PUBLIC WORKS, STREETS & DRAINAGE

The Public Works Department is responsible for streets and other transportation facilities, parks and other facility maintenance, code enforcement and building permits, and storm water management. Engineering services, construction, and significant maintenance projects are provided through contractual arrangements managed by City personnel. Current staffing level includes the Public Works Foreman plus 10 employees, including one maintenance staff. The infrastructure needs within the City are significant. There exists a need for improved coordination with Brooks County officials in addressing the City's public works needs over time. A significant number of projects to relieve congestion at key intersections, provide safe pedestrian travel to schools and elsewhere within the City, and enhance mobility and recreation have been incorporated into the City's Capital Improvements Plan. The Capital Improvements Plan is a rolling 5-year program that is updated annually in concert with the annual budget process.

The revolving 10 to 15-year street plan discussed in the Transportation and Mobility Section of this plan should evaluate methods to provide administrative and field personnel needed to implement the plan and maintain the City's infrastructure. Many communities are moving towards outsourcing significant aspects of infrastructure maintenance to reduce costs and liabilities associated with personnel services such as retirement funds. It is envisioned that provision of such services will continue to be provided largely through contractual arrangements.

STREETS

Streets are in some ways the most difficult capital improvement to budget for because they are expensive, not usually related to imminent health and safety concerns, and not often fundable through grants. The City of Falfurrias contains approximately 35 miles of streets and highways. An additional ____ miles are located within Falfurrias's ETJ for a total of ____ miles within the City's planning area. Of that total, the City is responsible for the operation and maintenance of approximately 35 miles. Brooks County, TxDOT, and some private land owners are responsible for the operation and maintenance of the remaining ____ miles.

Prior Studies

A street system study for the City of Falfurrias was conducted in 2011 as part of a Comprehensive Plan funded through the Texas Department of Agriculture (TDA) Planning and Capacity Program. This street system study found that 22,124 linear feet of Falfurrias' streets were in poor condition compared to 17,727 in 2012. In 201, most other streets were in fair condition due to lack of maintenance, poor drainage, and streets that were improperly engineered and constructed. The street system analysis determines the adequacy of the system to meet existing and forecasted needs and makes recommendations for improvements concerning traffic flow and street conditions.

Street Layout

Falfurrias's street system began as grid as evidenced in the central portion of the City. The building of US 281, first in the configuration of what is now St. Mary's/Business 281 through the eastern portion of the original grid and in 2012 the newly-constructed highway overpass that divides the street system into eastern and western sections that connect through underpasses every half-mile. The locations of these are underpasses are at Travis Street, Rice Street and Noble Street. These streets, a combination of city, county and state roads, serve as the cities primary thoroughfares. Local streets extend from them in all directions in a grid pattern of streets that extends throughout the City, creating high connectivity that disperses local traffic.

Street Condition

Within the city limits, 99.5% of roads are paved. Of the paved streets, 33% are in good condition, 62% are in fair condition, and the remaining 5% are in poor condition. The TxDOT-maintained major thoroughfares are in good condition.

Most streets, with the exception of Best Street in far eastern Falfurrias, are paved. Many in fair and poor conditions cannot be seal coated. In these conditions, the broken pavement has allowed too much dirt and oil to mix into the materials to be re-used; or parts of pavement are missing altogether. Improving the street conditions, then, will require a combination of seal coating, and the more expensive overlay and reconstruction.

The City's public works department maintains the streets and the parks with a 9-member staff. It purchases materials annually for street repairs and has a motor grader and roller to perform seal coating projects. However, its budget ($38,000 in Budget Year 2011) is used mostly to perform point-repairs throughout City on an as-needed basis to keep the streets drivable. Because much of the City is located in the FEMA 100-year floodplain, staff report that street repairs sink and unattended streets worsen after heavy rains.

The City also purchased a street sweeper that allows it to clear small debris from roadways after storms. This has probably contributed to longer life for the streets in the central part of the City that are shown to be in good condition as even the streets in good condition have not been completely seal coated since prior to the City's last comprehensive plan in the late 1990s.

Overgrown gutters may be contributing to poor street conditions. The City does not have a routine maintenance plan to address overgrown curb and gutter. Overgrown curb and gutter, while slowing the water so as not to overwhelm drainage structures, contributes to the water standing on the street for longer periods of time and allowing pavement deterioration. Most of the overgrown gutters were noted during field work in northern and southern Falfurrias and in western Falfurrias. It is hoped that the drainage improvements along Cibolo Creek will decrease storm water flow over streets in western Falfurrias in the future.

DRAINAGE & FLOOD CONTROL

A City Wide Drainage Study (CWDS) for Falfurrias, Texas (City) should be undertaken to identify, develop and recommend drainage improvements to address drainage problems and lessen flooding and its impacts across the City. Reasons for existing drainage and flooding problems include 1) insufficient flow capacity in ditches and channels, 2) ponding of waters in streets and adjacent properties, 3) undersized storm sewers, 4) temporary blockage of storm water inlets by debris, 5) backup of storm waters in sewers, and 6) lack of overland or sheet flow paths. Also contributing to the drainage problems are the natural contours of the ground: Relatively small ground slopes making it difficult to rapidly drain away runoff waters. Future drainage problems can, on the other hand, result if the runoff from future land development is not controlled. Flooding is a fact of life in coastal areas and control of flooding in coastal areas presents significant challenges. The strategy used to address drainage and flooding issues had two components: 1) remedy of current drainage and flooding problems; and 2) mitigation of future drainage problems.

Current Flooding and Drainage Problems

To address the current drainage and flooding problems, 1) channel improvements, 2) detention ponds for flood flow diversion, 3) storm sewer upgrades, and 4) development of relief swales (i.e., directed sheet flow pathways) options are evaluated. Improvements proposed in prior studies by others were incorporated into the proposed solutions of this study when appropriate. Moderately large storm events which exceed the City's standard design frequency for storm sewers. Swales, in effect, enhance local drainage system capabilities.

Future Drainage Issues

Future drainage problems may arise from land development for residential or commercial structures which would, without mitigation, result in increased rates of runoff and possibly overtax drainage facilities. Developers are usually required by the City to provide mitigation of runoff increases. Two approaches are commonly used to provide necessary mitigation: onsite detention or regional detention. The choice between the two is typically dictated by economics. Detention for flood water diversion and mitigation of channel or storm sewer system capacity improvements, as well as habitat improvement, a community amenity, or, during dry periods, recreational opportunities. Detention ponds can: be constructed in phases, with early phases being used to provide detention for diversion or mitigation and later phases being used to provide detention of increased runoff from land development.

Flood Control

Approximately 1,183 acres, 64 percent of land in the City, is located in the floodplain. The City adopted a Flood Prevention Ordinance in 2010 that prohibits future development in the floodplain or substantial expansion or changes to existing structures if they are not elevated to or above the base flood elevation. Persons developing or substantially altering existing structures in the floodplain (areas of special flood hazard) must obtain a Floodplain Development Permit, with approval by the Building Inspector, prior to construction.

The only areas in the City limits not mapped in the floodplain include the central western part of the city, west of the Junior High complex around Westside Park; and an area south of Noble Street and west of Center Street. A limited amount of semi-developed and undeveloped land is located in in both areas.

In 2013 the City and the County will begin construction on a $1 million drainage improvement plan being funded through General Land Office (GLO) funds it received in the recovery of damage from the storms created by Hurricane Ike in 2008. Substantial rains flooded streets and lots, stranding some residents for several days. The improvements will be along Cibolo Creek which has frequently flooded the La Colonia subdivision in northern Falfurrias, overwhelmed heavily-travelled Travis Street and prevented further development of additions in eastern Falfurrias. The improvements may allow for easier development of those areas, including replacement of dilapidated homes, throughout the planning period.

City/County Partnership

City leaders understand that to effectively implement a drainage plan for Falfurrias, collaboration with Brooks County officials will be needed. The City's fiscal capacity to provide for the drainage needs of the City are tied to the County-Wide drainage problems.

Characteristics of the soil of lands can be seen in Figure 4A below. An explanation of the soils and their building limitations can be found in Appendix 4B. In general, soils within the City provide conditions for building with little constraint (despite the FEMA floodplain mapping). Soils are least desirable for building north of Falfurrias and east of it. The easier land to develop, then, is located on existing infill lots within the City and just west of the city west of Negri Street and south of Texas 285.

POLICY GOALS AND OBJECTIVES FOR STREETS:

This plan addresses the concerns noted in the preceding analysis. It serves as a guide to the prioritization, costs, funding, and timing of future street improvements.

The problems with the City's street system are ranked and listed as follows:

- ☐ Local streets in fair to poor condition are in need of repaving or reconstruction
- ☐ Street maintenance needs to be prioritized with a limited budget
- ☐ Street maintenance of curb and gutter needs to be scheduled and performed on a routine basis
- ☐ Some paper streets need to be vacated to allow for new commercial or re-development

Goal 1: All streets in good to fair condition by 2022.

- ☐ Objective 1.1: Budget funds through 2015 to bring highly-travelled fair condition streets in south central Falfurrias around the junior high school complex and in central northern Falfurrias around the high school complex to good condition.
- ☐ Objective 1.2: Reconstruct streets after drainage improvements to be completed by 2014 in northern and western Falfurrias by 2016.

Goal 2: Good street conditions contribute to increased commercial and tourism growth.

- ☐ Objective 2.1: Budget funds through 2017 to improve streets around proposed new commercial development along the southbound SH 281 access road between Rodriguez Street and Taylor Road and around Lopez Street along northern St. Mary's to encourage new development there.
- ☐ Objective 2.2: Overlay highly traveled Allen and Miller streets as key components of the city's commercial, financial and government district.

Goal 3: Routine maintenance plan protects streets through 2032.

- ☐ Objective 3.1: By 2014, public works department develop a scheduled plan to address curb and gutter overgrowth throughout the City by 2018. Also, annually remove debris from culverts and drainage ditches that the City maintains to reduce flooding and pooling of water on street surfaces
- ☐ Objective 3.2: By 2022, public works department develop a phased seal coating plan to protect streets for the plan duration. Streets should be seal coated every 8 to 10 years.
  - Excavation of failed pavement sections to the base course, back-filled with cold mix asphalt and compacted to existing grade. Surface sealant is optional. This method is used to treat potholes and other imperfections and roadway hazards, and constitutes a portion of annual, ongoing maintenance.
  - Application of asphalt cement; cover with pre-coated aggregate at about one cubic yard of aggregate per 90 square yards. Ideally, this treatment is used once every three to five years to maintain streets and forestall more costly repairs. Using recent engineering cost estimates, chip seal coating would cost an estimated $2.00 per square yard.
  - Depending on the severity of wear, approximately one inch of surface is milled off the existing street in order to level depressions in the pavement. The remaining surface material is overlaid with a minimum of 1.5- to 2-inches of hot mix asphaltic concrete (HMAC) or hot mix/cold laid asphaltic concrete, followed by a surface treatment (two-course). This treatment is used to completely replace the surface material of a street to address pavement deterioration and extend street life. Two-course overlay increases the life of the pavement, and would require additional milling. Using recent engineering cost estimates, overlay projects would cost an estimated $19 per square yard, depending on processes chosen.
  - Reclaim/Reconstruct (asphalt streets): Remove existing base to a minimum depth of six inches. Mix emulsified asphalt with recycled asphalt to create road way base. Apply two-course of asphalt cement to create bearing surface. Base is proof-rolled at each course. Surface sealant optional. Streets receiving the reclamation treatment will last 12 to 20 years, depending on the traffic load and environmental conditions. The cost of this method also approximates costs for paving a gravel road. Cost estimates would be higher than for overlay methods, at about $35 per square yard.

POLICY GOALS AND OBJECTIVES FOR DRAINAGE & FLOOD CONTROL:

Goal #1: Minimize losses due to flooding and achieve a balance between natural open space and improvements for drainage

- ☐ Address storm water and drainage issues
- ☐ Utilize the dedication of a buffer zone to reduce the loss of floodplains and to minimize flood damage caused by erosion
- ☐ Provide development incentives to assure the control and management of floodplains
- ☐ Consider utilizing floodways and floodplains in order to assure proper drainage in a pleasing and accessible environment
- ☐ Continue to allow the dedication of some floodplain acreage toward parkland
- ☐ Develop and fund a comprehensive Capital Improvements Program from the recommended improvements identified in the Primary and Secondary Drainage Studies
- ☐ Evaluate streets designated as emergency routes to identify where bridge or culvert size over creeks should be improved to assure access as evacuation or emergency services routes during major storm events
- ☐ Promote a regional storm water detention system to assure coordination and lessen mutual impacts
- ☐ Promote regional detention facilities and provide opportunities for their creation. Incorporate design guidelines encouraging the provision of regional detention facilities where they could be beneficial
- ☐ Explore reimbursement methods to help pay for regional detention facilities

Goal #2: Preserve and protect unique open spaces, river corridors, drainage corridors and green spaces with the city and its extraterritorial jurisdiction

- ☐ Establish mechanisms to acquire and preserve key open space
- ☐ Investigate other sources of revenue including matching grants for specific projects, capital improvement funding and other public and private sources
- ☐ Review existing development regulations to consider incorporating open space and greenway dedication

Goal #3: Develop a network of pedestrian and bicycle ways for hiking and cycling throughout Falfurrias

- ☐ Continue the planning for, acquisition and preservation of certain identified linear park corridors and greenbelts throughout the city using major greenbelts, creeks and drainage ways
- ☐ Foster the development of parkways along greenbelts by developers as opposed to lots backing up to these green areas. Examine all mechanisms for accomplishing this including, but not limited to, dedication, donation, and conservation
- ☐ Examine subdivision and drainage regulations to include requirements for dedication and conservation
- ☐ Continue efforts to develop a linear park along Cibolo and Palo Blanco Creeks and work with Brooks County to provide for a regional park facility

This Comprehensive Plan recommends a variety of drainage improvement and flood control projects, including those that can be relatively easily implemented in the short term, those which are more complex and expensive but which provide a high level of flood protection, and those which can be used to address impacts of future development in the City. Projects can be implemented individually and are not contingent upon each other; sequencing of projects can be used to implement a series of projects over time. While guidance has been provided to assist in deciding which projects should receive priority for implementation, the decisions as to the priorities for construction of improvement projects is, in the final analysis, the responsibility of City leaders.

The need for a Drainage Master Plan is recommended for the City of Falfurrias, Texas. One step toward securing the needed funding is the City Council's authorization to engage the services of eCivis for Professional Grant Writing Services in 2013. eCivis will work with City staff in preparing an application to submit for the Texas Water Development Board's (TWDB) Flood Protection Planning Study Grant.

The study is a matching grant of 50% that can be as require as little as a 25% match for disadvantaged communities. The potential funding assistance would allow the City to develop long-term options toward addressing the flooding problems of Falfurrias/Brooks County. The City envisions having a "shovel-ready" project for the allocation of local funding in addition to State and Federal funding as it becomes available.

Key factors in a Drainage Master plan include (but not limited to):

- ☐ Existing conditions
- ☐ Effectiveness of various drainage improvements
- ☐ Addressing the underlying cause of the existing identifiable drainage problems
- ☐ Channel and non-channel solutions
- ☐ Right-of-way considerations and acquisition
- ☐ Integrate with Parks and School District Planning
- ☐ Future development
- ☐ Prioritization of construction costs for maximum benefit
- ☐ Diversion and Detention policies
- ☐ Potential flooding based on historical rain events
- ☐ Funding considerations
- ☐ County, State and Federal Interactions
- ☐ Enforcement of construction criteria
- ☐ Operation and Maintenance of drainage infrastructure