



# Water and Wastewater Leak Detection Update

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Infrastructure & Development Committee  
February 4, 2026



# Agenda

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- Background
- Analysis - Water Leak Detection
- Analysis – Wastewater Leak Detection
- Summary & Next Steps

# Background

- The City of Burleson maintains 223 miles of water distribution mains and 226 miles of sanitary sewer collection mains
- Historically, water distribution leak detection has been based on visual observation, physical inspection, and using acoustic equipment
- Wastewater system monitoring typically uses closed-circuit television (CCTV) inspection (CCTV van pictured) and post-storm inspections of sewer creek crossings to ensure there are no overflows from manholes



# Background - Program Overview

City Council approved a 12-month agreement January 6, 2025, with Asterra USA for water and wastewater leak detection in the amount of \$73,500 consisting of:

1. Two satellite scans of the potable water distribution and wastewater collection systems
2. Acoustic field investigation of suspected water leaks
3. Leak data assessment to prioritize rehabilitation project

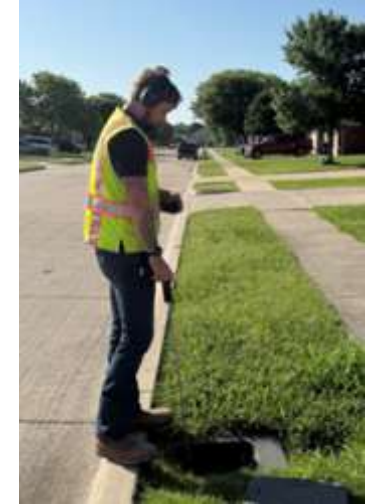




# Systematic Identification & Confirmation of Leaks



- **Initial Detection Phase** - 178 Points of Interest identified through satellite detection technology
- **Investigation Phase** - 178 field assessments using acoustic analysis completed August 2025 by Asterra
- **Confirmation Phase** - 90 suspected leaks identified by Asterra with additional staff efforts to confirm
  - **33 utility-side leaks** were confirmed and **100% repaired in-house**
  - **57 suspected customer leaks** were identified for further analysis
    - **14** notifications made to property owners of **apparent leaks** delivered after staff further analyzed customer leaks
    - **Two** of the 14 property owners have responded and repaired their leaks



# Satellite Water Leak Detection: Property Owner-side

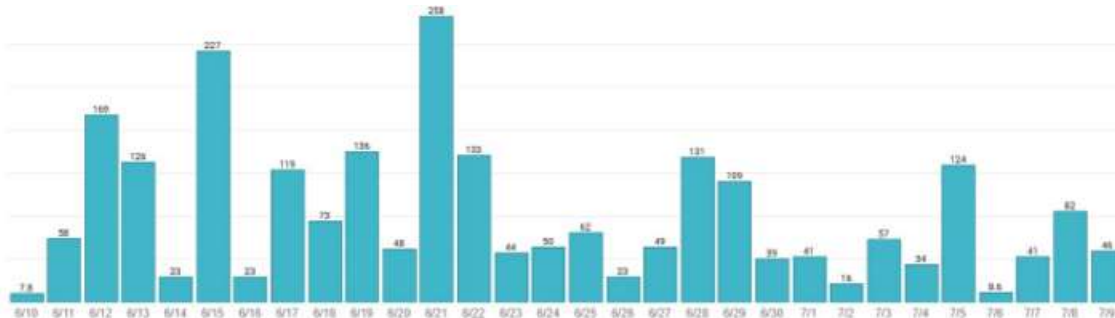
#	Street	Est. Annual Loss (Gallons)
1	Pinnacle Cir	109,500
2	Pinnacle Cir	91,250
3	SW Wilshire Blvd	73,000
4	W Alsbury Blvd	102,200
5	SW Alsbury Blvd	80,300
6	Alsbury Blvd	94,900
7	Alsbury Blvd	87,600
8	Arnold Ave	76,650
9	Tarrant Ave	98,550
10	Oak St	83,950
11	Market St	91,250
12	Barkridge Ct	80,300
Total		~1,069,450

**Two of fourteen property owners have provided documentation of repairs representing 90,000 gallons/year (\$711)**

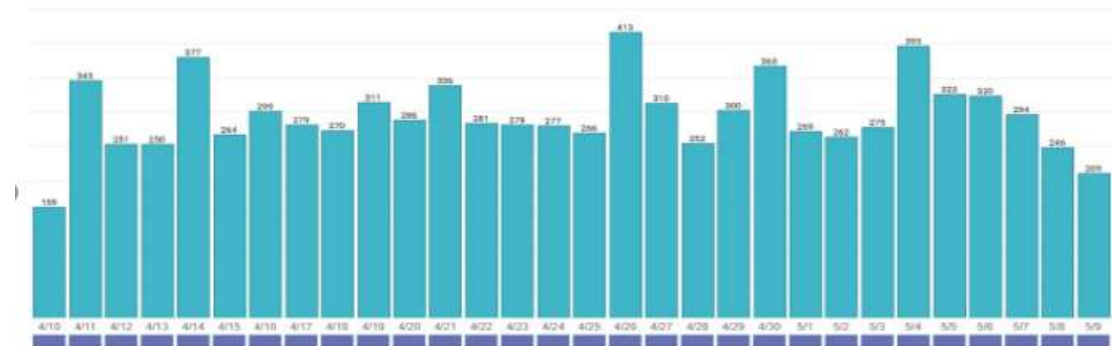
Estimated / projected leak flow rates defined in the industry standard *AWWA M36 Water Audits and Loss Control Programs Manual*

# Example of Normal vs. Continuous Consumption

## Normal Usage over 30 days



## Hi Continuous Usage over 30 days



# Satellite Water Leak Detection: Utility-side

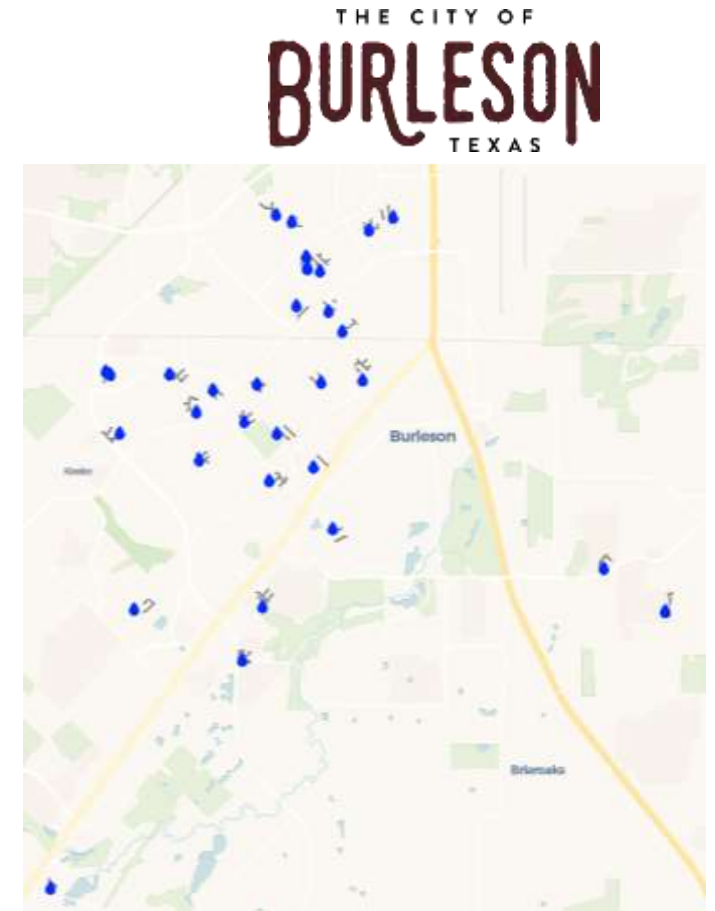
Utility Leak Categories	Number of Leaks	Corrected
Service Pipe	7	Y
Service Connection	6	Y
Valve (shut off)	1	Y
Fire Hydrant	5	Y
Water Meter	7	Y
Water Meter Curb Stop	7	Y
Total	33	

**Service Pipe:** A connection from the distribution main to the building's plumbing system

**Service Connection:** The assembly (pipes, valves, fittings) that links the distribution system (water main) to the customer's service line or meter

**Valve:** A mechanical device installed in the water service line or system that controls, shuts off, or regulates water flow

**Water Meter Curb Stop:** A valve—located underground near the curb—that enables utilities (and sometimes customers) to shut off water flow before the meter





# Satellite Water Leak Detection: Utility-side

REAL WATER LOSS IDENTIFIED BY LEAK TYPE - GPM		
Leak Type	Number	Total Flow (GPM)
Service Pipe	7	48.3
Service Connection	6	41.4
Valve	1	6.9
Hydrant	5	17.5
Meter	7	2.8
Curb Stop	7	4.9
Total	33	128.7

**33 utility-side leaks represent projected 67.6 million gallons per year (or \$184k)**

Estimated/projected leak flow rates defined in the industry standard *AWWA M36 Water Audits and Loss Control Programs Manual*

# Field Investigation Outcomes: Wastewater Collection System

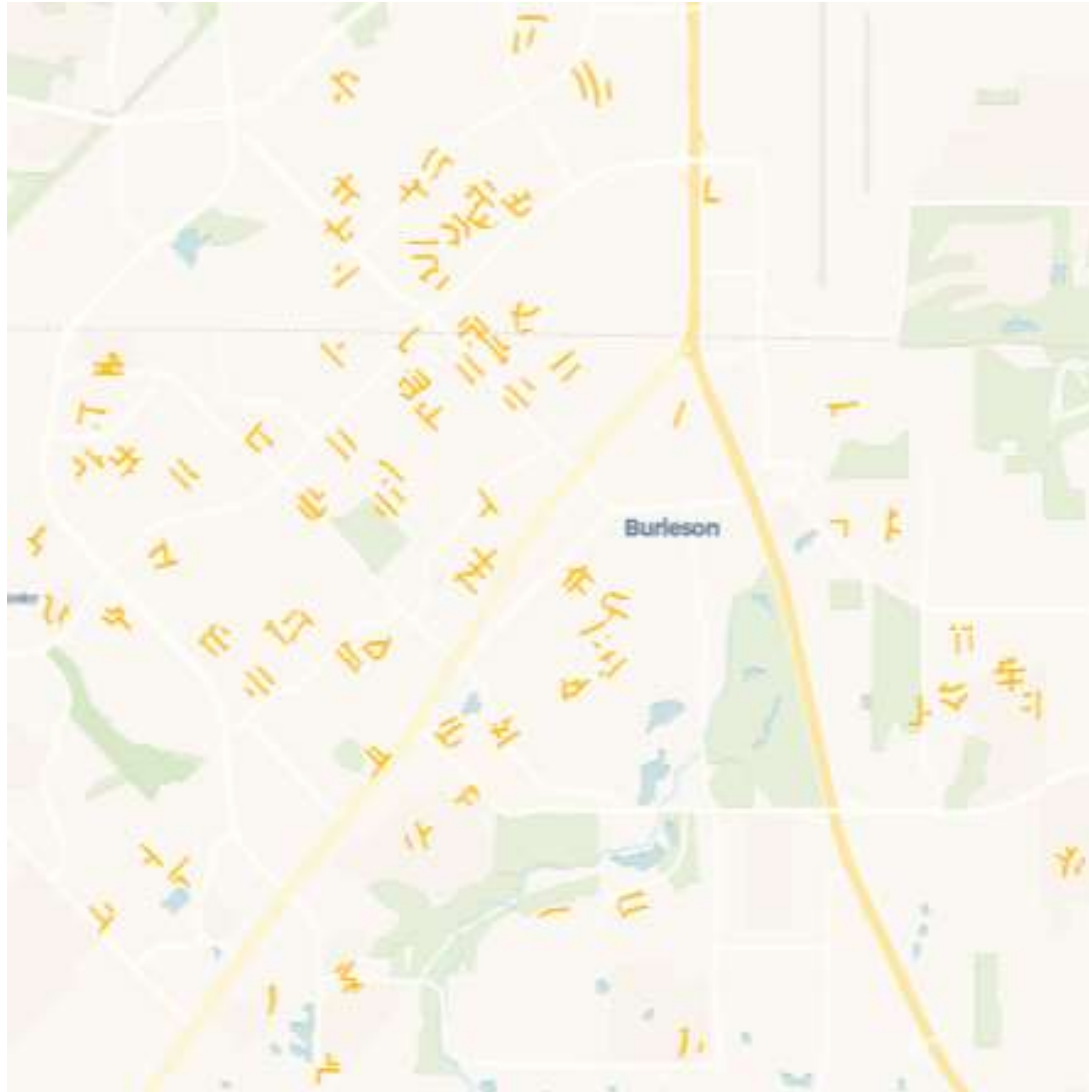


- 21 miles of sewer mains identified for inspection (100 segments or Areas of Interest (AOIs) identified
- Validation through a combination of smoke testing, CCTV, and visual checks
- Field investigations found no evidence of Sanitary Sewer Overflows
- Acoustic detection is much less effective for gravity flow wastewater mains

**Exfiltration** refers to wastewater leaking from sanitary sewer pipes into the surrounding soil and is typically caused by cracks or joint failures in sewer mains or laterals, aging pipes, or defective manholes and cleanouts.

**Sanitary Sewer Overflows (SSO)** are generally above ground sewage spills onto the surface.

# Satellite Wastewater Leak Detection



- CCTV inspection completed for approximately nine of 21 miles identified
- Smoke testing completed for six of 21 miles identified
- Corrective actions resulting from activities above:
  - Five manholes rehabilitated to address structural issues and infiltration
  - 100 manhole rain guards installed
  - 35 broken/missing sewer cleanout caps replaced

# Summary & Next Steps

## Operational

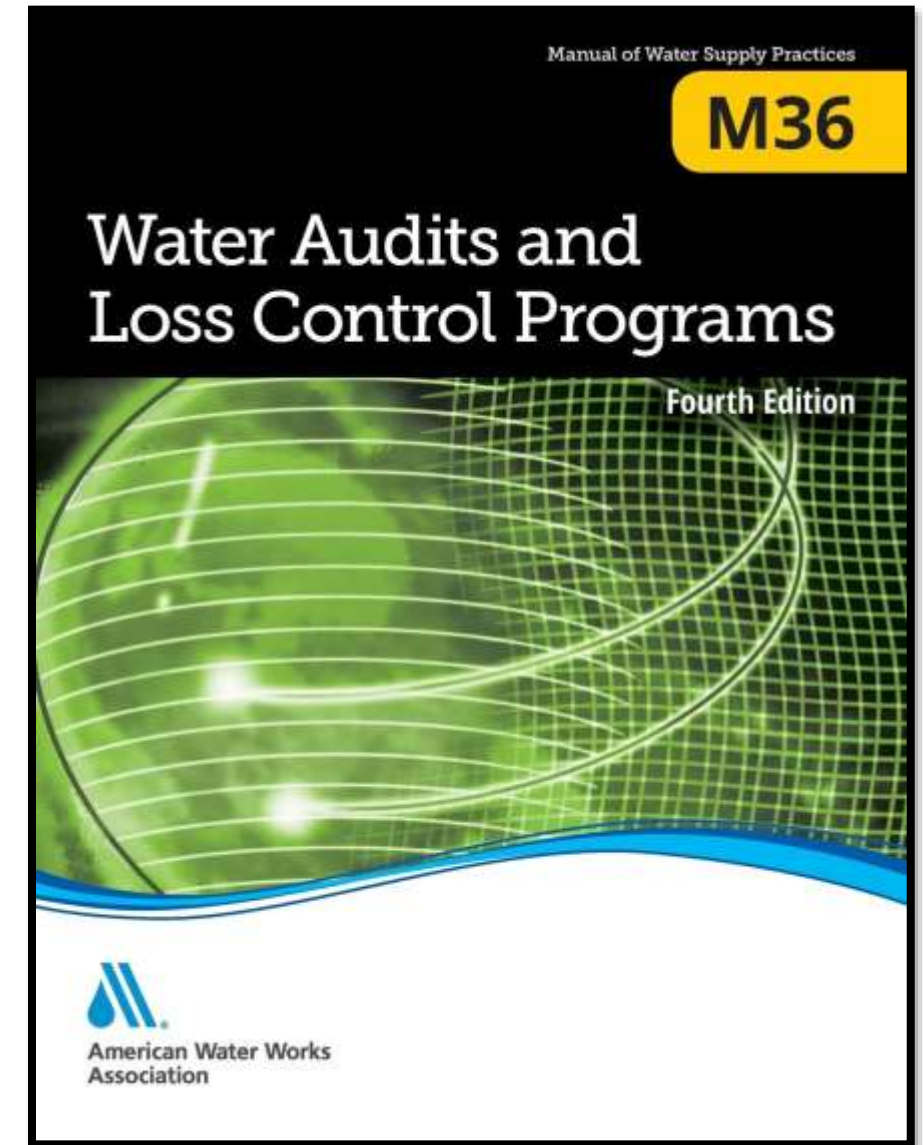
- Assessed 100% of water distribution system in **< one year** as opposed to approximately 7.5 years with traditional methods
- Identified priorities for staff deployment for additional investigation

## Environmental / Citywide Water Conservation

Leaks representing 67.6 million gallons/year (3.5% of typical annual consumption of 1.931 billion gallons)

## Financial

- Cost of pilot to City: **\$73,500**
- Annual value of utility-side leaks identified: **\$183,994**



Staff considers the pilot a success and anticipate repeating this or some other promising technology every three to four years

# Questions / Feedback?

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