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The Sewerage & Water Board of New Orleans Non-Invasively Locates Massive Leak, Reduces Non-Revenue Water

SITUATION

The Sewerage and Water Board of New Orleans (SWBNO) has been using acoustic leak detection for perhaps two decades. However, in early 2011 it incorporated Echologics' acoustic-based leak detection and pipe condition assessment services into its water loss management and water pipe integrity assessment program aimed at reducing non-revenue water (NRW), which The International Water Association defines as water that has been produced and is "lost" before it reaches the customer. According to the American Water Works Association, NRW costs public water systems approximately $2.8 billion in yearly revenue.

As part of its NRW initiative, SWBNO leverages Echologics for a combination of ongoing flow meter maintenance, distribution network leak detection and transmission main leak detection. Following the installation of a flow meter, which was repaired by Echologics, on a 50" inch transmission main, Echologics engineers noticed sudden increases of water flow with minimum night flows that roughly doubled in a matter of minutes. Because significant fluctuations in flow rates are typically indicative of major leaks or significant changes in mainline valve configuration, the engineers informed SWBNO that they suspected a problem.

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Customer
The Sewerage & Water Board of New Orleans (SWBNO)

Situation
- **Approx. 7,200,000 gallons of water loss per day**
- **Needed to quickly locate leak**

Pipe Material(s)
- **Asbestos Cement (AC)**
- **Cast Iron**

Pipe Diameter
20" to 50"

Technology
LeakFinderRT™

Results
- **Non-invasively pinpointed blown-off hydrant lead on 20" inch AC transmission main**
- **Reduced Non-Revenue Water by millions of gallons**
- **Helped prevent potentially catastrophic roadway failure**

ACTION

Echologics engineers were dispatched to investigate the issue. The investigation began by non-invasively surveying smaller mains that branched off of the 50" inch transmission main.

To conduct this kind of acoustic-based survey, engineers place two sensors on valves and fire hydrants that are connected to selected sections of a water system. Once the sensors are in place, a correlator listens for variations of acoustic signals induced in the pipe by any of several means: flowing water from fire hydrants, physically tapping on appurtenances such as valves, or by attaching vibro-mechanical shakers to the system. Analysis of changes in the acoustic signals enable Echologics to pinpoint leaks and measure the effective wall thickness of pipes without breaking ground or disrupting service.

Echologics uses LeakFinderRT—its acoustic-based leak detection system. LeakFinderRT's proprietary sensor and signal conditioning technology substantially reduces electronic "white" noise and ambient background noise often created by running water, traffic or pumps.

Unlike traditional leak detection methods, LeakFinderRT can accurately detect leaks and measure the effective wall thickness of pipes of all sizes and materials, as its enhanced correlator functions dramatically improve its accuracy when it comes to identifying and locating narrow-band leak noise. This capability is especially ideal for water service providers that have plastic or asbestos cement (AC) pipes, multiple leak situations, and scenarios where there is a large amount of background noise or where leak sensors have to be closely spaced.

RESULTS

Echologics' non-invasive investigation revealed the problem; a massive leak was pinpointed on a span of 20" inch AC pipe. The leak was located in a remote area that was close to a road embankment, but the engineers quickly discovered that this was no ordinary leak—it was a blown-off hydrant lead that was connected to the transmission main. Water was flowing out of the leak into a nearby drainage ditch.

SWBNO crews immediately repaired the leak and flow rates to returned to normal levels. Echologics compared historical flow data to data that was collected after the leak was repaired; the analysis concluded that the transmission main, which regularly flowed at 450,000 gallons of water per hour, had been losing at least 7,200,000 gallons of water per day through the massive leak.

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The average transmission main leak goes undetected for more than 20 years.

"Integrating Echologics' services into our water loss management and water pipe integrity assessment program enabled us to detect and locate the leak. This leak would have likely remained unnoticed for at least six months due to its remote location, and might have continued to go unnoticed until secondary failure of the nearby roadway occurred," said Steve Bass, Utility Services Administrator for the Sewerage & Water Board of New Orleans. "Not only did the project help us to reduce millions of gallons of non-revenue water, it probably averted a dangerous and expensive catastrophic roadway failure."

Echologics engineers non-invasively pinpointed the leak, which was a blown-off hydrant lead that was flowing into a nearby drainage ditch. Analysis showed that the leak had been losing at least 7,200,000 gallons of water per day.

Undetected leaks such as the one that was non-invasively located by Echologics are a significant challenge facing water utilities. While the obvious symptoms of leaks include visible puddles, overall pressure drops, main breaks and what might appear to be sudden rises in water usage or flow rates, the average transmission main leak goes undetected for more than 20 years.

Find out more ways Echologics can help reduce costs, conserve water, and improve customer service by calling us today at 1-866-324-6564 or visiting www.echologics.com.

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