A Master Plan for Everyone - How a Small City is Working with Developers to Provide Regional Wastewater Infrastructure

Abstract

Master planning is an important practice for any City, and this is especially true for a City that is anticipating rapid growth. The City of Manvel, situated 20 miles from Houston near State Highway 288, is an example of a fast-growing city in northern Brazoria County. Developments have resulted in exponential housing sales in recent years, and a major TxDOT road expansion currently under construction is bringing more developers to Manvel’s doorstep. Manvel is facing two key challenges related to wastewater infrastructure. The first is planning to accommodate explosive growth. The second is coordinating the implementation of a regional wastewater collection and treatment system with multiple developers. A recent wastewater master plan, completed in June 2017, drafted innovative solutions to each challenge.

Planning to Accommodate Explosive Growth

Manvel currently serves approximately 600 wastewater connections in a 1.4 square mile wastewater service area. Within the next 20 years, the City is anticipating serving approximately 28,000 wastewater connections, to include eleven developments within the City limits and the ETJ, within a wastewater service area of 30 square miles. Wastewater treatment capacity is anticipated to increase from 0.50 MGD (current capacity) to approximately 9.0 MGD. The wastewater master plan laid out a capital improvement plan that addressed fundamental questions including the number and locations of regional wastewater treatment plants, service area boundaries, and a phased time-table for these improvements. This presentation will detail the methodologies utilized for projecting wastewater connections, delineation of wastewater service areas, and the analysis utilized to plan the number and location of future wastewater treatment plants for the City.

Regionalization and Developer Coordination

There are four existing Municipal Utility Districts (MUDs) serving wastewater customers in developments in Manvel’s City Limits and Extraterritorial Jurisdiction (ETJ), and additional developers are currently in talks with the City. One of Manvel’s primary focus topics in the master plan was regionalizing the wastewater infrastructure to serve both the existing and future customers in the projected service area. This presentation will describe how this process was undertaken in Manvel, to include the solicitation of developer input and the feedback loop between the City, the developers, and the consultants. Additionally, the presentation will outline a near-term fiscal year budgeting tool to facilitate implementation of Manvel’s anticipated $200 million wastewater system capital improvement plan.
Finally, this presentation will outline how the City utilized the master planning process to facilitate cost-sharing discussions with developers.

Municipal staff from Cities of all sizes will walk away with ideas about infrastructure planning in their wastewater service areas and consulting engineers will find an informative case study on planning strategies for explosive growth.

Authors:
Richard Weatherly, P.E.
Kendall Ryan, P.E., Freese and Nichols
Ishita Rahman, E.I.T., Freese and Nichols
Kyle J. Jung, City of Manvel