ford Shale include those people directly employed by the oil industry. A survey was done of all the known rental facilities within the city to determine how many oil workers currently live there. It was estimated that this represents 85% of the total oil industry population within the city, with the rest able to find housing somewhere else, such as purchasing or renting a house. The total direct population increase as of January 2012 came to 808 people.

Direct Population Increase From Eagle Ford Shale

Rental Accomodations	# of Units	Type	% Oil Industry	Oil Occupants[1]
Lazy J RV Park	18	Stall	100%	54
Creekside RV Park	58	Stall	100%	174
Stockman Motel	25	Room	100%	50
Stockman RV	32	Stall	100%	96
Texas Star Lodges	19	unit	100%	57
Best Western Inn	43	Room	100%	129
Eagle Ford Inn	27	Room	100%	81
Road Side Inn	23	Room	100%	46
			Subtotal:	687
House/Apartment[2]	40	House	100%	121
			Total:	**808**

[1] Where number of occupants unknown, an average of 3 per unit was applied.
[2] Estimated 15% of current rental population.

Indirect and Induced Population Increase From Eagle Ford Shale

Type	Regional Employment[1]	Percent within City	Percent migrant labor	City Population Increase
Indirect	434	12%	80%	42
Induced	381	47%	23%	41
			Total:	83

[1] Based off of UTSA Economic Impact of the Eagle Ford Shale Feb 2011 Table 6 Estimated Drilling and Completion Impact for Eagle Ford Shale at the Regional Level (2010)

Indirect population impacts include those people who move to Floresville to supply goods and services to the oil industry. This includes pipe suppliers, welders, mechanics, truck drivers, inspectors, etc. Induced population impacts include those people who move to Floresville because of the extra money spent and the resources needed by the oil workers. This includes people in retail, sales, and food industries. The Center for Community and Business Research at UTSA estimated the Employment levels of the Eagle Ford Shale for these three categories at the regional level.[7] Although this population will not be scattered evenly throughout the area, it was assumed that the ratio of indirect and induced employment to direct employment would roughly hold for a place like Floresville. Applying these ratios and adjusting for local effects, the estimated indirect and induced population increase as of January 2012 came to 83 people.

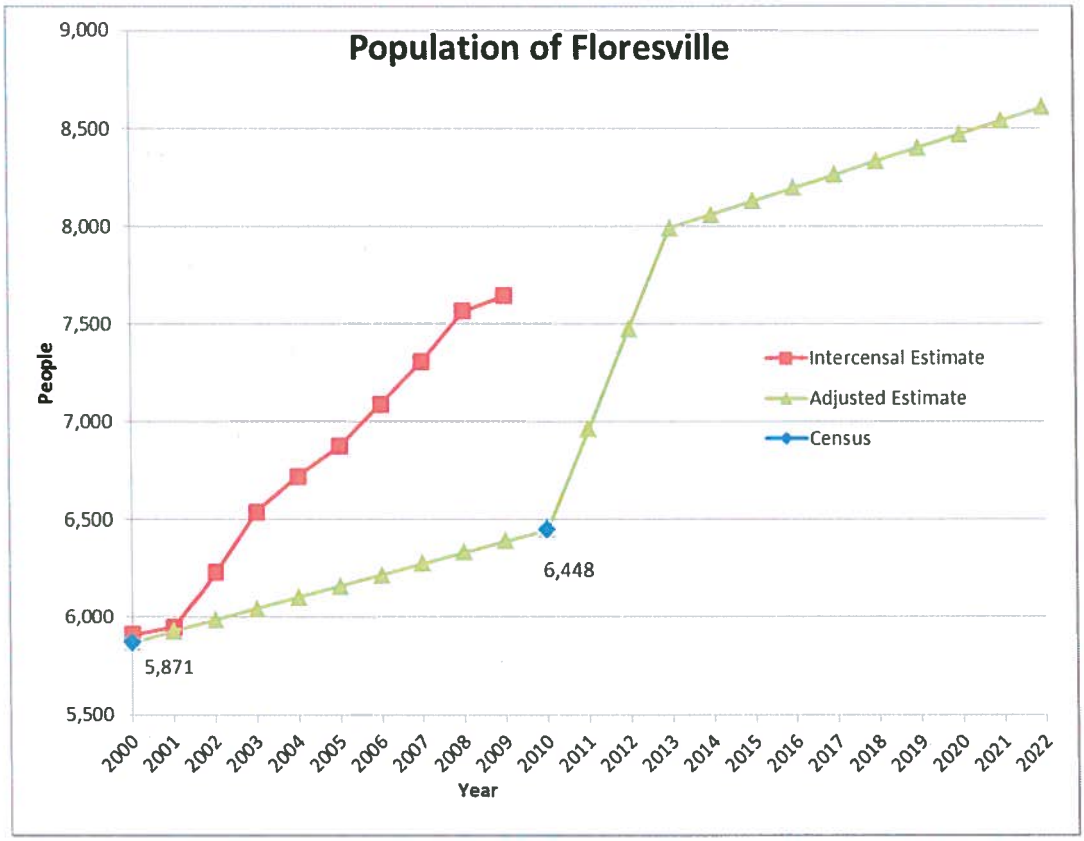
[7] Source Center for Community and Business Research at UTSA: Economic Impact of the Eagle Ford Shale, February 2011

Projection Results

In order to draw meaningful conclusions, an assumption on how the oil workforce grows had to be made. Given the history of the Bakken shale play which is an older shale play in North Dakota and Montana and its similarity to the Eagle Ford shale play, the production buildup should be similar as well. Assuming 2010 to be the first year of production, the buildup can be expected to take three years.[8] After that the plateau stage is reached where production rates remain constant. Production rates, at least in the first half of the economic life of an oil and gas play, should correlate to the employment rate of the industry. By 2013 the influx of new workers should diminish and the oil population should hold steady for the length of this study. Below is a chart of the population estimates of Floresville through 2022 along with the intercensal estimates published by the U.S. Census Bureau. The intercensal estimates have been used between 2000 and 2010 as a population estimate for growth of the city. It was largely overestimated, but can be counted as a blessing because it buffered the large increase the Eagle Ford Shale Boom has had on the population.

Estimated Eagle Ford Shale Population Impact on Floresville	
Year	Population
2010	0
2011	446
2012	891
2013	1,337
2014	1,337
2015	1,337
2016	1,337
2017	1,337
2018	1,337
2019	1,337
2020	1,337
2021	1,337
2022	1,337

Estimated Population of Floresville	
Year	Population
2010	6,448
2011	6,962
2012	7,476
2013	7,990
2014	8,059
2015	8,127
2016	8,196
2017	8,264
2018	8,333
2019	8,401
2020	8,470
2021	8,538
2022	8,607



[8] Source Center for Community and Business Research at UTSA: Economic Impact of the Eagle Ford Shale, February 2011

Zoning

Introduction

The city management has been working to adopt zoning as a means of preserving the character of the community. Much of the choices made will affect the structure of the city in the future. Undoubtedly the city is facing unstructured growth and urban sprawl; the costs of allowing these events to occur can literally be measured in real money. Stretching infrastructure such as water, sewer, and roads across longer distances as well as boosting taxes and fees to cover police, fire, and medical services will spread maintenance money thin. Strip development such as what is happening along US 181 produces increased traffic congestion which can lead to decreased air quality in the city.

With that in mind M&S proposes that a zoning plan be created and officially codified to help protect and exemplify the unique neighborhoods and history of Floresville. This will help insure adequate services and facilities, establish acceptable land and water use patterns, inform developers of standards they must design too, enable residents to have an idea of what they can expect to have developed around them, and helps prevent premature urban sprawl.

Current Land Use Pattern

Historically, the city center used to be concentrated around the city hall and commercial center nestled along what is now business loop 181 and C Street. This area is close to the railroad which used to be the major method of transportation until the proliferation of the automobile. Today the railroad line is gone and a hike and bike trail takes its place. Much of the city uses a grid plan where roads are at right angles to each other. The city is divided by two major road arteries, US 181 and HWY 97. Much of the commercial portion of the city lies along these two corridors. A sector of commercial also lies near the historical city center.

As of this time, there is no official zoning ordinance so citizens can build anything within reason. Due to the proliferation of RV Parks the City has already started the process of creating a zoning plan.

Factors Affecting Land Use

The southwest portion of the city encroaches on and, in certain places, borders the San Antonio River. This river forms a natural barrier to city growth due to the wide floodplain and limited amount of access points across it. While some limits produced by these inundation areas can be mitigated through engineering others will always remain. There are no constraints placed on expansion of the city in any direction from other cities extraterritorial jurisdictions. Other sewer services do not inhibit the growth of Floresville's sewer CCN. Water service areas from companies such as Sunko, Oak Hills, and Picosa have boxed in Floresville and in some cases border the city limits. Large-lot residential

development can be built in many areas in and around Floresville, but higher density developments of residential as well as commercial and industrial depend upon water and sewer services to be available.

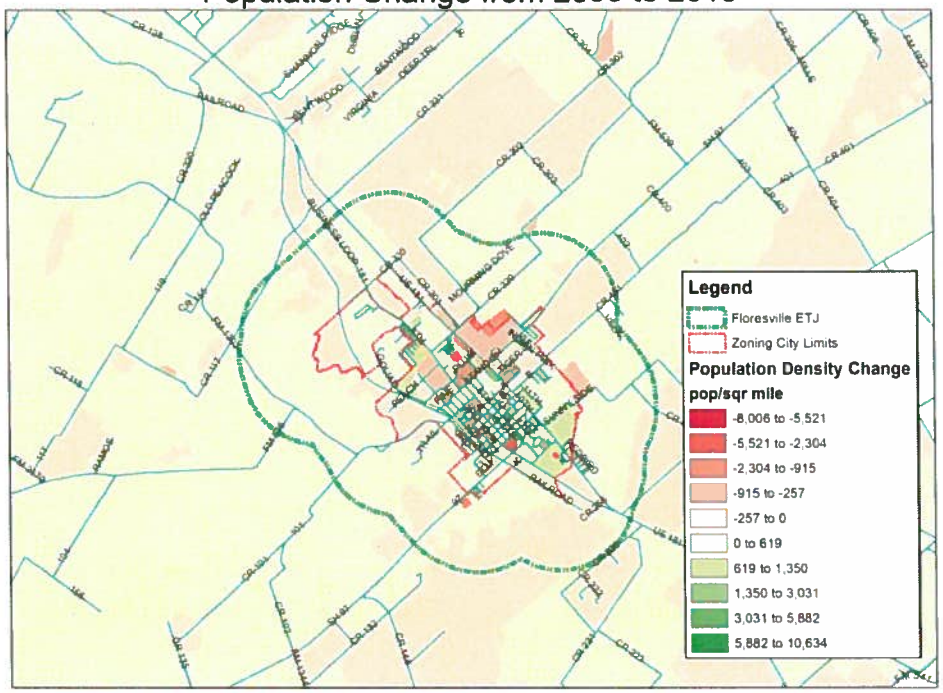
Future Land Use Patterns

The people of Floresville currently face a choice as to whether they should change the face of the city or to preserve the city currently as it is. City representatives should work with concerned citizens, developers, economic development volunteers to promote the right kind of development without causing undue rights restrictions to property owners. In this report, M&S has attempted to present several scenarios on how development could grow depending on what sort of regulations are chosen. They are not all-inclusive and there are a variety of other scenarios which are equally plausible. Those included here were chosen for the sake of furthering discussion.

Scenario 1: No Zoning

The city does not develop zoning and continues running as is. Currently commercial growth is occurring generally northwest of the city along US 181 and northeast of the city along HWY 97. An analysis has been performed to determine the population change over the last decade using the U.S. Census data. The results of this study can be seen in the map below. The residential population has been increasing in patches that are generally more toward the south and west sides of town and decreasing in the northeast. It is expected that any developable land will become residential in the south and west. Commercial will continue to increase north along US 181 and east along HWY 97.

Population Change from 2000 to 2010



Freedom to develop property anywhere allows market forces to balance demand for residential, industrial, and commercial properties. This also allows RV parks and other citizen decreed nuisances to be developed along US 181 or mixed in residential areas. The business district may lose its historical flair as new businesses come in and tastes change. This method can be sustainable as Houston, Texas currently operates without any zoning. Largely, nuisances are kept in check through publicly accepted norms and costs associated with not being in public favor.

Scenario 2: Planned Use Development Zoning

The city develops a zoning plan regulating use of property. Separation of usage types protect areas from light, sound, and smell pollution. Mixed use zoning also allows commercial spots such as grocery stores to be built close to residential houses. If desired a business district could be zoned so that the feel of Floresville is preserved. One of the potential cons of this type of zoning is the reliance on special use permits to keep the plan flexible for odd situations. Extra caution is needed when setting precedents that could cause public backlash.

Scenario 3: Smart Growth Zoning

Zoning defined based on broad and flexible land uses. More of the city is classified under mixed use zoning. Residential areas allow for affordable housing construction. Separate standards are created for well-established areas of the city. Rules allow for negotiation with large key Developments which may not fit with current zoning. This method may require the most thought up front, but should be less burdensome to manage in years to come. Regulations may take time to understand by the public as the ideas expressed could be different than what they are used to.

Any zoning plan adopted by the city should adhere to the following recommendations. Any code should be written clearly and readily accessible by the public. Placing city regulations on a website will improve efficiency and responsiveness to citizens. Graphics and illustrations which visually describe how to comply with zoning should be added throughout the plan to bolster understanding. Zoning should be a living document that is able to change over time.

Parks

Introduction

Parks in Floresville were previously assessed in 2007 through the City of Floresville Park and Recreation Plan. The purpose of this section is to update the plan created in 2007 and provide continued guidance on park development. Also examined were possible ways the city could tie park facilities into the comprehensive plan for the San Antonio River System. Information about the comprehensive plan can be found in the "San Antonio River Basin Plan for Nature Based Park Resources" provided by the San Antonio River Authority (SARA).

Methodology

While there are many ways to calculate and classify parks, the method from the 2007 assessment has been used in this report as much as possible for the sake of continuity. The criteria to be evaluated has been built using data from the National Park and Recreation Association (NRPA), San Antonio River Authority (SARA), Texas Park and Wildlife Department (TPWD), and input from the City and the public.

The NRPA created Level of Service (LOS) guidelines to help communities develop a plan for parks and provide suggested sizes and types of facilities per capita. While the criteria seem pertinent for this study, populations grow and tastes change. Additional input from the citizens of Floresville should be sought in the future.

Parks were categorized by use and size. The classification of parks used for Floresville can be seen in the table below.

Parks, Open Space, and Pathways Classifications Table[9]			
Park Classifications	General Description	Location Criteria	Size Criteria
Mini Parks	Used to address limited, isolated or unique recreational needs	Less than a 1/4 mile distance in residential setting.	Between 2500 sq.ft. and one acre in size
Neighborhood Parks	Neighborhood Parks remains the basic unit of the park system and serves as the recreational and focus of the neighborhood. Focus is on the informal, active and passive recreation.	1/4 to 1/2 mile distance and uninterrupted by non-residential roads and other physical barriers.	5 acres is considered minimum size. 5 to 10 acres is optimal
Community Parks	Serves broader purpose than the neighborhood park. Focus is on meeting community-based recreational needs, as well as preserving unique landscapes and open spaces.	Determined by the quality and suitability of the site. Usually serves two or more neighborhoods and 1/2 to 3 mile distance.	As needed to accommodate desired uses. Usually between 30 and 50 acres.
Greenways	Effectively tie park system components together to form a continuous park environment. Greenways are often easements, riverfronts, or abandoned railroad corridors.	Resource availability and opportunity.	Variable
Recreational Facilities	Parks and recreation facilities which contribute to the public park and recreation system.	Variable - dependent on specific use.	Variable
Regional Parks	Activities available in regional parks may include picnicking, boating, fishing, swimming, camping, trail use, golfing, etc.	Serve entire cities or regions	Over 200 acres

Park Inventory

A current inventory of parks within and near Floresville was done. Any public recreational area that is open to the public during normal hours of the day was counted. Neither public school facilities nor local church facilities were counted in this plan as requested by the city. The public parks owned by the city are:

- Pecan Park (Neighborhood Park)—which contains swings, slides, miniature fort, spring rides, 2 multi-level play structures, 6 picnic tables, grills, ½ mile walking trail, and restrooms.
- River Park (Community Park)—which contains 2 baseball fields, 1 softball field, 4 soccer fields, and 1 multi-use practice field, playground, 2 volleyball courts, along with a swimming pool, 2 pavilions, 1 mile walking trail, grills, 18 picnic tables, related concessions stands and restrooms.
- Lodi Park (Mini Park)—which contains 2 lighted basketball courts and restrooms.

[9] Adapted from the NRPA Parks, Recreation, Open Space and Greenways Guidelines

- The Floresville Hike and Bike Trail (Greenway)—which is a 2 mile hiking trail along the old railroad right of way with railroad depot and bathroom facilities.
- The Wilson County Community Center (Recreational Facility)—which currently contains a community center with reception hall and gym.
- Canta Rana "Singing Frogs" Park (Neighborhood Park)—which contains 4 picnic tables and a play structure.
- Skate Park (Neighborhood Park)—which has a skateboarding area complete with ramps, jumps, rails, stairs, boxes, 2 picnic tables, and restrooms.

Other parks within the community are:

- Masonic Youth Park (Neighborhood Park)—which has 6 soccer fields, 2 picnic tables and restrooms.
- Wilson County Show Barn (Recreational Facility) —which has a show barn and rodeo arena.
- American Legion Park (Mini Park)—which has 2 tennis courts, 2 basketball courts, 2 picnic tables, the American Legion Hall, and restrooms.
- Maverick Golf Club (recreational facility)—18 hole golf course with putting green, driving green, and rental clubs and carts.

Level of Service Analysis

Though most of the parks are located within Floresville, many people outside the city actively use them. In light of this, the Floresville CCD population was used as the service area, which accounts for a significant portion of the overall Wilson County residents. The population of this area for 2012 and 2022 was estimated by applying a linear growth formula using 2000 and 2010 census data. Facilities desired per population were referenced from the 2007 Recreational Plan. The facilities available and needed within Floresville can be seen in the table below.

Outdoor Recreational Facilities					
	Facility	Standard	Presently Available	Additional Needed for 2012 Pop[1]	Additional Needed for 2022 Pop[2]
1	Basketball	1 to 5,000 Pop.	4	1	2
2	Tennis	1 to 2,000 Pop.	2	11	13
3	Volleyball	1 to 5,000 Pop.[3]	2	3	4
4a	Baseball--Peewee/T-Ball	1 to 5,000 Pop.[3]	0	5	6
4b	Baseball--Pony League	1 to 10,000 Pop.[3]	0	3	3
4c	Baseball--Little League	1 to 5,000 Pop.[3]	2	3	4
5	Football	1 to 20,000 Pop.	0	1	2
6	Soccer	1 to 3,000 Pop.[3]	10	(1)	0
7	400 M Running Track	1 to 20,000 Pop.	0	1	2
8	Golf Driving Range	1 to 20,000 Pop.	1	0	1
9	Softball	1 to 5,000 Pop.	1	4	5
10	Trails	1 system per area	3	0	0
11	Golf Course	1 to 20,000 Pop.	1	0	1
12	Swimming Pool	1 to 20,000 Pop.	1	0	1
13	Water Play Area	1 to 10,000 Pop.[3]	0	3	3
14	Playgrounds	1 per park area	4	4	2
15	Picnic Tables	1 to 1,000 Pop.[3]	34	(8)	(3)
16	Pavilions (2)	1 to 10,000 Pop.[3]	2	1	1
17	Horseshoes	1 to 5,000 Pop.[3]	0	5	6
18	Washers	1 to 5,000 Pop.[3]	0	5	6
19	Shuffleboard	1 to 10,000 Pop.[3]	0	3	3
20	Base/Softball Backstops	2/Regulation field[3]	2	26	30
21	Skatepark	1 to 20,000 Pop.[3]	1	0	1
22	Camping Facilities	1 connection/2,000 Pop [3]	0	13	15

[1]Population of Floresville CCD estimate for 2012: 25,564
[2]Population of Floresville CCD estimate for 2022: 30,961
[3]Local Standards set by community input from 2007 Recreational Plan

Currently Floresville could benefit from additional camping facilities, water play areas, softball fields, football fields, baseball fields, running tracks, tennis courts, and basketball courts. Less active facilities that will especially benefit the older population include horseshoes courts, washers courts, and shuffleboard courts. It may be beneficial to build the sports fields in space-saving patterns together to maximize park usage and also make concession stands more lucrative to the area.

Floresville Parks Level of Service Comparison							
Park Type	NRPA Guidelines	Small Community Guidelines[1]	S Bexar County[2]	Wilson County[2]	Karnes County[2]	Floresville[3] (City Owned)	Floresville[3] (All parks)
Total Park Land/ 1000 Pop.	11.25-20.5	15.0	23.0	8.3	8.4	6.9	15.7
Regional Acres/1000 Pop.	5 to 10	6.5	22.9	4.6	6.5	0.0	8.7
Community Acres/1000 Pop.	5 to 8	9.5	0.0	3.3	0.7	1.3	1.3
Neighborhood Acres/1000 Pop.	1 to 2	4.0	0.2	0.2	0.6	0.5	0.7
Mini Park Acres/1000 Pop.	0.25 to 0.50	0.0	0.0	0.2	0.5	0.0	0.1
Other Acres/1000 Pop.			0.0	0.0	0.1	5.0	5.0

[1]State of Colorado Small Community Park and Recreation Planning Standards per SARA guidelines
[2]San Antonio River Basin Plan for Nature Based Park Resources 2006
[3]Population of Floresville CCD estimate for 2012: 25,564

The average amount of parkland per 1,000 people for cities with a population under 20,000 in Texas is 15.6 acres.[10] If all parks within the City are included, the City of Floresville is currently slightly above this state average. The tables below show a comparison of the total new parkland required to meet the minimum recommended ratios according to two standards: the NRPA and SARA. As requested by the City, evaluations were performed to determine the level of service requirements if only City-owned parkland were considered in the analysis, and again if all parkland from the above inventory, both public and private, were considered.

Additional Park Acreage Needed Per Minimum NRPA Guidelines (City Owned)[3]						
			2012[1]		2022[2]	
Park Type	NRPA Minimum Ratio (acres / 1000 Population)	Existing Parks (acres)	Existing Parks Ratio (acres / 1000 Population)	Required Parks (acres)	Existing Parks Ratio (acres / 1000 Population)	Required Parks (acres)
Regional	5	0.0	0.0	127.8	0.0	154.8
Community	5	33.1	1.3	94.8	1.1	121.8
Neighborhood	1	13.8	0.5	11.8	0.4	17.2
Mini Park	0.25	1.0	0.0	5.4	0.0	6.7
Other	N/A	116.7	4.6	N/A	3.8	N/A
Total		164.6		239.8		300.5
Total Park Land[4]	11.25	164.6	6.4	123.0	5.3	183.8

[1]Population of Floresville CCD estimate for 2012: 25,564
[2]Population of Floresville CCD estimate for 2022: 30,961
[3]Additional acreage required to meet NRPA minimums if only City-owned parks are included in evaluation
[4]Required acreage to meet Total Park Land minimum would be satisfied by fulfilling individual park type minimums

[10] 2005 Land and Water Resources Conservation and Recreation Plan by TPWD. http://www.tpwd.state.tx.us/publications/pwdpubs/pwd_pl_e0100_0867/land_priorities/park_analysis/

Additional Park Acreage Needed Per Minimum NRPA Guidelines (All Parks)[3]						
			2012[1]		2022[2]	
Park Type	NRPA Minimum Ratio	Existing Parks	Existing Parks Ratio	Required Parks	Existing Parks Ratio	Required Parks
	(acres / 1000 Population)	(acres)	(acres / 1000 Population)	(acres)	(acres / 1000 Population)	(acres)
Regional	5	221.6	8.7	0.0	7.2	0.0
Community	5	33.1	1.3	94.8	1.1	121.8
Neighborhood	1	18.5	0.7	7.0	0.6	12.4
Mini Park	0.25	1.8	0.1	4.6	0.1	5.9
Other	N/A	127.5	5.0	N/A	4.1	N/A
Total		402.5		106.4		140.1
Total Park Land[4]	11.25	402.5	15.7	0.0	13.0	0.0

[1]Population of Floresville CCD estimate for 2012: 25,564
[2]Population of Floresville CCD estimate for 2022: 30,961
[3]Additional acreage required to meet NRPA minimums if all parks within listed inventory are included in evaluation
[4]Total Park Land minimum is satisfied with existing parks

Additional Park Acreage Needed Per Minimum SARA Small Community Guidelines (City Owned)[3]						
			2012[1]		2022[2]	
Park Type	SARA Minimum Ratio	Existing Parks	Existing Parks Ratio	Required Parks	Existing Parks Ratio	Required Parks
	(acres / 1000 Population)	(acres)	(acres / 1000 Population)	(acres)	(acres / 1000 Population)	(acres)
Regional	7	0.0	0.0	166.2	0.0	201.2
Community	9.5	33.1	1.3	209.8	1.1	261.1
Neighborhood	4	13.8	0.5	88.5	0.4	110.1
Mini Park	N/A	1.0	0.0	N/A	0.0	N/A
Other	N/A	116.7	4.6	N/A	3.8	N/A
Total		164.6		464.5		572.4
Total Park Land[4]	15.00	164.6	6.4	218.9	5.3	299.9

[1]Population of Floresville CCD estimate for 2012: 25,564
[2]Population of Floresville CCD estimate for 2022: 30,961
[3]Additional acreage required to meet SARA minimums if only City-owned parks are included in evaluation
[4]Required acreage to meet Total Park Land minimum would be satisfied by fulfilling individual park type minimums

Additional Park Acreage Needed Per Minimum SARA Small Community Guidelines (All Parks)[3]						
			2012[1]		2022[2]	
Park Type	SARA Minimum Ratio	Existing Parks	Existing Parks Ratio	Required Parks	Existing Parks Ratio	Required Parks
	(acres / 1000 Population)	(acres)	(acres / 1000 Population)	(acres)	(acres / 1000 Population)	(acres)
Regional	7	221.6	8.7	0.0	7.2	0.0
Community	9.5	33.1	1.3	209.8	1.1	261.1
Neighborhood	4	18.5	0.7	83.7	0.6	105.3
Mini Park	N/A	1.8	0.1	N/A	0.1	N/A
Other	N/A	127.5	5.0	N/A	4.1	N/A
Total		402.5		293.5		366.4
Total Park Land[4]	15.00	402.5	15.7	0.0	13.0	62.0

[1]Population of Floresville CCD estimate for 2012: 25,564
[2]Population of Floresville CCD estimate for 2022: 30,961
[3]Additional acreage required to meet SARA minimums if all parks within listed inventory are included in evaluation
[4]Required acreage to meet Total Park Land minimum would be satisfied by fulfilling individual park type minimums

San Antonio River Basin Plan

The regional concept for the San Antonio River Basin generally involves developing and linking the natural and historical areas within the watershed through an extensive trail network for hiking, biking, trail riding, and river access. Floresville is fortunate enough to have a variety of natural and historical areas nearby. The San Antonio River boarders parts of Floresville and River Park is located along the river as well. This river area can be used for kayaking or canoeing if suitable access points are created and water levels allow. With the Rancho de las Cabras National Historic Area just down the road from the River Park historical and nature-based tourism can be cultivated by promoting the history in the area and by providing better multimodal access to city parks and camping areas. Construction on the Rancho de las Cabras National Historical Park is anticipated to start in 2014[11].

Public Input

Public input from the workshop held at City Hall provided useful information that would not have otherwise been able to be acquired. After all, it is the citizens in Floresville who use the parks each day and know about the little things that would be beneficial to the community. A summary of some items of general consensus is described below.

Bathroom facilities at Pecan Park should be upgraded. As these bathrooms are in the floodplain it is not easy to do this. M&S believes that two options are still available: Making improvements of less than 50% of the cost of the building or elevating the structure. A pecan tree revitalization plan should be put in place at Pecan Park to ensure the trees continue to be there for generations. A privacy fence should be built in Canta Rana Park along the boundary with the WWTP.

[11] 2011 San Antonio Missions National Historical Park Impact and Opportunity by the NPCA

Water

Introduction

The City of Floresville owns and operates their own water system supplied exclusively from 3 groundwater wells. In addition to the wells the City's infrastructure consists of ground and elevated storage tanks as well as various pump houses. As part of this Master Plan M&S reviewed the city's infrastructure for compliance with the TCEQ minimum capacity regulations.

The applicable regulations can be found in TAC Chapter 290.45 (b) Community Water Systems. The City of Floresville has more than 200 connections and is therefore governed by subsection (D). The requirements are broken into the following categories:

1. Well requirements.
2. Total storage requirements.
3. Pump requirements.
4. Elevated storage requirements.
5. Emergency power requirements (if the elevated storage requirements are not met).

A brief description of the specifics contained in each of these requirements is as follows:

Well Requirements

Two or more wells per pressure zone having a total capacity of 0.6 gpm per connection provided no interconnect with another pressure zone or system exists.

Total Storage Requirements

Total storage (both ground and elevated) must be at least 200 gallons per connection.

Pump Requirements

A minimum of 2 pumps capable of producing the lesser of either 2.0 gpm per connection or 1000 gpm and the ability to meet peak hourly demands with the largest pump out of service—whichever is less. These requirements are lowered if 200 gallons per connection of elevated storage are provided.

Elevated Storage Requirements

For systems with over 2500 connections an elevated storage capacity of 100 gallons per connection is required.

Emergency Power Requirements

If the elevated storage requirements are not met then emergency power capable of providing 0.35 gpm per connection must be provided unless an emergency interconnect with another pressure zone or system exists.

M&S systematically reviewed the information provided by the City for compliance with each of these requirements. In addition compliance with the 85% rule was reviewed. This mandate stipulates that if a system is currently utilizing 85% of their capacity they must submit a plan to TCEQ explaining how they are going to expand to meet additional demands in the future.

System Operation

The City of Floresville's system is operated as two pressure zones that are, as of the date of this report, connected hydraulically using Pressure Reducing Valves (PRVs). As such, the system can be evaluated as a whole unit since the pressure zones are not isolated from each other.

System Statistics

Historical data for the year 2011 (through November) was provided to M&S for review. Additionally specifications for each major component of the City's water infrastructure were made available to M&S staff for review. The following tables summarize the major system statistics which were used in the compliance review.

Hospital Boulevard Pump Station	
Well Capacity (gpm)	1,200
Ground Storage Capacity (gal)	300,000
Elevated Storage Capacity (gal)	250,000
Total Storage (gal)	550,000
Pump Capacity (gpm)	1,500
No. Pumps	2
Total Pumping Capacity (gpm)	3,000

Plaza Pump Station	
Well Capacity (gpm)	1,200
Ground Storage Capacity (gal)	80,000
Elevated Storage Capacity (gal)	250,000
Total Storage (gal)	330,000
Pump Capacity (gpm)	1,250
No. Pumps	3
Total Pumping Capacity (gpm)	3,750

"B" Street Pump Station	
Well Capacity (gpm)	1,000
Ground Storage Capacity (gal)	80,000
Elevated Storage Capacity (gal)	-
Total Storage (gal)	80,000
Pump Capacity (gpm)	1,150
No. Pumps	3
Total Pumping Capacity (gpm)	3,450

Additional Infrastructure	
Ground Storage Capacity (gal)	210,000
Elevated Storage Capacity (gal)	50,000
Pump Capacity (gpm)	750

Totals	
Total Well Capacity (gpm)	3,400
Ground Storage (gal)	670,000
Elevated Storage (gal)	550,000
Total Storage (gal)	1,220,000
Maximum Daily Production (gal)	4,896,000

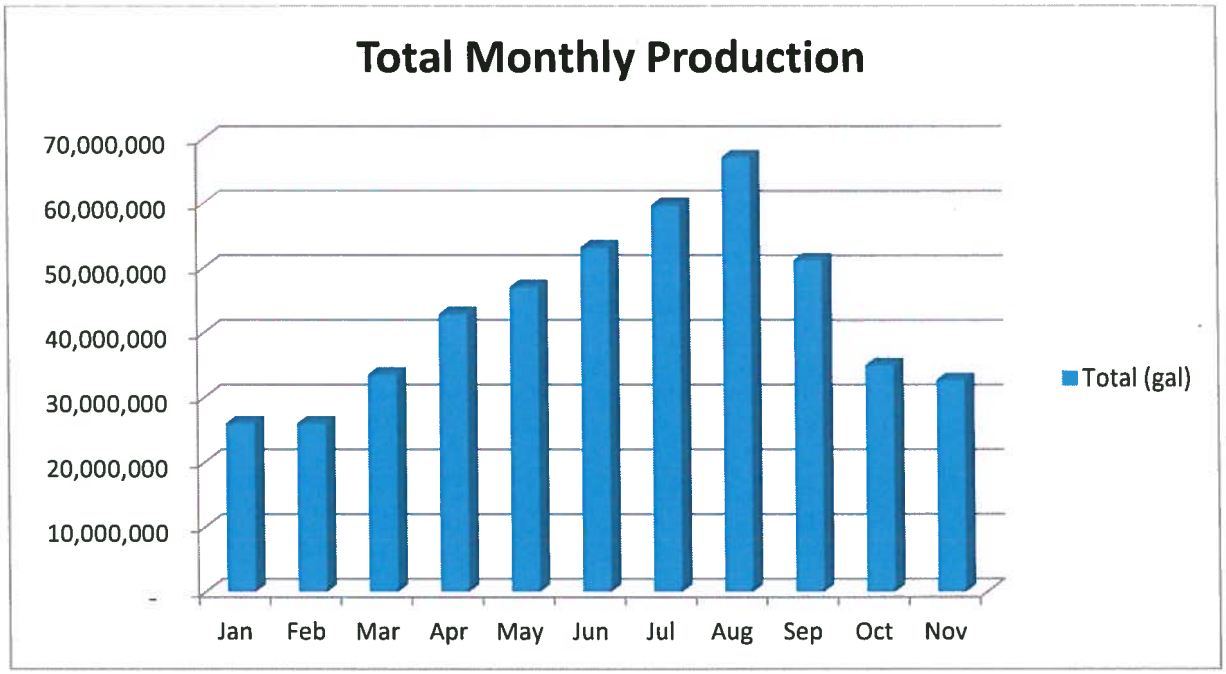
The number of connections to a water system varies from month to month due to shutoffs, service cancellations and new connections. Over the course of 2011 the number of connections to the City of Floresville's system was as follows:

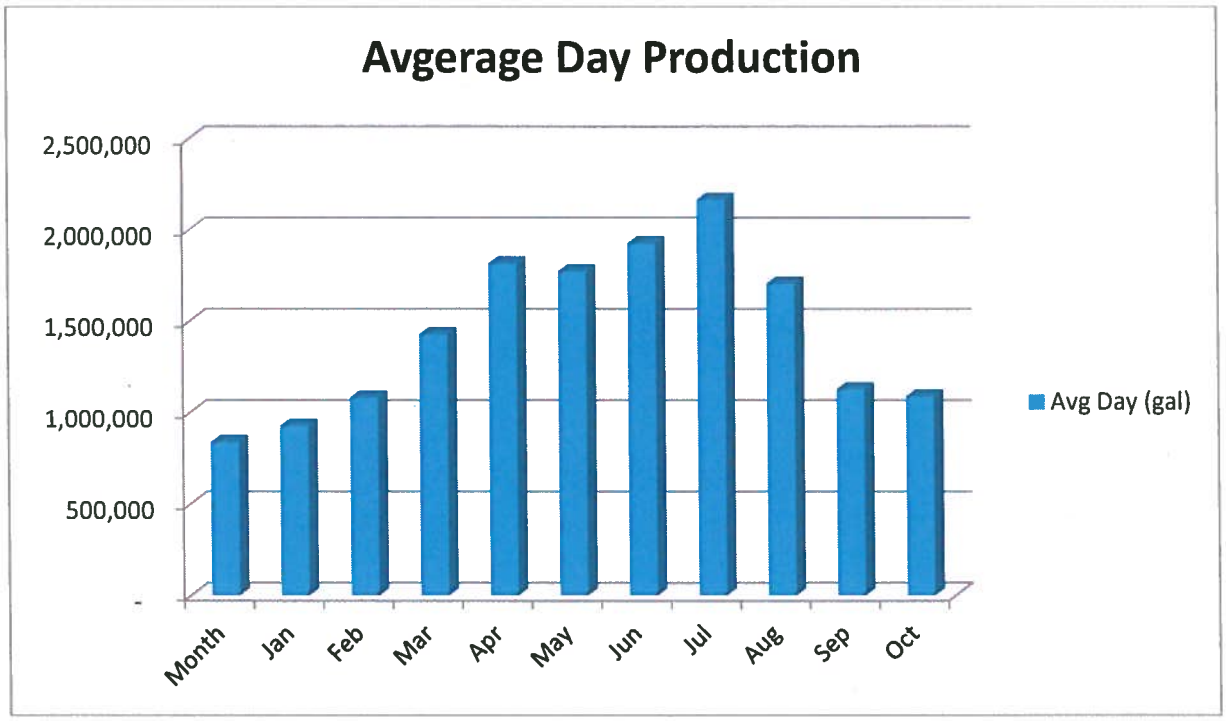
Month	No. Connections
Jan	2458
Feb	2457
Mar	2463
Apr	2456
May	2377
Jun	2384
Jul	2384
Aug	2486
Sep	2400
Oct	2490
Nov	2474
Min	**2377**
Max	**2490**
Average	**2439**

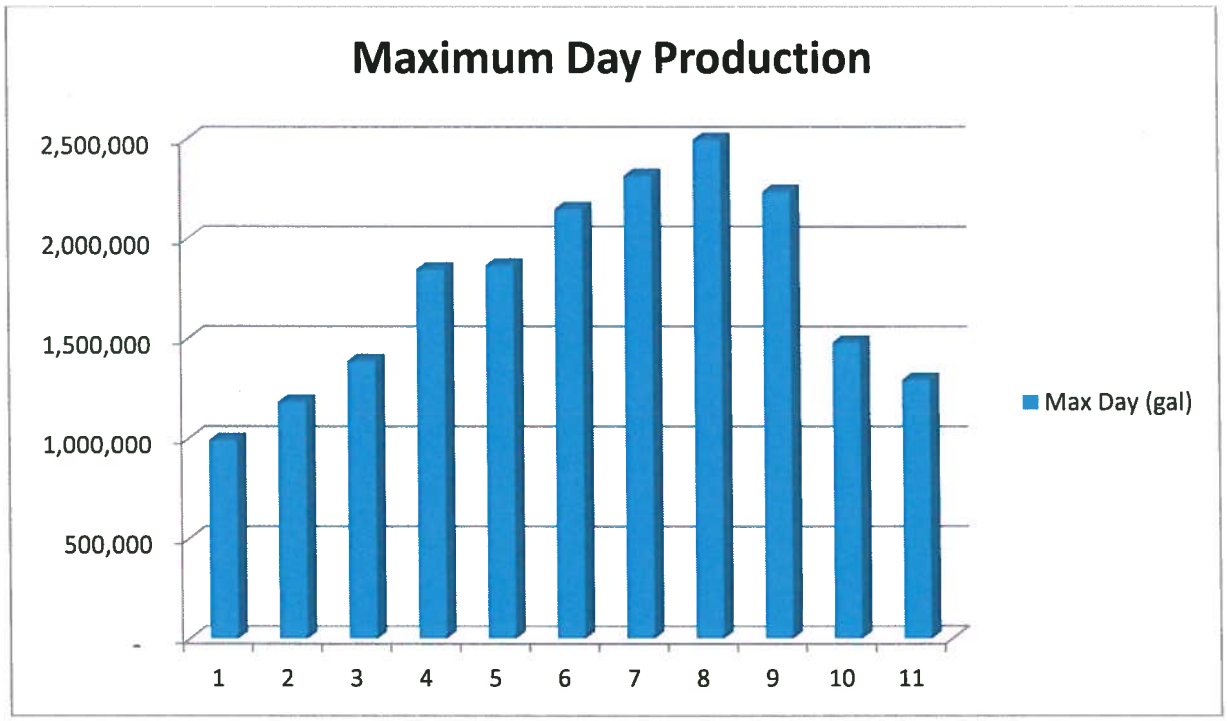
As the maximum was a mere 10 connections from the TCEQ benchmark of 2500, M&S staff elected to evaluate the system based on the regulations for systems containing 2500 connections or greater.

Finally, the production statistics for 2011 are presented below in both tabular and graphical form.

2011			
Month	Total (gal)	Avg Day (gal)	Max Day (gal)
Jan	25,999,000	839,000	994,000
Feb	25,995,000	928,000	1,185,000
Mar	33,549,000	1,082,000	1,389,000
Apr	42,878,000	1,429,000	1,847,000
May	47,038,000	1,817,000	1,867,000
Jun	53,175,000	1,773,000	2,151,000
Jul	59,726,000	1,927,000	2,317,000
Aug	67,173,000	2,167,000	2,497,000
Sep	51,210,000	1,707,000	2,238,000
Oct	35,003,000	1,129,000	1,482,000
Nov	32,709,000	1,090,000	1,295,000







With these statistics established the M&S team moved on to analyze the City of Floresville's water supply system for compliance with the TCEQ regulations.

Well Requirements

The TCEQ regulations require 0.6 gpm/connection of well capacity in total. Therefore the maximum number of connections that the City can have is as follows:

$$Maximum\ No.of\ Connection\ = \frac{Total\ Well\ Capacity\ (gpm)}{0.6\ (\frac{gpm}{connection})}$$

$$\rightarrow \frac{3{,}400\ gpm}{0.6\ (\frac{gpm}{connection})} = 5{,}667\ Connections$$

The maximum number of connections which the City can have and still be in compliance with TCEQ well capacity regulations is **5,667**.

Conservatively assuming 2500 current connections the City is currently at **44%** of its capacity in terms of number of possible connections based on available well capacity. TCEQ rules further state that if a system is at 85% of its capacity planning materials for system expansion must be submitted to TCEQ. The City is well below this benchmark.

Total Storage Requirements

With both ground and elevated storage the City of Floresville currently has 1,220,000 gallons of available storage. Total storage must be 200 gallons per connection. Accordingly, the maximum number of connections which the City can have based on the currently available storage is as follows:

$$Maximum\ No.of\ Connections = \frac{Total\ Storage\ Capacity\ (gal)}{200\ (\frac{gal}{connection})}$$

$$\rightarrow \frac{1{,}220{,}000\ (gal)}{200\ (\frac{gal}{connection})} = 6{,}100\ Connections$$

The maximum number of connections which the City can have and still be in compliance with TCEQ total storage regulations is **6,100**.

Assuming 2500 current connections the City is currently at **41%** of its capacity in terms of number of possible connections based on available storage.

Elevated Storage Requirements

Taking into account all available elevated storage the City's current capacity is 550,000 gallons. Total elevated storage is to be 100 gallons per connection. Accordingly, the maximum number of connections which the City can have based on the currently available elevated storage is as follows:

$$Maximum\ No.\ of\ Connections = \frac{Total\ Elevated\ Storage\ Capacity\ (gal)}{100\ (\frac{gal}{connection})}$$

$$\rightarrow \frac{550{,}000\ (gal)}{100\ (\frac{gal}{connection})} = 5{,}550\ Connections$$

The maximum number of connections which the City can have and still be in compliance with TCEQ total storage regulations is **5,500**.

Assuming 2500 current connections the City is currently at **46%** of its capacity in terms of number of possible connections based on available elevated storage.

Service Pump Requirements

The City is governed by the requirement that each pump be able to produce a minimum of 1000 gpm and meet peak demands with 1 pump out of service. As every pump station is redundant and all pumps can produce greater than 1000 gpm the City is in compliance with this regulation.

Summary

In summary the City of Floresville's water system, based on the data provided to M&S, is in full compliance with the TCEQ water supply requirements. Additionally across the board the City is well above the minimal margins set by the state. M&S recommends that the City place a low priority on adding capacity of any type to the system and focus instead on maintaining what is already in place until such time as the City experiences more growth. Additionally, M&S recommends that the City develop a water system model to more effectively manage system growth.

Additional Analysis

In addition to the analysis just described M&S completed the following analysis to determine how close the TCEQ average demand value was to the actual average day demand value for the City of Floresville.

The following table describes the average flow, in gpm, for each month in 2011:

Month	Avg Flow (gpm)
Jan	0.24
Feb	0.26
Mar	0.31
Apr	0.40
May	0.53
Jun	0.52
Jul	0.56
Aug	0.61
Sep	0.49
Oct	0.31
Nov	0.31
Min	**0.24**
Max	**0.61**
Average	**0.41**

What this table reveals is that the City of Floresville matches the TCEQ average for flow per connection in gpm one month out of the year and the rest of the time is well below it. In the event that the TCEQ ever attempts to require the City of Floresville to add additional capacity a more comprehensive review of the City's actual demand would be warranted.

The final analysis completed was for the water demand projected into the future. The following table summarizes the results:

Estimated Water Demands for Floresville					
Year	Population	Average Demand	Max Demand	% Total (Avg)	% Total (Max)
2010	6,448	1,392,768	2,785,536	28%	57%
2011	6,962	1,503,797	3,007,595	31%	61%
2012	7,476	1,614,827	3,229,654	33%	66%
2013	7,990	1,725,856	3,451,712	35%	71%
2014	8,059	1,740,658	3,481,315	36%	71%
2015	8,127	1,755,459	3,510,918	36%	72%
2016	8,196	1,770,260	3,540,521	36%	72%
2017	8,264	1,785,062	3,570,124	36%	73%
2018	8,333	1,799,863	3,599,726	37%	74%
2019	8,401	1,814,665	3,629,329	37%	74%
2020	8,470	1,829,466	3,658,932	37%	75%
2021	8,538	1,844,267	3,688,535	38%	75%
2022	8,607	1,859,069	3,718,138	38%	76%

Based on the population projections generated as part of this Master Plan, the City of Floresville should, if no major changes occur, have enough water supply for the immediate future.

Wastewater

Introduction

The City of Floresville owns, operates, and maintains a wastewater collection and treatment system. As the City is currently experiencing accelerated growth due to local mining operations and as the existing wastewater treatment plant (WWTP) is near capacity, the next stage of infrastructure development must be addressed.

In 2008 Melden & Hunt, Inc. completed a 10-Year Wastewater System Master Plan for the City of Floresville. The report evaluated the wastewater system and provided recommendations to correct existing deficiencies as well as prepare for future growth. The purpose of this present study performed by M&S is to update the Master Plan in preparation of the anticipated imminent expansion and to aid in prioritizing the needed wastewater improvements with other City projects.

This 10-Year Master Plan is for the period from 2012-2022 and is based on existing trends and projections of expected growth. It should be updated as needed to reflect the changing needs of the City.

Available Data

The existing equipment and sizing information in this report is based on the 2008 Master Plan, scans of the existing collection line drawings, tours of the WWTP, and conversations with City personnel. Historic monthly average daily flow and peak daily flow values for 2006-2011 were provided by the plant operators. Historic population was taken from the 2000 and 2010 Census, with linear interpolation for intermediate years. Population estimates are based on Census and TWDB data and observations of mining industry-related growth. Historic daily precipitation amounts for the City of Floresville were obtained from the Utah State University Climate Center.

Methodology

For the period of 2006-2011, the historic annual average daily flow was compared to the population to determine average per capita flow. The Average Daily Flow (ADF) was then averaged across a three-month period to determine a peaking factor and the percent of plant capacity used.

Total daily, monthly, and three-monthly precipitation values were compared to the peak, average daily, and three-month average daily flow values to investigate the correlation between stormwater and effluent flow.

The results of these calculations were then used to predict future flow rates. Two different approaches were compared. The first was to calculate the linear growth trend in the average daily flow and extrapolate that into the future. This approach would typically be adequate for an assumed steady population growth. The second was to use the per capita flow value in conjunction with the population projection developed by M&S as part of the overall 2012 Master Plan. This projection takes into account the anticipated effect of the mining-related growth. For both approaches, a baseline ADF was determined, and the peaking factor applied to determine the maximum expected three-month peak. As the three-month peak is the value TCEQ uses to evaluate the need for plant expansions, recommendations for the timeframe and size of expansion were based on this projection.

Summary of Results

There have been questions within the community as to the ability of the City to meet existing flow requirements. The provided data shows that the plant is currently operating at well below capacity. The improvements made in response to the Melden & Hunt report corrected the majority of the indicated deficiencies, and the plant is well-equipped to perform its existing duties.

However, with the rapid population growth, there will very soon be the possibility that peak flows could exceed both plant capacity and permit requirements. TCEQ requires plants to begin design and financial planning for expansion when the average daily flow exceeds 75% of the permitted flow for three consecutive months, and to obtain authorization for the expansion when the flow reaches 90% for three consecutive months.

The WWTP reached the 75% threshold for two months in 2007, after which the Melden and Hunt Master Plan began the planning process for expansion. Both the historic trend projection and the population growth projection indicate that the 75% capacity threshold can be expected to be regularly exceeded in either the summer of 2012 or 2013, and the 90% threshold reached shortly after that.

The peak flow values were found to be significantly influenced by stormwater, which indicates a large amount of Infiltration/Inflow to the collection system.

Summary of Recommendations

The most critical issue with the wastewater collection and treatment system is the capacity of the treatment plant to handle imminent growth. In order to be proactive in complying with permit requirements and to meet the expected rapid rise in flow, it is the recommendation of M&S that the engineering, permitting, and financial planning for a plant expansion begin immediately, with a target date for construction to begin in 2013 and be completed 2014. As discussed below, M&S recommends a 50% expansion of the plant capacity, for a total of 1.35 MGD, which will be adequate for the projected peak 3-month flow for approximately a 20-year period at current growth trends.

The permitting process typically takes at least 8 months, and can take considerably longer if there is any public objection. Therefore, the City should begin this process without delay. A critical early decision in the design of the expansion will be determining the desired treatment process. This should be decided based on capital cost, O&M costs, reliability, adaptability to potential future permit requirements, and operator familiarity.

At the time of this report the City of Floresville does not have any impact fees in place. It is the recommendation of M&S Engineering that an extremely high priority be put on establishing and implementing impact fees immediately. The establishing and collecting of impact fees is a closely regulated process governed by the Texas Local Government Code as well as other more specific governing entities (such as the TCEQ). The development of appropriate fee structures requires a detailed analysis and report in accordance with a strict process outlined in the law. Normally these fees are created by a team which involves city staff, legal council and engineers. M&S recommends that the City establish a task force or assign city staff to the immediate development of impact fees so that the costs of future infrastructure can be offset by those who will be using it.

As a clarification, as these fees often cause confusion: no existing city resident or business will be affected. Impact fees are charged to new customers who request service or begin development after the date of their implementation. Impact fees are an important vehicle for municipalities and other entities to recoup the costs of infrastructure installation. They allow for infrastructure owners to charge a pro-rata share to new users for improvements already in place or improvements that need to be made.

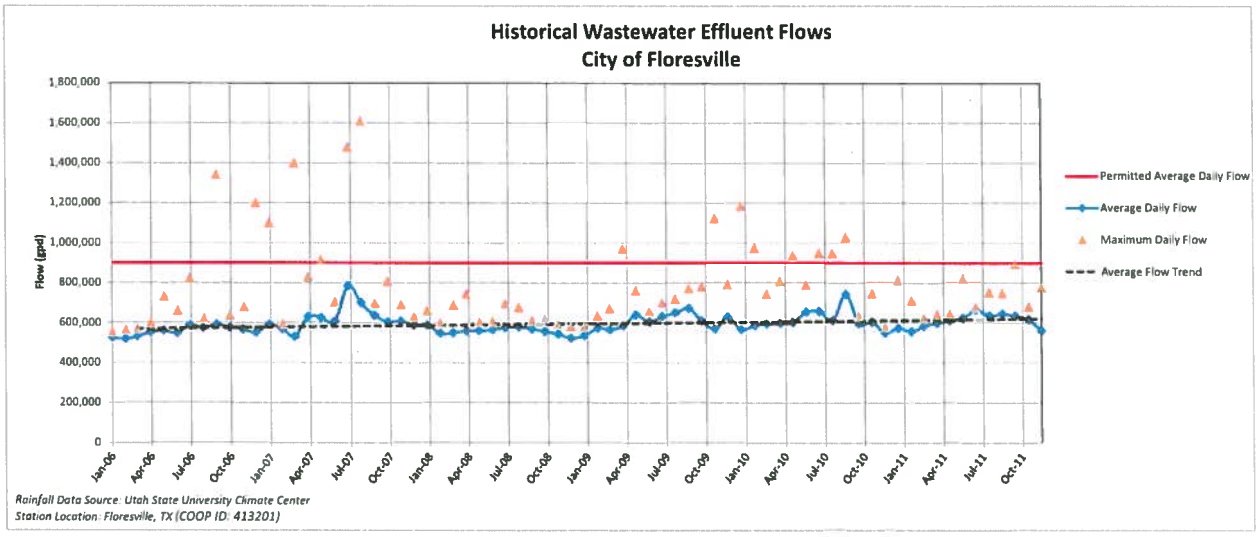
Existing CCN

The City of Floresville currently holds Sewer CCN #20279, a 2726-acre region which represents approximately 90% of the incorporated area. The existing CCN is located almost entirely within the city limits. Recent expansions to the sewer lines along FM 97 and Hwy 181 extend beyond the existing CCN. While there are neighboring Water CCNs, there are no nearby Sewer CCNs.

Historic Flows

The existing TPDES permit authorizes the City of Floresville to discharge 0.90 MGD with a BOD_5 limit of 20 mg/l, a TSS limit of 20 mg/l, and an *E. coli* limit of 63 CFU/100 ml. The permit expires March 1, 2015.

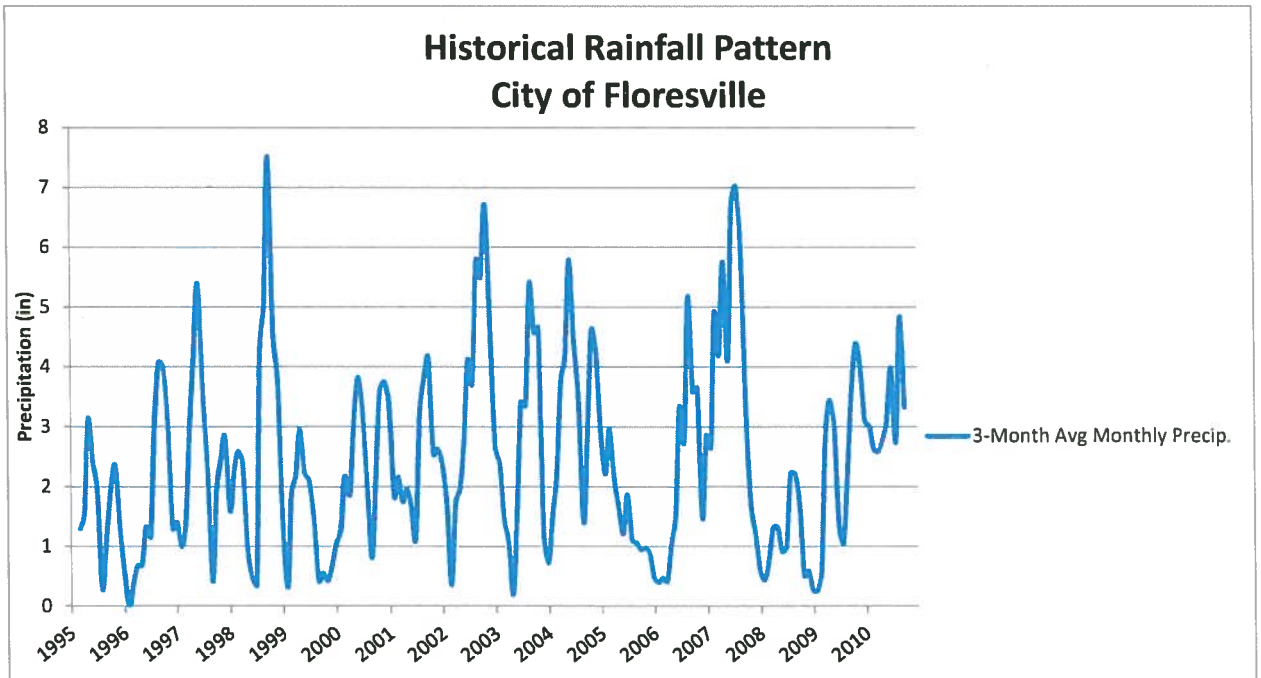
Historic data for the average daily flow and the maximum daily flow was available from January 2006-December 2011. The trend shows a gradual increase in average daily flow of approximately 1.5%, which is consistent with the population growth during this period.



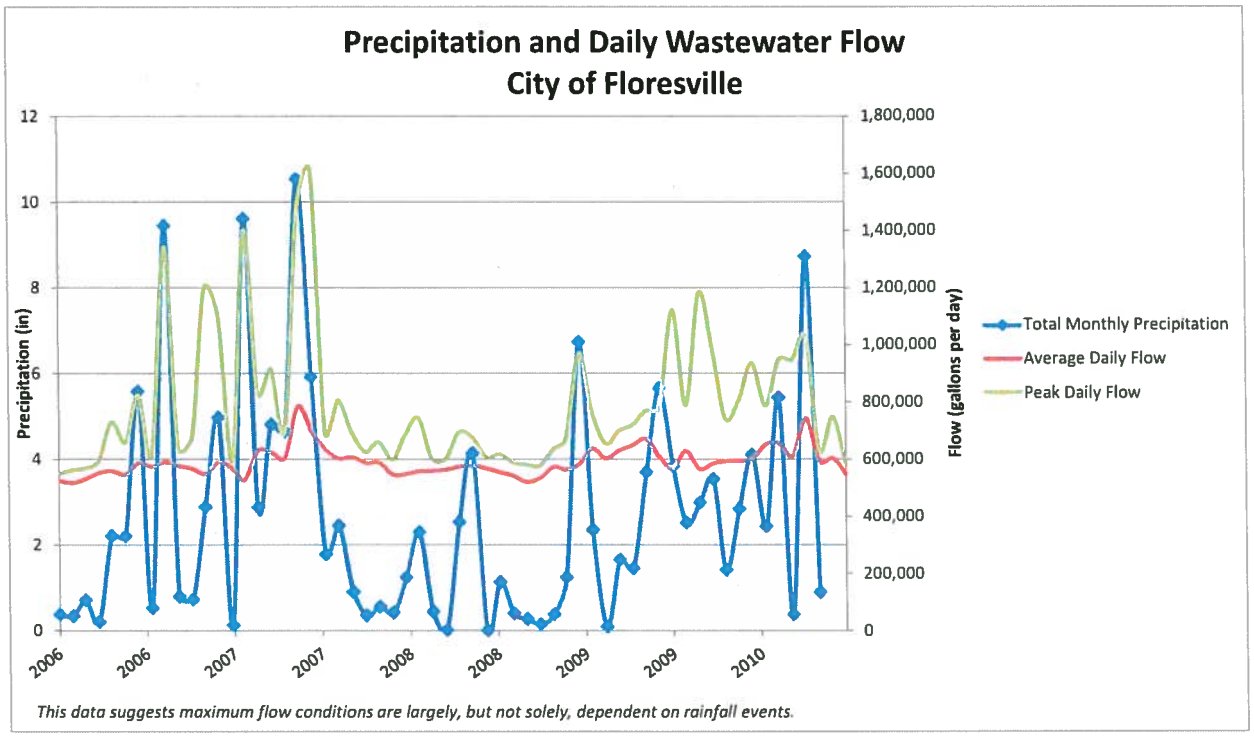
The average daily flow per capita ranges from 87 to 99 gpd with an average flow per capita of 92 gpd. This value, which is within the range specified in TAC 217.32, is used to project a baseline average flow. The maximum variation of the three-month average daily flow from the baseline flow is by a factor of 1.21, occurring in the summer of 2007. This peaking factor value was used in the projected peak daily flow for capacity estimations.

Year	Population	AverageDaily Flow (gpd)	Average Daily Flow Per Capita (gpd / capita)
2006	6,217	555,901	89
2007	6,275	621,805	99
2008	6,333	558,199	88
2009	6,390	604,409	95
2010	6,448	611,987	95
2011	6,962	607,091	87

A plot of recorded flow and total monthly rainfall shows a fairly strong correlation between peak flows and precipitation, indicating a large amount of infiltration/inflow. Precipitation data from the last 15 years suggest that the high rainfall in 2007 is not an aberration, but can be expected every 4-5 years (though of course larger climatic trends would affect this). Consequently, in the absence of significant collection system improvements to reduce infiltration/inflow, the observed three-month peaking factor of 1.21 provides a good basis for long-term planning. The typical peaking factor for years of more average rainfall such as 2009 and 2010 is approximately 1.1.



This data suggests the high monthly precipitation observed in 2007 is not an aberration, and can be expected every 4-5 years.



Existing Collection System

The existing collection system was a major focus in the Melden and Hunt study, including the creation of a SewerCAD model to evaluate dry and wet weather capacities. As such M&S staff performed a review of the data presented in that report and updated by adding the additional infrastructure which has been installed during the intervening time frame.

Pipe Diameter	Length (ft)	Length (miles)
6"	91,422	17.31
8"	45,087	8.54
10"	13,326	2.52
12"	4,258	0.81
15"	2,188	0.41
21"	1,450	0.27
Total	157,731	29.87

The City of Floresville's collection system consists of three main types of improvements: Gravity Lines, Force Mains, and Lift Stations. As Floresville sits across a ridgeline, making gravity lines to the treatment plant often impossible, lift stations with accompanying force mains are required throughout the city.

Lift Station Name	Pump Model	Quantity	hp
97 West	Hydromatic	2	20
Pajarito	ABS	2	10
4D	Barnes	2	3
Park	Hydromatic	2	3
Avalon	Hydromatic	2	10
Wal Mart	Flowserve	2	3

Existing WWTP

In wastewater treatment there are innumerable options for general treatment processes and specific equipment configurations. The existing Floresville plant is a traditional plant in general keeping with

many of the plants constructed throughout the area at the time it was originally permitted and built. Its primary features are influent screening, an oxidation ditch, two clarifiers, a chlorine contact basin, and sludge dewatering equipment.

Location and Discharge Point

The existing wastewater treatment plant is located on Goliad Road at the intersection with Standish St. The plant discharges into the Lodi Branch of the San Antonio River adjacent to the plant site and from there flows approximately two-thirds of a mile into the Segment 1911 of the San Antonio River Basin.

Screening

The City of Floresville recently upgraded its headworks to replace the manual bar screen with a new automatically cleaned bar screen. The screen removes large items from the influent flow which could cause treatment or maintenance issues if allowed entry into later plant processes. These screenings are automatically deposited into adjacent containers which can then be emptied by plant staff as needed.

Aeration

From the headworks the waste enters the oxidation ditch, which is in an extended aeration mode. The oxidation ditch is approximately 661 feet long with a trapezoidal cross section area of 144 ft^2. Oxygen levels are obtained with two permanently mounted brush aerators and one floating aerator. This oxygen maintains the aerobic microorganism population cultivated within the plant which is responsible for breaking down the various organic compounds which need to be removed from the waste stream.

Sedimentation

From the oxidation ditch the aerated effluent is split via two downward acting weir gate valves for deposit into the secondary clarifiers. The original plant built in the 1970s required only one clarifier with the second being added during the last major upgrade of the plant in the mid-1990s. The original clarifier utilizes a peripheral feed with inboard launders while the second utilizes a center feed design. Both clarifiers are in acceptable operating condition. In these large stilling basins the particulate sludge, now present in the waste stream as a result of the aeration process, is settled out and the treated water subsequently removed.

Disinfection

From the secondary clarifiers the flow proceeds to the disinfection process, aimed at removing harmful pathogens from the effluent. The City accomplishes this through the use of dosed chlorine added in a baffled contact chamber at the end of the treatment train.

Discharge

Once through the chlorine contact chamber the treated effluent is pumped into the receiving creek bed. Effluent quantity is measured using a partial flume and ultrasonic meter for recording purposes.

Sludge

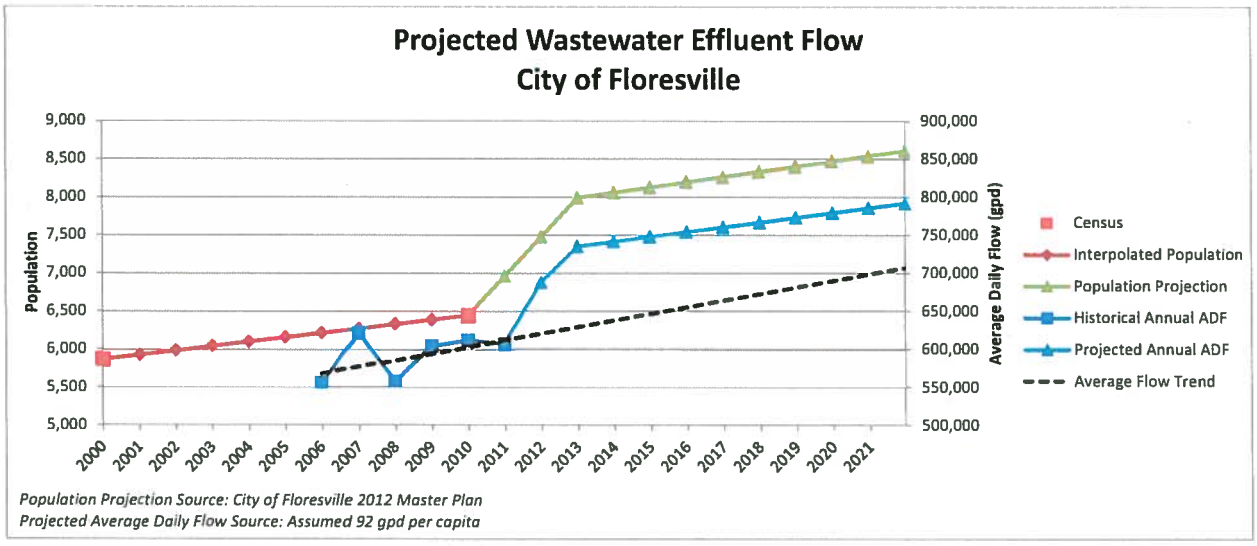
The plant has a set of four sludge drying beds and two smart boxes to use for sludge handling. The sludge removed in the secondary clarifiers is dewatered and transported to a permitted composting operation. Liquid supernatant is directed back to the lift station to be recycled through the plant again.

Projected Population Growth

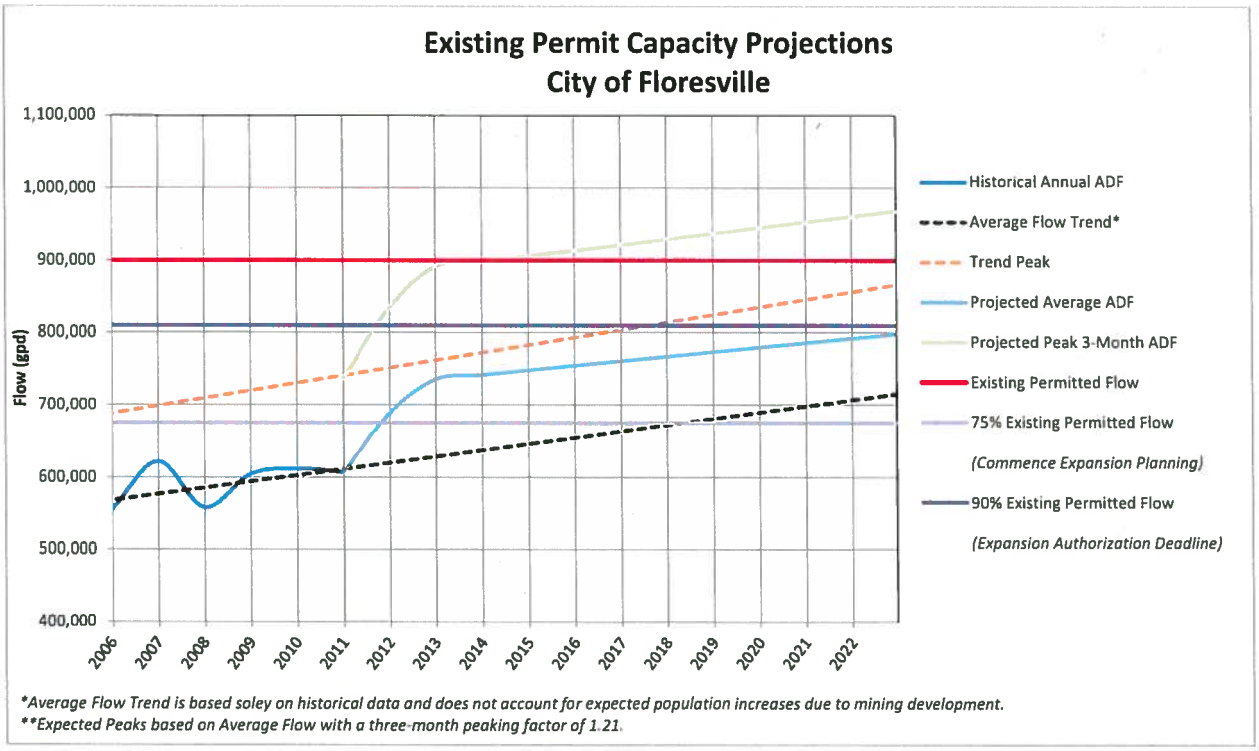
A detailed population analysis and projection was performed as a part of the overall City of Floresville Master Plan. This projection includes a sharp rise in the immediate future due to the impact of the mining activity in the area, followed by a gradual population increase at the observed linear base growth rate. That data was used as the basis for wastewater flow projections. When comparing these numbers with the projection in the 2008 Wastewater Master Plan, it is noted that the intercensus data used by Melden & Hunt to estimate population growth supported an estimated growth rate of 3.5% per year. The correction found in the 2010 Census suggests a linear base growth rate of approximately 70 persons per year (roughly 1.1%).

Projected Flows

Using the previously determined value of 92 gpd per capita, the expected average daily flow was calculated based on the population projection. This represents the most reliable flow prediction. For comparison, the existing trend was also projected to show the expected growth without the influence of the mining population. As plant expansion timeframes are based on the three-month average daily flow, the annual averages are of limited importance. Applying the calculated peaking factor of 1.21 to these base flows provides a more realistic estimation of when the critical plant capacity thresholds can be expected to occur. These estimations are approximate as the actual flow depends on seasonal, climatic, and other factors in addition to population which could, given certain circumstances, cause the existing plant capacity and permitted flow to be exceeded as early as 2013.



Population Projection Source: City of Floresville 2012 Master Plan
Projected Average Daily Flow Source: Assumed 92 gpd per capita



**Average Flow Trend is based soley on historical data and does not account for expected population increases due to mining development.*
***Expected Peaks based on Average Flow with a three-month peaking factor of 1.21.*

Recommended Capital Improvements

Proposed CCN Expansion

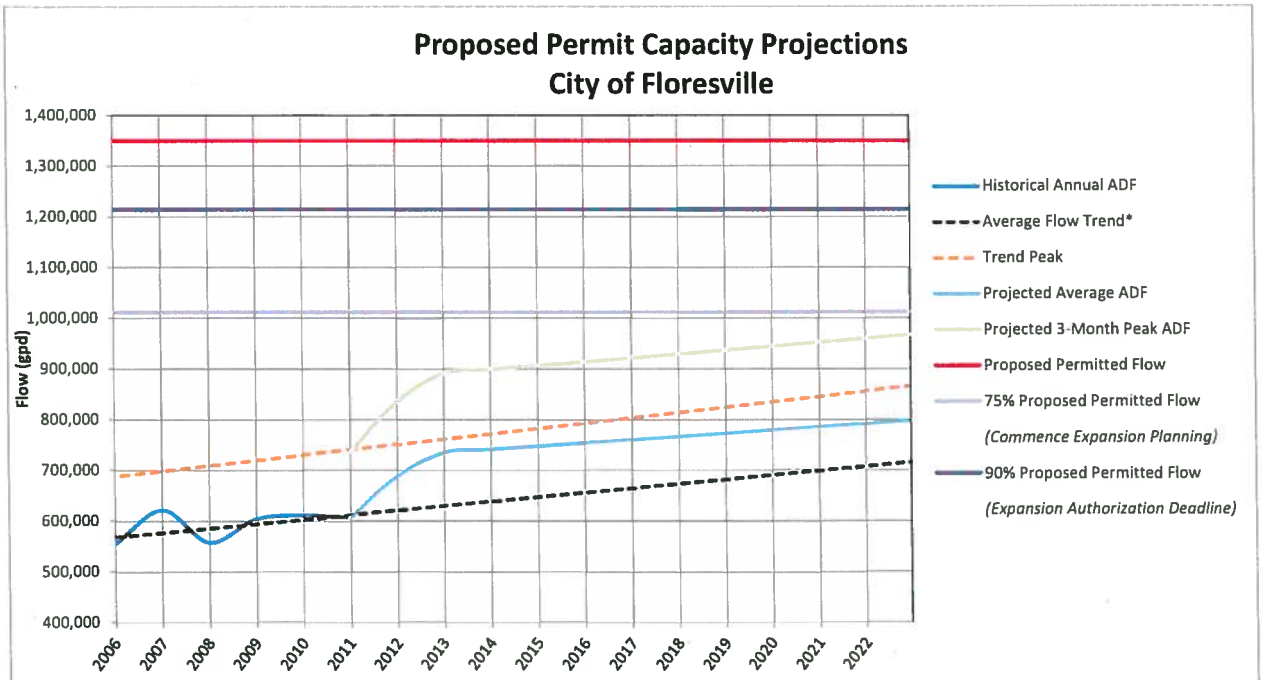
The existing CCN should be corrected to include all area currently within the collection system service area. As the City desires to eventually expand the sewer CCN to include the area within the Annexation Plan, it would make sense to do this at the same time with a single application. Expanding the CCN will affect capacity projections. This will likely only be an issue in the short term until the plant expansion is complete, and care will be needed to ensure additional connections do not exceed the existing plant capacity. Once the plant expansion is complete, any modest CCN additions will not likely have a significant impact on the 20-year capacity estimations.

Proposed Collection System Improvements

As the long-term projected flow is lower in this current study than in Melden & Hunt's original report, the recommendations contained in that report concerning upgrades to the collection system remain sound. These recommendations include maintaining the existing lines to remove blockages, correcting the deficiencies with the Pecan St. sewer line, expanding the Pajarito and FM97 lift stations to support future growth, purchasing a trailer mounted generator, and performing an Infiltration/Inflow study to identify cost-effective methods of minimizing the presence of stormwater and grease in the system.

Proposed WWTP Improvements

The projected wastewater flows clearly show that it is time to begin earnestly preparing for a plant expansion. There is some flexibility in the size of the expansion; capital costs and the inefficiency of excessively over-sized systems must be balanced against undesirability of frequent expansion projects. As it is clear that at least one additional clarifier will be required, this suggests a minimum capacity increase of 50%. The graph below compares this proposed expansion with the flow projections to estimate the duration of adequate capacity. Extrapolating the population projection to a 20-year period, which is a typical planning period for major expansions, it can be seen that such capacity would likely serve the City of Floresville for this period, assuming current growth trends. The 75% capacity threshold could be expected to be reached in approximately 2030.



**Average Flow Trend is based soley on historical data and does not account for expected population increases due to mining development*
***Expected Peaks based on Average Flow with a three-month peaking factor of 1.21.*

Several options exist for increasing the capacity of the aeration portion of the treatment process. Option 1 is to simply increase the volume of the existing oxidation ditch by raising the walls and adding additional aerators. Option 2 is to retrofit the existing oxidation ditch to use a complete mix, rather than an extended aeration process. Option 3 is to construct an additional oxidation ditch. The relative merits and costs of these options should be carefully considered as the first step in the design process.

Road Conditions

Introduction

M&S was tasked with updating the previous road study conducted in 1999 to determine how best to manage and repair the streets within Floresville. As it has been a while since the last study, many areas degraded faster or slower than predicted further prompting the need for a new study. Drainage was also briefly looked at around the city.

Methodology

The guide laid out in the 1999 study was mainly followed throughout this study. Streets were scored based on six categories: pavement width, curbs, pavement integrity, classification, right-of-way, and drainage. These same criteria were used to reevaluate the road system. Below are the evaluation guides used for each category—ten having the highest priority and zero the lowest priority.

Pavement Width Guide	
10	Gravel
9	-
8	0-16' W Pvmt
7	-
6	17-20' W Pvmt
5	-
4	21-24' W Pvmt
3	-
2	25-30' W Pvmt
1	-
0	31'+ W Pvmt

Curbs Guide	
10	no curbs
9	-
8	-
7	-
6	curb one side
5	-
4	-
3	-
2	curb both sides
1	-
0	-

Pavement Integrity Guide	
10	little to no pvmt
9	large potholes/ missing sections
8	alligator backing
7	mild alligator/significant cracking
6	cracking
5	old pvmt/mild cracking
4	bumpy
3	pvmt wearing
2	old pvmt good condition
1	-
0	new

Drainage Guide	
10	little to no drainage
9	-
8	-
7	-
6	-
5	moderate drainage across road
4	-
3	-
2	-
1	-
0	excellent drainage

Classification Guide	
10	-
9	-
8	collector street
7	-
6	-
5	-
4	-
3	-
2	local street
1	-
0	dead end

Right-of-way Guide	
10	-
9	-
8	-
7	-
6	50'+ ROW
5	-
4	41-50' ROW
3	-
2	40' ROW
1	-
0	-

Scores were placed into a decision matrix and weighted according to importance and data accuracy. Weightings were altered from the previous study to give more weight to those items that M&S could more confidently determine. A sample of this table can be seen below.

Category	Score	Weight	
Pavement Width		4	
Curbs		4	
Pavement Integrity		5	
Classification		3	
Right-of-way		2	
Drainage		2	
		Total	

Rankings

The Total from this matrix was then used to rank each section of street. Streets have been broken up into five phases, each containing approximately 20,000 feet of roadway—red needing major reconstruction right away to green needing little to no work.

Floresville Street Evaluation

Street Name	Map Reference #	Section	Rank	Pavement Width	Curbs	Pavement Intergrity	Classification	Right-Of-Way	Drainage	Street Evaluation Total
TRAIL ST	26	A	100%	8	10	5	2	9	0	121
RAILROAD ST	61	B	97%	8	10	7	2	2	0	117
3RD ST	51	A	94%	4	10	6	8	2	0	114
B ST	55	B	93%	4	6	7	6	2	8	113
K ST	58	A	92%	8	10	7	0	2	0	111
GOLIAD ST	10	B	91%	6	10	2	8	6	0	110
C ST	37	A	90%	6	10	7	2	2	0	109
C ST	37	B	90%	6	10	7	2	2	0	109
SUTHERLAND SPGS RD	1	A	88%	4	10	5	6	4	0	107
6TH ST	27	A	88%	4	10	5	7	2	0	106
7TH ST	56	B	88%	8	10	4	2	4	0	106
SPARROW LN	69	A	88%	8	10	6	0	2	0	106
A ST	41	A	87%	6	10	5	4	2	0	105
E ST	53	B	86%	6	10	6	2	2	0	104
PECAN ST	62	A	86%	6	10	6	2	2	0	104
OAK ST	68	A	86%	6	10	6	2	2	0	104
GOLIAD ST	10	A	84%	4	10	2	8	6	0	102
1ST ST	50	A	84%	6	10	5	3	2	0	102
2ND ST NORTH OF PINE	21	A	83%	8	10	5	0	2	0	101
3RD ST	19	A	82%	6	10	5	2	2	0	99
8TH ST	24	A	82%	6	10	5	2	2	0	99
7TH ST	25	A	82%	6	10	5	2	2	0	99
BLUE JAY ST	34	A	82%	6	10	5	2	2	0	99
ROBIN REST ST	35	A	82%	6	10	5	2	2	0	99
CHAPARRAL ST	42	A	82%	6	10	5	2	2	0	99
BLOCK ST	63	A	82%	6	10	5	2	2	0	99
8TH ST	64	A	82%	6	10	5	2	2	0	99
SUNNY SIDE (CR 405)	36	A	81%	4	10	5	3	4	0	98
F ST	16	C	79%	6	10	2	6	2	0	96
STANDISH ST	22	A	79%	6	10	2	6	2	0	96
STANDISH ST	22	B	79%	6	10	2	6	2	0	96
SUTHERLAND SPS RD (CR 329)	49	A	78%	4	10	2	8	2	0	94
1ST ST	50	B	78%	4	10	5	3	2	0	94
HICKORY CIRCLE	60	A	78%	6	10	4	2	2	0	94
SHILOH ST	43	A	77%	6	10	5	0	2	0	93
PONDEROSA ST	44	A	77%	6	10	5	0	2	0	93
5TH ST	57	A	77%	4	10	2	5	6	0	93
2ND ST	18	C	76%	4	10	4	4	2	0	92
D ST	54	A	75%	4	10	5	2	2	0	91
RAILROAD ST	61	A	75%	4	10	5	2	2	0	91
6TH ST	27	B	74%	4	6	5	7	2	0	90
PEACH ST	8	A	73%	4	10	2	6	2	0	88
PEACH ST	8	B	73%	4	10	2	6	2	0	88

G ST	17	A	73%	4	10	2	6	2	0	88
S 4TH ST	52	A	73%	2	10	6	2	2	0	88
OAKVIEW ST	40	A	72%	3	10	5	2	2	0	87
FRICK ST	59	A	70%	4	10	5	0	2	0	85
E ST	53	C	69%	6	10	2	2	2	0	84
B ST	55	A	69%	2	10	4	4	2	0	84
9TH ST	65	A	69%	6	10	2	2	2	0	84
F ST	16	A	69%	3	6	5	6	2	0	83
PINE	20	A	69%	6	6	5	2	2	0	83
C ST	37	C	69%	2	10	5	2	2	0	83
RAILROAD ST Not Sch. for Repair	45	A	69%	2	10	5	2	2	0	83
7TH ST	56	C	69%	6	10	0	5	2	0	83
PLUM ST	23	A	65%	4	10	2	3	2	0	79
2ND ST	18	A	64%	3	6	5	4	2	0	77
G ST	17	B	63%	5	6	2	6	2	0	76
BLUEBONNET ST	47	A	63%	4	10	2	2	2	0	76
WILDROSE ST	48	A	63%	4	10	2	2	2	0	76
ARROWHEAD ST	12	A	62%	4	6	5	2	2	0	75
TRAIL ST	26	B	62%	4	6	5	2	2	0	75
SUNNY SIDE (CR 405)	36	B	62%	2	10	2	3	4	0	75
11TH ST	38	B	62%	0	10	5	2	2	0	75
J ST	28	A	61%	6	10	0	2	2	0	74
7TH ST	56	A	61%	4	6	4	2	4	0	74
F ST	16	B	60%	4	6	2	6	2	0	72
LONGRIDGE ST	4	A	58%	4	10	0	2	4	0	70
3RD ST	67	A	57%	0	6	5	4	4	0	69
8TH ST	29	A	55%	4	10	0	2	2	0	66
H ST	30	A	55%	4	10	0	2	2	0	66
9TH ST	31	A	55%	4	10	0	2	2	0	66
3RD ST	51	B	55%	4	10	0	2	2	0	66
TIGER LN	46	A	53%	0	10	0	4	6	0	64
LONGLEAF ST	6	A	51%	2	10	0	2	4	0	62
MAPLE ST	15	A	50%	2	6	2	5	2	0	61
BELAIRE ST	13	A	46%	3	6	2	2	2	0	56
2ND ST	18	B	46%	0	10	0	4	2	0	56
LONGBRANCH ST	5	A	45%	0	10	0	2	4	0	54
LONGFIELD ST	7	A	45%	0	10	0	2	4	0	54
PALOMA DR	32	A	44%	2	2	2	5	6	0	53
CHUKAR ST	14	A	43%	2	6	2	2	2	0	52
B ST (CR 401) (OLD STOCKDALE RD)	39	A	43%	2	2	2	6	4	0	52
PALOMA DR	32	B	36%	2	2	0	5	6	0	43
SUTHERLAND SPGS RD	1	B	35%	2	2	0	6	4	0	42
SUTHERLAND SPGS RD	1	C	35%	2	2	0	6	4	0	42
S. 2ND ST	11	A	31%	0	2	2	4	4	0	38
S. 2ND ST	11	B	31%	0	2	2	4	4	0	38
S. 2ND ST	11	C	31%	0	2	2	4	4	0	38
A ST	66	A	31%	4	2	0	2	4	0	38
G ST	17	C	29%	0	2	1	6	2	0	35
VETERANS ST	33	A	28%	2	2	0	2	6	0	34
E ST	53	A	28%	6	0	0	2	2	0	34
11TH ST	38	A	21%	2	2	0	2	2	0	26
LONGFIELD ST	7	B	20%	2	2	0	0	4	0	24

Floresville should at a minimum complete one phase per year or as much as funding provides. During the last phase another street study should be done to re-evaluate and update the plan.

Drainage

While there are some minor drainage and ponding issues with some of the streets in Floresville there is one area in particular that may require a hydraulic analysis and new culverts to be installed. This area starts at the intersection of 6th and B Street and runs to 5th street and on 5th street from B Street to D Street. A FEMA LOMR Submittal for the stream affecting this area is currently released for review by Pape-Dawson Engineers. Once the report is finalized then a hydraulic analysis on the streets can be done with the new data.

M&S noticed that many of the water crossing areas did not have any guard rails to protect cars from going over large drops. A study should be done to assess where and how much it will cost to install these safety features. These should then be installed as money is available.

Plan Implementation

Introduction

Some master plans reveal a competing list of projects each with approximately equal priority which are difficult to set an order of recommendations to. This is not the case with the City of Floresville as one project has emerged above the rest in the course of this evaluation completed by M&S Engineering. The top priority for Floresville must be beginning the process of upgrading the wastewater treatment plant before potential violations begin to occur. In addition to this top priority, additional action steps for the other areas reviewed by M&S are summarized below. For clarity these have been divided two major categories: organization/policy and infrastructure.

Organization/Policy

One of the greatest assets that the City has is its rich culture and history coupled with a variety of conveniences and amenities without the "big city" feel of its large neighbor to the north. A lot of professionals are looking to escape San Antonio and these assets are what draw them to Floresville. Up until recently the development which came to the city did little to infringe or threaten the feel of Floresville, but with the recent boom along the Eagle Ford shale that quaint small town feel is being impacted by the need for quick housing to shelter the influx of workers. Accordingly several organization and policy changes are warranted. These recommendations have been divided into two categories: high priority and low priority.

High Priority

1. Develop a Zoning Plan

The current Floresville zoning regulations are both confusing and incomplete. City staff should move to develop a revised zoning classification system and nomenclature that makes the various zoning types and what goes into them clearer. Ordinances should be updated as required to enforce these new descriptions and designations. Furthermore a formal business/historical district should be added to the zoning in order to preserve the historic flare of downtown and encourage only certain types of businesses to move there.

2. Create/update impact fees for water, wastewater and streets

A major hole within the cities current regulations and ordinances is the absence of impact fees and a means to collect them. Impact fees are a well-established and accepted method for cities to generate revenue from new development in order to fund infrastructure projects. They are essentially "buy in" fees for new businesses and developers looking to construct in the city charged when hookups are made to the city's infrastructure. Currently the City does not have any type of impact fee and is therefore forfeiting a potential income stream.

The impact fee development process is strictly regulated by law to ensure that individual cities not abuse the privilege afforded to them by the legislature to collect these monies. M&S recommends that city staff and regulators immediately work on forming a team comprised of the necessary professionals (normally legal and engineering personnel to provide guidance to the city staff) to begin work on developing these fees so that this potential income is fully realized.

3. Develop a water model of the Floresville water system

While the water system as a whole is prepared for increased population it is impossible to determine if water pressures will hold and water quality remains consistent as new piping is added. A water model is essential to effectively plan for water system needs and delivers a return on investment.

4. Convert to Online information sharing/GIS

Currently no regulations are easily accessible. Citizens must call into the city to obtain information taking up valuable time and personal. Switching to an online system will help engage citizens, deliver transparency, and enhance policymaking.

Low Priority

1. Amend new subdivision regulations to include park areas or pay fee in lieu of.

The goal of this recommendation is very similar to the impact fees: require incoming developers to cover the costs of the increased park needs that their projects will create. This can be accomplished either by directly setting aside land for parks in the new developments, or by paying a fee that the city puts into a fund designated for park projects, either upgrades, maintenance or new installations.

2. Promote multimodal travel through new development ordinances and install improvements such as sidewalks and bike lanes in key areas.

This recommendation should first be implemented in areas around schools to promote public safety. The goal is to develop means for safe transportation by a method other than automobiles.

Infrastructure

As in the previous section the items listed under the infrastructure category have been broken into low and high priority projects. The life blood of a city is its infrastructure and the ability to hook up to services, such as utilities, is the primary incentive which draws prospective developers to an urban area. When evaluating infrastructure there are two primary concerns: is its capacity sufficient and is its condition acceptable. Projects to address infrastructure which were found to have issues in both of these categories must, of necessity, be rated higher than those that do not. Accordingly M&S has developed the following recommendations.

High Priority

1. Upgrade Waste water treatment plant

As has been stated previously, the single most important action which the city must take in the wake of this master plan is to immediately move to expand the waste water treatment plant. This cannot be emphasized enough. Although there a no current violations, the potential for continued rapid growth made up of projects which have already been presented to the city in one form or another will quickly push the city over the previously described benchmarks mandated by TCEQ. Accordingly, the city must move quickly and decisively to begin the process of expanding the plant.

2. Replace the Pecan Street sewer line

Over the course of the development of this master plan, the sewer line beneath Pecan Street was reviewed. This line has been seriously compromised by tree roots which have permanently and irrevocably damaged a section of the line. This line should be assessed and properly mitigated. Ideally the correction of the deficiency should correspond with road maintenance on Pecan Street so as to minimize cost.

Low Priority

The remaining recommendations, all of which are lower priority are summarized in accordance with the infrastructure category in which they fall.

1. Wastewater

   The Pajarito and FM97 lift stations should be expanded to support future growth. Also, a trailer mounted generator should be purchased to provide mobile power to keep lift stations and the plant running in case of power failure.

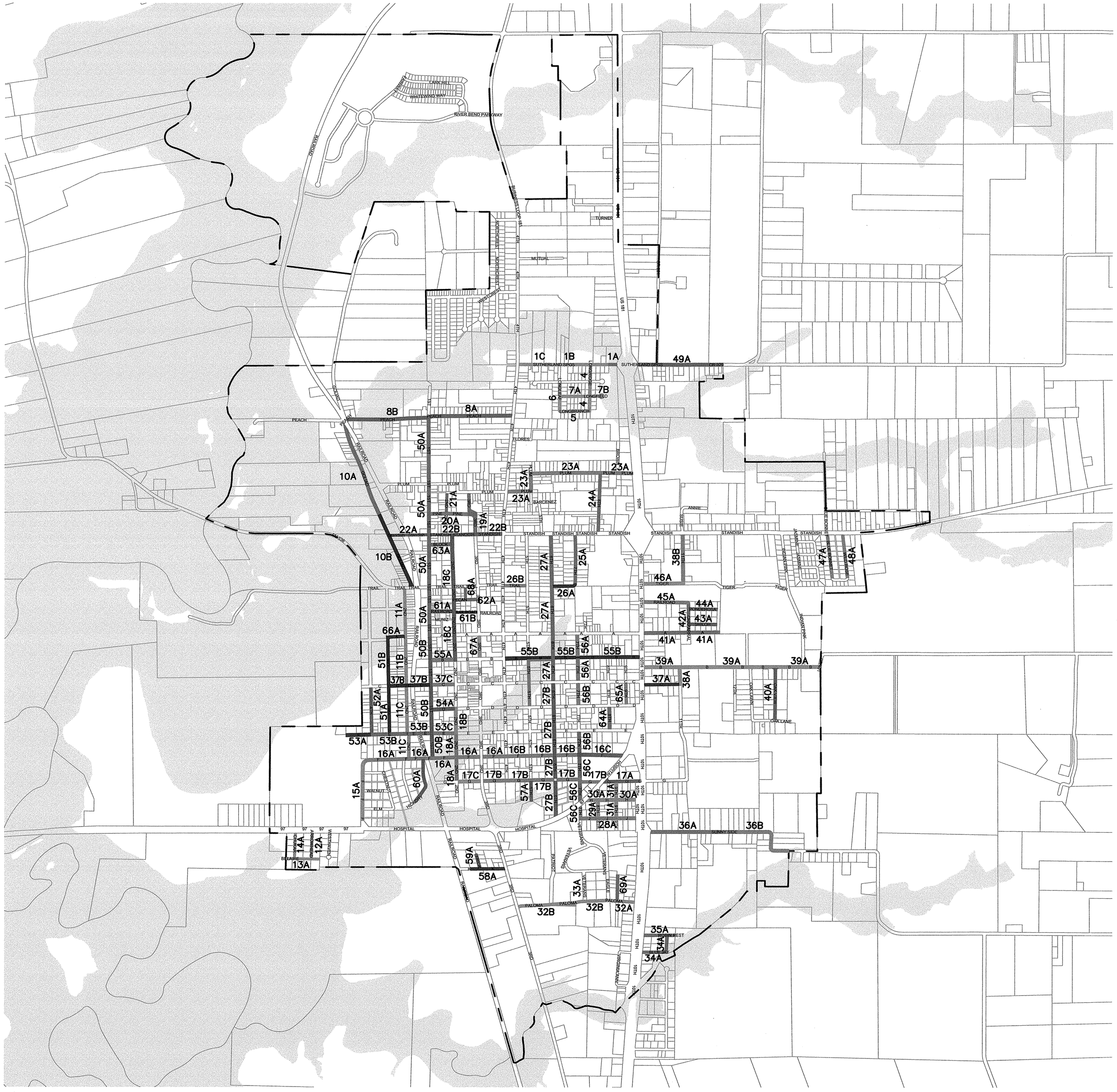
2. Parks

   Park facilities should be built behind the community center to fully utilize the site. Bathroom facilities at Pecan Park should be upgraded. As these bathrooms are in the floodplain two options remain: Making improvements of less than 50% of the cost of the building or elevating the structure. A pecan tree revitalization plan should be put in place at Pecan Park to ensure the trees continue to be there for generations. A privacy fence should be built in Canta Rana Park along the boundary with the WWTP. It would be beneficial to the community to work with SARA to develop and promote the Rancho de las Cabras National Historic Area. Finally opportunities to develop small parks in underserved areas should be sought as land and funding becomes available.

3. Streets

   Begin repair work on streets as money is available. Phases have been split up into approximately 20,000 foot of road with the highest ranked streets at the top. The city should strive to repair at least this much if not more each year.

4. Drainage
   - Have hydraulic analysis done on the area that starts at the intersection of 6th and B street and runs to 5th street and on 5th street from B street to D street. Complete any reasonable design improvements found to reduce flooding. Many water crossings do not have guard rails. A study should be conducted to determine how many guard rails are needed and the costs associated with each. Then, guard rails should be installed as money is available.



0 500 1000 2000
SCALE (FEET)

LEGEND:

- CITY LIMITS
- APPROXIMATE 100 YR FLOODPLAIN
- ROADWAY IMPROVEMENTS UNDER CONSTRUCTION
- ROADWAY IMPROVEMENT 1st PRIORITY
- ROADWAY IMPROVEMENT 2nd PRIORITY
- ROADWAY IMPROVEMENT 3rd PRIORITY
- ROADWAY IMPROVEMENT 4th PRIORITY
- ROADWAY IMPROVEMENT 5th PRIORITY
- DRAINAGE IMPROVEMENT

REVISIONS

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ENGINEERS, PLANNERS, AND SURVEYORS
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STATE OF TEXAS
HEATH L. WOODS
100297
LICENSED PROFESSIONAL ENGINEER
4/24/12

CITY OF FLORESVILLE, TEXAS
CITY MAP
PROPOSED STREET IMPROVEMENT MAP

JOB: 11FLORE001
DATE: 02/07/2012
SCALE: H: 1" = 1000'

INTERNAL REVIEW:

DESIGN:
PEER:
PM:
DM:
OTHER:

SHEET: 1 OF 1

Date: Apr 24, 2012, 7:25am User ID: jredmon
File: S:\Active Projects\11FLORE001 Masterplan 2011\dwg\11FLORE001-PSTR-IMPROVEMENT-MAP-001.dwg