

CASE STUDY



Utqiaģvik, Alaska THE CHALLENGE

Detecting underground pipe leaks during the winter months in Alaska presents immense challenges. Harsh weather conditions and frozen terrain make pinpointing leak locations nearly impossible. Additionally, the region faces a critical resource challenge–water scarcity combined with financial constraints.

Manpower availability is limited, meaning both speed and accuracy in leak detection are essential to maintaining the efficiency of water distribution systems.

BACKGROUND

Ukpeaġvik Iñupiat Corporation (UIC)

The water system in this remote Alaskan village supports a population of approximately 800 residents and depends on a recirculating freshwater network to maintain consistent flow and prevent stagnation. During the short summer pumping season, the community produces the water supply that must last throughout the long winter—there's no year-round production.

The village was losing 8 gallons per minute, or over 10,000 gallons per day—it posed a serious risk to the village's water security. In this environment, every gallon counts.

All water lines are heat-traced to prevent freezing in the extreme cold, and maintenance is complicated by the frozen terrain. Repair work often involves scraping through layers of compacted, frozen ground—and can cost tens of thousands of dollars per dig. For that reason, accurate leak detection isn't just helpful—it's essential to avoid unnecessary excavations and protect limited water resources.



Utqiaġvik is the northernmost community in the United States and is located in the Arctic Circle on the Chuckchi and Beaufort Sea coast. It is the largest village on the Arctic Slope with around 4,212 residents.

FCS' SOLUTION

Assessment

The community's water distribution system faced unique challenges due to its recirculating design. Leaks were transferred from barrel to barrel at residences, complicating direct detection. To track and isolate leak locations, recirculation pumps were bypassed to reduce background noise.

Technicians effectively detected and traced leak sounds using the Tri-Corr Touch Pro Correlator paired with a Hydrophone Kit. The process was further enhanced by the intentional creation of manufactured leaks from barrels, which served as reference points to aid accurate tracking.



Recommendation & Products

A comprehensive, multi-day training was implemented to improve long-term leak detection and system maintenance. This hands-on training focused on:

- Mastering the Tri-Corr Touch Pro Correlator for precise leak detection.
- Efficient deployment of the Hydrophone 2 for sound-based tracking in complex recirculating systems.

This in-depth training ensured that operators gained the necessary skills to maintain water distribution efficiency despite challenging conditions.





RESULTS

Tri-Corr Touch Pro was employed to successfully detect one small leak in the system, marking a step forward in addressing the issue. However, the process of identifying additional leaks is still underway, as the challenging conditions and the complexity of the system require further investigation and effort.

Using the Tri-Corr Touch Pro Correlator and the Hydrophone 2 led to the successful detection of a small but significant leak in the distribution system. This achievement marked an important step forward in tackling the community's water loss challenges.

"FCS field techs came out and gave our team hands-on training with the Tri-Corr system, walking us through how to detect and pinpoint leaks in real-time. Their support made a big difference. We were able to confirm a major leak without wasting time or money. The precision of the Tri-Corr, especially when paired with Hydrophone 2, was a game-changer, even in our harsh Arctic conditions. Working with FCS was a great experience, we would recommend them to other utilities that care about protecting their water supply."

> UIC Municipal Services Managers, Andy R. and Danny H.

