Subject: **Tucson Water & Arizona Department of Water Resources (ADWR)**
Leak Detection Program – 2022 Annual Monitoring Report Deliverable

2022

Annual Report

January 01, 2022 – December 31, 2022

CITY OF TUCSON | TUCSON WATER

WATER MANAGEMENT

ASSISSTANCE PROGRAM

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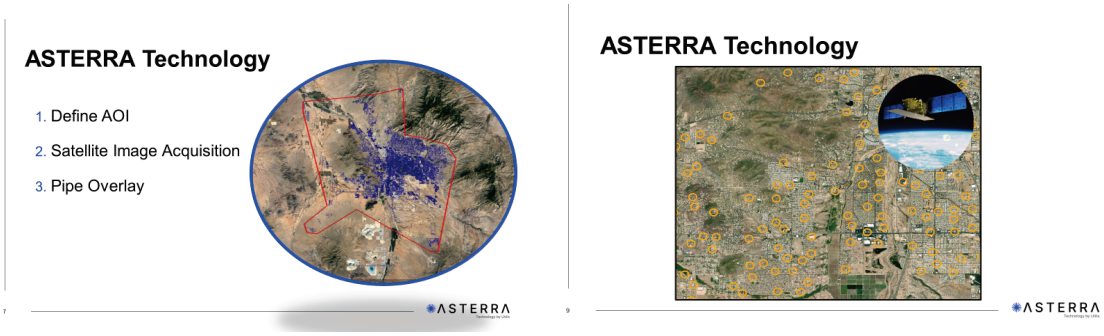
REQUIREMENT:

Tucson Water contracted with Asterra Satellite Imagery company to scan the entire water infrastructure˜5,000 miles and identify Points of Interest (POI) that could potentially reflect active leaks within our service area. Asterra, Inc. performed three satellite passes of 396 square miles and identified 1542 POI's at a cost of $262,500.



We also contracted with Xylem/Pure Technologies/Water Wach's company to perform leak detection by traditional boots on the ground acoustic ground microphone technology. The goal is to validate the Asterra Satellite Imagery POI's and determine if a leak exist. If leaks are located, we will use our Asset Management Program to produce a workflow of leak to final repair. Our utility will benefit by this testing method with the security each water asset will be physically seen, GPS documented, touched, and tested for leaks. In addition, we will gain physical proof the asset exists or is accessible. POI validation cost $250,000.

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DELIVERABLE:

The Xylem/Pure Technologies/Water Wach's team provided Tucson Water Condition Assessment Program (CAP) team a dynamic GIS program (Project Tracker) accessible for real time project progress. Upon completion of the testing, a concise report detailing the success of Tucson Water's leak detection project. Data includes identified leaks, location and size of leak. Each leak was documented with a patented software which included the amount of water lost, and GPS location. Additionally, Tucson Water's Asset Management program documented the need for repair and was trackable to completion.

SUMMARY:

To date, Tucson Water entire water infrastructure was scanned electronically by the Asterra Satellite Imagery technology and validated by traditional boots on the ground with acoustic ground microphone technology. The Xylem/Pure Technologies/Water Wach's team performed leak detection on a total of 319 miles of pipeline with exactly 213 total leaks, equating to 146.56 GPM.

Tucson Water has an Asset Management System documenting the asset registry and identified leaks. Each leak was labeled Tucson Water leak or Customer leak. A work order was created for each single leak and repaired. A service request was created for Customer leaks for trackable purposes and to notify each customer in person or by a door posted informational card.

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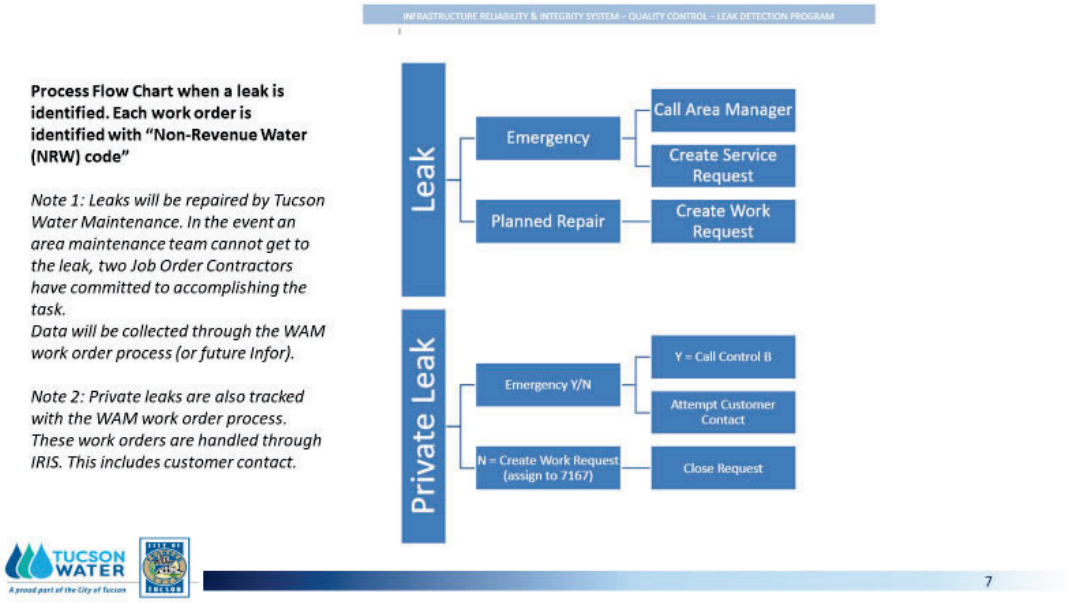

Tucson Water is proud to share the success of the annual water loss is progressing in a positive direction from a calculated 9.11% to 8.17%. Ensuring consistency with data is an active challenge. In February 2022, Tucson Water has retained the services of ME Simpson as part of expanding our non-revenue water program and continue to use technology as a tool to perform leak detection on Tucson Water infrastructure.

The completion of the leak detection program for 2022 significantly improved the data information usability for our Artificial Intelligence (AI) program. The AI program continues to be successful with our Short Main Replacement Program based off Asset Management Program documented leaks and breaks.

Attached below is a copy of the Annual Water loss report chart identifying the annual progress. As you are aware, the Tucson Water annual report was submitted previously to ADWR by traditional methods from our Water Quality Division.

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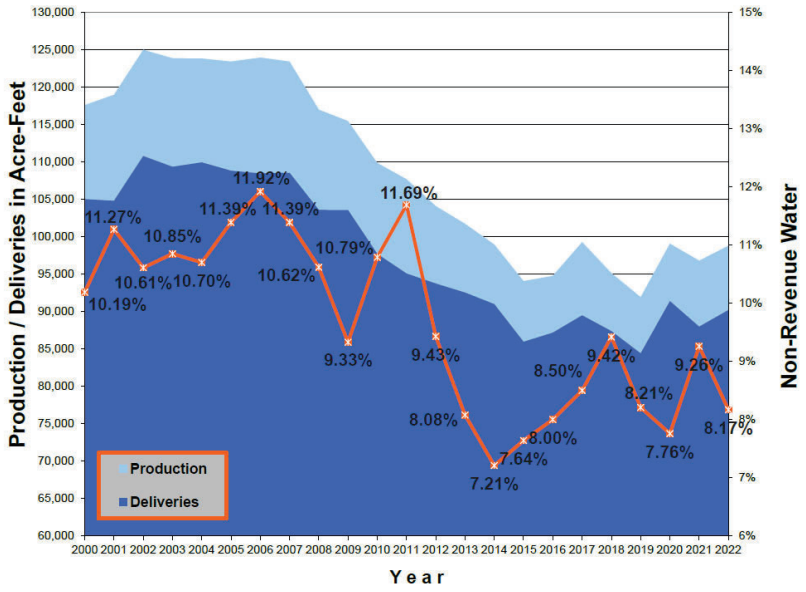

To add, Tucson Water CAP team is growing the internal leak detection testing by traditional boots on the ground with acoustic ground microphone technology and the use of leak detection correlators. This is a new addition to the program that will grow as funding and manpower grows. We've accomplished approximately 100 miles of testing on the distribution system. The leaks encountered are few however they are documented within our asset management program Hexagon.

We are proud to announce the completion of a leak detection project on a major 56-year-old 15.6-mile-long 42" C-303 Concrete Cylinder Pipeline was successfully tested acoustically internally by the Pure Technologies SmartBall technology. No leaks were revealed. Project cost $246,251.25.

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Thank you for your continued support and patience as we perfect our program.

If you have any questions, please contact me at [redacted]

Sincerely,

Jose Pico

Jose Pico,
Tucson Water
Condition Assessment Program (CAP)

cc: John Van Winkle, P.E. Chief Engineer Rev 10/26/2023

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