

# Town of Landis

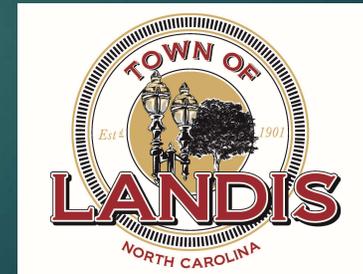
## Asset Assessment and Evaluation

### Sanitary Sewer System

FUNDED BY THE NORTH CAROLINA DIVISION OF WATER INFRASTRUCTURE  
STATE AIA PROJECT NO. AIA-W-ARP-0200



Presented By:  
Municipal Engineering , Inc.  
January 12, 2026



# AIA Program Overview

## **Asset & Inventory Assessment (AIA) Grant Program**

- ▶ The Asset Inventory and Assessment (AIA) grant program was established to encourage municipalities to become viable and proactive in the management of their water and wastewater systems. The grants provide funding for developing water and wastewater asset inventories, condition assessments of critical assets and other components of a comprehensive asset management program. The program is administered by the North Carolina Department of Environmental Quality, Division of Water Infrastructure.
- ▶ In March 2023, the Town of Landis was approved by the State Water Infrastructure Authority (SWIA) to receive grant funding from the American Recovery Plan Act (ARPA) and the State Reserve Program (SRP) for a wastewater system AIA grant in the amount of \$400,000. As stated in the Town's AIA application and preliminary project scope, the grant funds were used to conduct a condition assessment of select segments of the gravity sewer system, assess six (6) of the town's wastewater lift stations, update the town's Water and Sewer Systems Asset Management Plan (AMP), and assist the town in updating and identifying potential projects for the 10-year Capital Improvements Plan (CIP).



# Wastewater System AIA

## Summary of Work

- Sanitary Sewer Limited Condition Assessment

# Sanitary Sewer Limited Condition Assessment

- ▶ As part of the AIA project, a limited condition assessment of select segments of the gravity sewer system was performed. The assessment areas were selected by town personnel and deemed the most critical areas in town based on pipe materials, age, and current condition.
- ▶ The assessment consisted of closed-circuit television (CCTV) inspection of the collector sewers, a level 2 aboveground inspection of the manholes and smoke testing of the collector lines. A total of 44,417 feet of sewer pipe was CCTV inspected and 46,257 feet of sewer was smoke tested. In addition, a Level II aboveground visual inspection of 117 manholes was performed. The pipes and manholes were inspected and graded using protocols and standards established by the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) and the Manhole Assessment Certification Program (MACP).
- ▶ Most of the sewers inspected were constructed of terra cotta clay pipe and were in fair to poor condition. Numerous pipe defects such as cracks, fractures, holes, offset joints, roots, pipe sags, and utility incursions were noted throughout the survey area. Similarly, many of the manholes inspected were found to be in poor condition. Most were constructed of brick or masonry block. Nearly 85% of the sewers inspected were in need of replacement at an estimated construction cost of \$15.7M (based on 2025 costs).



# CCTV Inspection

## Condition Assessment – Typical Pipe Defects Encountered

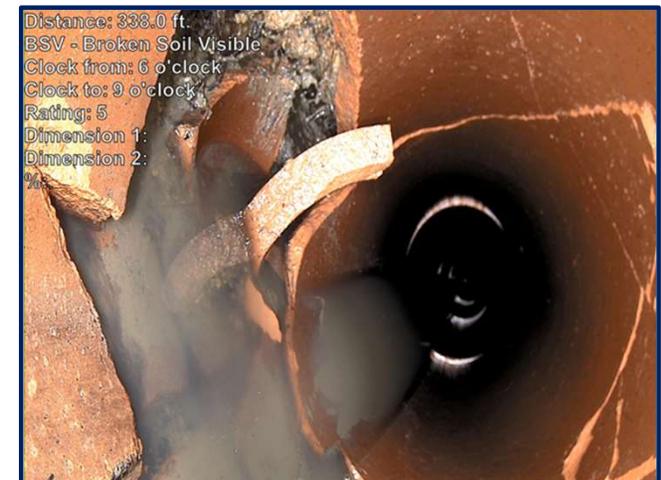
**Roots in Pipe (W. 5<sup>th</sup> St.)**



**Utility Cable Intrusion (W. Rice St.)**



**Broken Tap/Pipe (S. Zion St.)**



# Level II Manhole Inspection

## Condition Assessment – Typical Manholes Encountered

Sever Root Intrusion (S. Zion St.)



Soil/Mud Infiltration (N. Zion St.)



Precast Manhole (for comparison)



# Smoke Testing

Approx 46,257 feet of sewer was smoke tested revealing numerous missing cleanout caps and other defects that can be large sources of inflow into the sewer collection system. ***Interesting fact: A single missing clean-out cap can lead to 800 gallons of stormwater entering the sanitary sewers during a 1-inch rain event.***

Missing Clean-out Cap (S. Zion St.)



Missing Clean-Out Cap (closeup)



Missing Clean-out cap



# Lift Station Assessment

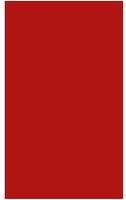
Part of the Sewer AIA project involved inspecting and assessing six of the town's ten wastewater lift stations. The six stations inspected ranged from 35 years old to over 40 years old and were visually inspected for general condition, operational issues, location and accessibility, O&M personnel safety, property ownership and easement issues, site conditions and security. A copy of the Lift Station assessment report is included in the project deliverables.

The six lift stations inspected and assessed were:

- ▶ LS No. 5 – W. Rice Street
- ▶ LS No. 6 – W. Fifth Street
- ▶ LS No. 7 – Poplar Street
- ▶ LS No. 8 – Daybrook Drive
- ▶ LS No. 9 – Partee Lane
- ▶ LS No. 10 – US Hwy 29 South

*Note 1 - Field testing of mechanical and electrical components was not part of the scope of services, however, mechanical and electrical components were assumed to be in relative physical and operational condition as other station components.*

*Note 2 - Lift Station Nos. 1 thru 4 were not part of the assessment since Nos. 1 and 2 were replaced in 2015 and Nos. 3 and 4 were replaced in 2022 and all four were in excellent physical and operational condition.*



**Town of Landis  
Wastewater  
Lift Station  
Assessment  
(Representative Photos)**





# Asset Management Plan Update & 10-Year Capital Improvements Plan

In addition to the inspection and assessment of sewer pipes, the project also included revisions and updates to the town's Water and Sewer System Asset Management Plan and 10-Year Capital Improvements Plan.

The Water and Sewer System Asset Management Plan, originally adopted in March 2021, was revised and updated to reflect system improvements completed since 2021, such as the Chapel St. and Fourth St. Lift Station replacements, the S. Upright St. pump station upgrade and sewer rehabilitation, and the new 100,000-gallon elevated tank currently under construction. The plan was also updated to include the names, positions, and contact information of all current management, financial, and operations/maintenance personnel.

As an integral part of the asset management plan, the town's 10-Year Capital Improvements Plan (2025 – 2035) was also updated to reflect the town's current vision for the next 10 years in regards to needed improvement projects to the water and sewer systems.

# Water and Sewer System

## Asset Management Plan

### 10-Year Capital Improvement Plan

Presented to the Landis Board of Aldermen, January 12, 2026  
Updated November 2025



**Municipal Engineering, Inc.**  
68 Shipwash Drive, Garner, NC 27529



Table 6-1. Water Distribution System 10-Year Capital Improvement Plan (Revised November 2025)

Capital Improvement Project	Estimated Total Project Cost	FY 2025-2026	FY 2026-2027	FY 2027-2028	FY 2028-2029	FY 2029-2030	Fiscal Years 2025/26 - 2029-2030	Fiscal Years 2030/31 - 2034/35
Main St./Mt. Moriah Rd. Water Line Replacement	\$ 2,700,000	\$ 2,700,000					\$ 2,700,000	\$ -
150K Gallon Elevated Water Tank	\$ 1,200,000	\$ 1,200,000					\$ 1,200,000	\$ -
12-inch Water Interconnect w/Kannapolis	\$ 1,000,000					\$ 1,000,000	\$ 1,000,000	\$ -
Patterson Rd. - Flat Rock Rd. Loop Water Line	\$ 3,000,000			\$ 3,000,000			\$ 3,000,000	\$ -
Dial St. - Church Rd. Elevated Tank	\$ 3,500,000		\$ 3,500,000				\$ 3,500,000	\$ -
5th St. Elevated Tank	\$ 3,500,000				\$ 3,500,000		\$ 3,500,000	\$ -
US 29 Main to the Fall Out	\$ 6,500,000					\$ 6,500,000	\$ 6,500,000	\$ -
<b>TOTAL</b>	<b>\$ 21,400,000</b>	<b>\$ 3,900,000</b>	<b>\$ 3,500,000</b>	<b>\$ 3,000,000</b>	<b>\$ 3,500,000</b>	<b>\$ 7,500,000</b>	<b>\$ 21,400,000</b>	<b>\$ -</b>

Table 6-2. Sanitary Sewer Collection System 10-Year Capital Improvement Plan (Revised November 2025)

Capital Improvement Project	Estimated Total Project Costs	FY 2025-2026	FY 2026-2027	FY 2027-2028	FY 2028-2029	FY 2029-2030	Fiscal Years 2025/26 - 2029-2030	Fiscal Years 2030/31 - 2034/35
S. Upright St. Basin Sanitary Sewer Rehab	\$ 2,400,000	\$ 2,400,000					\$ 2,400,000	\$ -
S. Upright St. Basin Sanitary Sewer Rehab Ph. II	\$ 2,550,000		\$ 2,550,000				\$ 2,550,000	\$ -
S. Upright St. Basin Sanitary Sewer Rehab Ph. III	\$ 2,700,000				\$ 1,200,000		\$ 1,200,000	\$ 1,500,000
Rice St. Basin Sanitary Sewer Rehab	\$ 200,000		\$ 200,000				\$ 200,000	\$ -
4th St. Basin Sanitary Sewer Rehab Ph. I	\$ 2,200,000			\$ 2,200,000			\$ 2,200,000	\$ -
4th St. Basin Sanitary Sewer Rehab Ph. II	\$ 2,500,000					\$ 2,500,000	\$ 2,500,000	\$ -
West Side Gravity Basin Sewer Rehab Ph. I	\$ 4,250,000				\$ 2,125,000		\$ 2,125,000	\$ 2,125,000
West Side Gravity Basin Sewer Rehab Ph. II	\$ 4,500,000						\$ -	\$ 4,500,000
Lift Station No. 5 (Rice St.) Rehab/	\$ 750,000			\$ 750,000			\$ 750,000	\$ -
Lift Station No. 6 and 7 Elimination	\$ 1,000,000					\$ 1,000,000	\$ 1,000,000	\$ -
Lift Station No. 8 (Daybrook Dr.) Rehab	\$ 500,000						\$ -	\$ 500,000
Lift Station No. 9 (Partee Ln.) Rehab	\$ 500,000						\$ -	\$ 500,000
Lift Station No. 10 (US 29) Replace/Force Main Upgrade	\$ 1,500,000						\$ -	\$ 1,500,000
<b>TOTAL</b>	<b>\$ 25,550,000</b>	<b>\$ 2,400,000</b>	<b>\$ 2,750,000</b>	<b>\$ 2,950,000</b>	<b>\$ 3,325,000</b>	<b>\$ 3,500,000</b>	<b>\$ 14,925,000</b>	<b>\$ 10,625,000</b>

Notes:

- The Water and Wastewater System Capital Improvements Plan includes capital projects to replace, rehabilitate or upgrade capital infrastructure/equipment that has been categorized as Poor or Very Poor and have an estimated replacement, rehabilitation or upgrade date within the next 10 years.
- The estimated total project cost is distributed over the life of the project (up to 20 years) and includes project costs (excluding debt service) covered by grants, loans, and the Town of Landis. Costs associated with a project may be distributed in fiscal years after FY 2034/35, and that distribution is not presented in this table.

# Asset Inventory and Assessment Budget – Sewer System

Description – Sewer System AIA	Costs
Project Management	\$ 15,000
CCTV Inspection, Level II Manhole Inspection, Smoke Testing	300,000
Lift Station Condition Assessment	30,000
Asset Management Plan Update	20,000
CIP Project Development/Updates	20,000
Grant Administration	15,000
<b>TOTAL SEWER SYSTEM AIA PROJECT COSTS</b>	<b>\$ 400,000</b>

# Project Deliverables

- ▶ One (1) copy of the Sewer Condition Assessment performed by Compliance Environmental Services (CES) including inspection reports, PACP/MACP database with CCTV inspection media, summaries and reference data, on USB thumb drive.
- ▶ One (1) copy of the Lift Station Assessment report, on USB Thumb Drive
- ▶ One (1) copy in PDF Format of the updated Water and Sewer Asset Management Plan (w/ 10-Year CIP), on USB thumb drive.
- ▶ One (1) copy of the Engineer's Executive Summary of the project's goals and accomplishments, in PDF format, on USB thumb drive.

# Summary

- ▶ With the information gathered through the recent limited condition assessment of the town's collector sewers and the lift stations, and updates to the Asset Management Plan and CIP, the Town of Landis has additional knowledge, guidance and planning tools necessary to continue proactively managing the sanitary sewer collection system
- ▶ Utilizing this new information will allow the town to identify and prioritize critical infrastructure projects, determine the timing of those projects, and investigate potential methods for funding projects through planned rate increases and/or state and federal funding programs.



## QUESTIONS?

