

5 | INFRASTRUCTURE

Infrastructure Policies

- POLICY 1:** Invest first in infrastructure that supports the preferred scenario
- POLICY 2:** Consider long-term operational costs when setting priorities among new capital projects
- POLICY 3:** Seek funding from other entities whenever possible
- POLICY 4:** Work with Lancaster ISD, Cedar Valley College, and other educational institutions to ensure that the “learning infrastructure” is in place

Introduction

Utilities and infrastructure are a critical piece of the foundation and operations of a city and can include water and wastewater systems, storm drainage systems, solid waste disposal, electric service, gas service, cable, fiber optics, and telephone service. The location, condition, and accessibility of these features can greatly affect daily operations, construction timelines, and funding capabilities. Understanding the system’s existing conditions is essential to planning for future development. Utilities and infrastructure can act as an indicator of a city’s ‘growing pains’ - meaning the performance of a system under pressure can show where the infrastructure needs to adapt, expand, or be replaced to accommodate growth.



Figure 5.01 - Elevated Storage Tanks

The City of Lancaster Public Works Department maintains a Street Division and Water Utilities Division. The Street Division services and repairs the existing streets and sidewalks, and are responsible for traffic signals, street sweeping, crack sealing, and storm water drainage. The Water Utilities Division is responsible for pumping and maintaining quality water, the distribution of water, and repairs and improvements to both the water and sewer system.

Water System

The City of Lancaster purchases water from Dallas Water Utilities (DWU). The water that the City receives from DWU is treated and is provided from 7 sources: the Trinity River and Lake Ray Roberts, Lewisville, Grapevine, Ray Hubbard, Tawakoni and Fork. DWU provides water supply for 22 other municipalities in the Dallas-Fort Worth region.

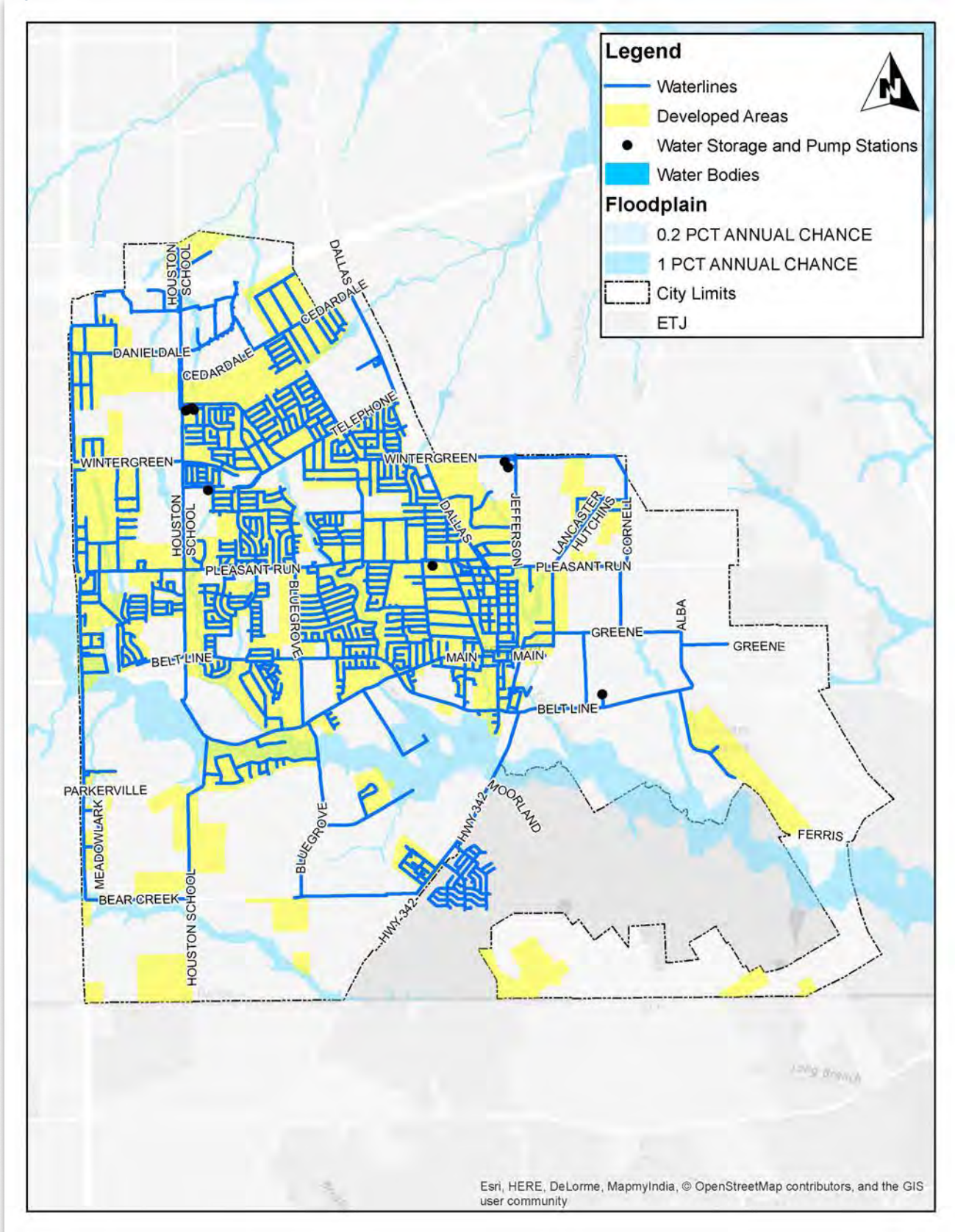
Once the water gets from DWU to the City of Lancaster, the Water Utilities Division handles the distribution of the water through underground water lines that vary in size depending on the demand in the area. The majority of the developed areas of Lancaster have water service provided to their residences and businesses, but some locations in the periphery of the City have limited service.

The City of Lancaster current water demand is approximately 6.8 Million Gallons per Day (MGD), and demand is expected to increase to 10.1 MGD by 2040, based on the Dallas Long Range Water Supply Plan, 2015. This increase in demand is based on a population increase to just under 70,000 people in 2040.

The City will be responsible for the cost to provide water service to new development and the growth to 70,000 residents in 2040. How the growth and development occurs in the next 25 years will greatly determine the extent of the costs. The City should encourage new development and support connectivity of existing water infrastructure networks in areas that already have water service in close proximity. The City should avoid, if possible, development in areas that have limited water service. Areas south of the Ten Mile Creek watershed would incur the highest costs to provide water service and would have the smallest cost benefit ratio.

Water conservation is the most cost-effective and environmentally sound way to reduce our demand for water. Water efficiency has been increasing as a result of technological advances in our homes with low flow toilets and drip sprinklers in our yards. However continued education for residents can even further reduce our water intake. Increasing our water efficiency also reduces our impact on the wastewater system.

Figure 5.02 - Lancaster Water Map



Wastewater System

The City of Lancaster contracts with the Trinity River Authority (TRA) to handle wastewater treatment. Two wastewater treatment facilities are used and both are located outside of the City of Lancaster city limits. The primary facility is the Ten Mile Creek Regional Wastewater facility (TMCRRWS) which is located downstream from Lancaster on Ten Mile Creek. Wastewater from Lancaster is also treated at the Red Oak Creek Regional Wastewater facility (ROCRWS) in Waxahachie.

The wastewater system collects flow through a series of gravity pipelines. Due to the geography in the region, TRA also relies on a collection of lift stations and force mains to transfer this flow to one of the two treatment facilities.

The TMCRRWS expanded from 6.8 MGD to 24 MGD in the 1980s to handle the increase in population growth during that time. The collection system also includes 58 miles of interceptor pipelines and a lift station.

The ROCRWS includes 12 meter stations, one lift station and a force main. This system has a 4.6 MGD capacity that can serve a population of 60,000.

Storm Drainage System

Stormwater runoff is created from excess water that cannot be absorbed by natural surfaces or impervious areas. Rather than being absorbed into the ground, rainwater enters into Lancaster's storm drainage system. A network of retention areas, inlets and pipes keep water from flooding roads and property. This water is diverted through a network of storm drainage and eventually into the city's streams and rivers.

The City of Lancaster's drainage system generally flows to tributaries, creeks and branches, which eventually flow to the Trinity River. The watersheds of Five Mile Creek and Floyd Branch flow north to the Trinity while Ten Mile Creek and Bear Creek flow east to the Trinity from the southern portions of Lancaster.

As stormwater flows over the ground and into the stormwater drainage system, it picks up pollutants such as fertilizers, chemicals, and litter. This stormwater pollution is the leading cause of water quality problems in our State. It is important as a City to work hard to reduce the pollution that is entering our water system through the storm drainage. This can be accomplished by keeping curb gutters clear of debris and disposing of chemicals properly and not through dumping.

Figure 5.04 - Sludge Dewatering Building





Figure 5.03 - Lancaster Sewer Map

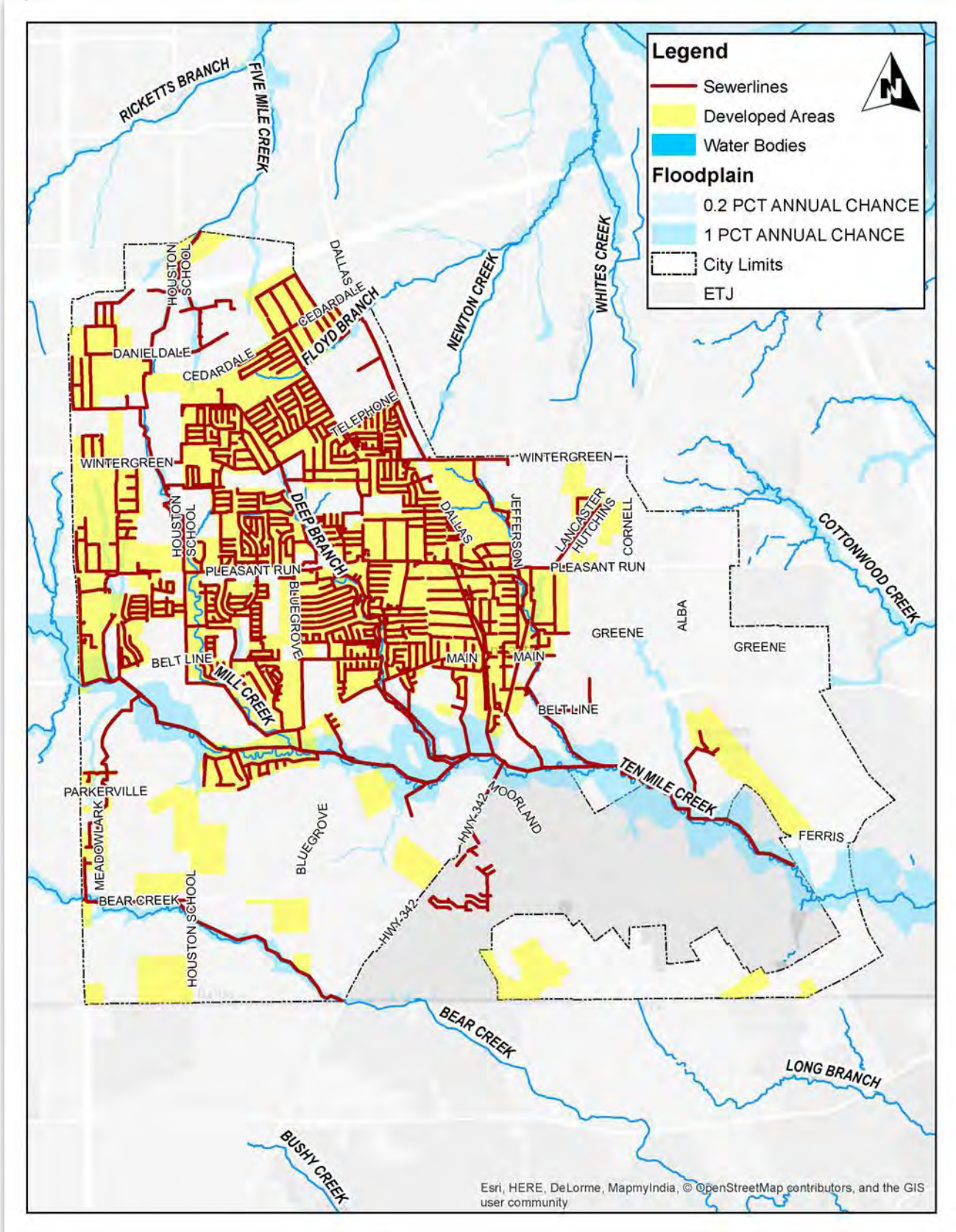
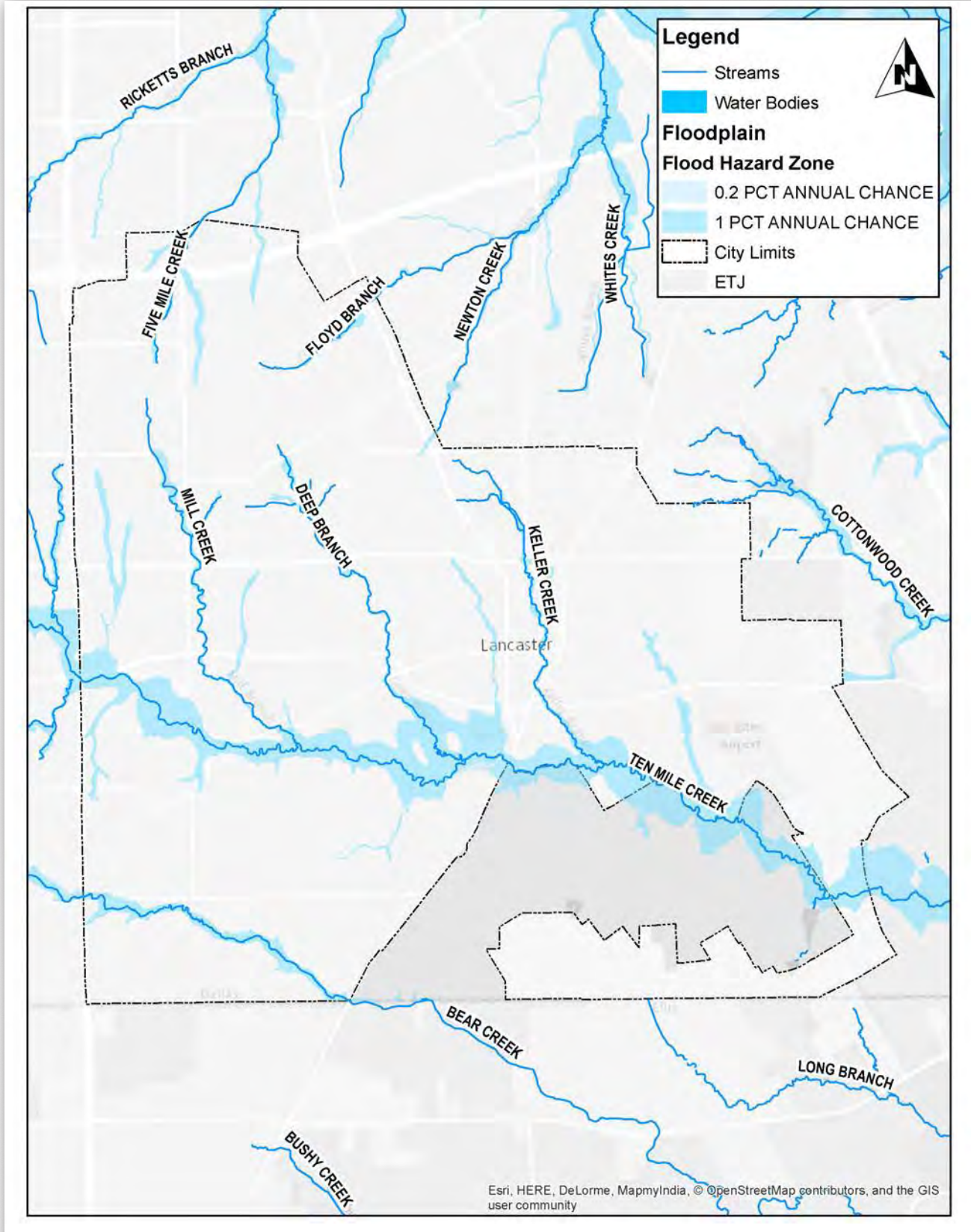


Figure 5.05 - Lancaster Drainage



Infrastructure Implementation Strategies

Implementation strategies were developed from this chapter in order to achieve two primary goals:

- 1) Maintain standards for adequate service levels for public utility infrastructure systems that will adequately serve present and future residents and businesses.
- 2) Ensure that utility and infrastructure systems are fiscally responsible and provide for ways to improve the environmental amenities in Lancaster.

These implementation strategies, which are described in greater detail in the Implementation Chapter and Appendix 1 of this document, are as follows:

- Encourage new development to occur within areas that are already served by necessary infrastructure, or where utility extensions can be realistically provided.
- Address future water and sewer demands within areas not already served, and revise utility and construction priorities to support the preferred growth scenario and avoid investment in areas not planned for urban uses.
- Prepare a new Capital Improvements Program for capital projects in the next five years that implement this plan and catalyze desired growth.
- Continue coordinating with TRA to communicate projected increases in the City's wastewater production.
- Continue to educate and provide educational resources to the public on conservation strategies and the importance of water conservation.
- Develop a comprehensive Drainage Master Plan and consider funding strategies, such as a stormwater utility or stormwater fees, to provide sufficient resources to implement the plan.
- Create TIF & PID districts to fund infrastructure in designated special growth areas, including the Medical District, Campus District and Town Center.
- Encourage private/franchise utilities (e.g., telephone, gas, electricity, cable TV, etc.) To provide service to newly developing areas as quickly and efficiently as possible, and to place utility lines underground and within shared conduits, wherever possible.
- Review construction standards and update to take advantage of modern "green infrastructure" designs to reduce costs and increase sustainability.
- Identify flooding problem areas and propose methods for mitigating those problems.
- Develop a set of capital recovery tables/schedules that will ensure the above-listed utility services are fiscally maintained for all customers.
- Include public art funding as a percentage in all infrastructure program.

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