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FEATURED

Technology used to find water on Mars helps detect leaks for Kline Twp. authority

By Amanda Christman Staff Writer

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Michael Koshmieder, left, and Aaron DeBalko look over the Honey Brook Reservoir at the Kline Twp. Municipal Authority authority and ratepayers money.

AMANDA CHRISTMAN / STAFF PHOTO

MCADOO — The same technology used to find water on Mars locates leaks in community water systems.

Kline Twp. Municipal Authority Manager Aaron DeBalko said the technology saved resources and money during the drought and record inflation in 2022.

He said a 30-by-20-mile satellite image taken in August by a company called Asterra revealed that 64% of the system's chlorine-treated water never made it to its destination, instead leaking into the ground — wasting not only the water, but energy and materials during a time when customers were asked to conserve.

The ground-penetrating radar found 16 points where water leaked from the distribution system, which has 2,500 customers in McAdoo and Kline and Banks townships.

From August to September, authority employees made repairs, DeBalko said.

In 2021, the authority was scrambling to find leaks. Wells were at full blast trying to keep water in the system.

"We were leaking water faster than we were pumping it," said Mike Koshmieder, authority water and wastewater operator.

The price of chemicals used at the main well house increased by \$35,956 from 2021 to 2022 due to inflation, but when the leak repair reduced pumping by one-third, the authority also reduced chemical costs by the same amount, saving \$28,993, DeBalko said.

PPL costs increased \$5,000 from 2021 to 2022, but once the leaks were plugged, \$17,000 was saved in the production of treated water.

There were still leaks in homes and service lines in 2022, but the system didn't take a hit like the year prior, DeBalko said.

Initial skepticism

The authority can tell when it's losing water because its pumps are working harder.

Customer reports of dirty water also provide clues, but it's not always easy to find the source of the leak, DeBalko said.

"You can't see into the ground," Koshmieder said, "but with this we can," he said of Asterra's technology.

Authority engineer Karen Pollock, of Systems Design Engineering, learned of Asterra, then called Utilus, through a webinar and brought it before the municipal authority board.

She saw it as a quicker and easier way to detect leaks. Previously, if water wasn't surfacing, the authority would have to send technicians into the field to listen for leaks, a time-consuming process.

Asterra is able to use acoustic equipment on the ground to narrow a search area to an approximately 300-foot radius, said Bruno Tume, sales manager for Asterra North America.

DeBalko said he laughed at Pollock's idea to hire Asterra at first. Not only was it new technology, the price was well over what the authority could afford.

Koshmieder said the rates the authority charges customers haven't changed since 2003, when they were established to pay for a major infrastructure project.

"At first we did blow her off," he said.

But when they applied for a Susquehanna River Basin Commission grant and were awarded \$102,000, they were able to take a chance on the technology.

The grant paid for the satellite scan. It also paid for 50 acoustical meters to detect leaks in Kline's system and 200 smartmeters to be installed at residences, Pollock said.

The entities the water authority reports to — the Susquehanna River Basin Commission, Pennsylvania Rural Water Association and DEP — watched as the process with Asterra unfolded.

People called from authorities in New York's southern tier, Loyalsock and even Canada to inquire, DeBalko said.

An SRBC podcast discusses the work done at the authority, while a news release announcing the latest SRBC consumptive use mitigation grants highlights the work done in Kline.

In March, Asterra is set to perform another scan in conjunction with Schuylkill County, Mahanoy Twp., Schuylkill Twp., Lansford/Coaldale and Blythe Twp. authorities.

Each entity will share the expense of the imagery, DeBalko said.

Pollock said saving water is a big deal right now because of the area's extended periods without rain.

Also, she noted, leaks of treated water can be bad for the environment.

Chlorine isn't safe for flora and fauna; and it can kill fish and sink into the ground and kill beneficial bacteria.

Other savings

In another project, DeBalko said recent GIS mapping allows the authority to find intricate details of its infrastructure, from the well house to the brand of hydrants on any given street, to the service line in a person's basement and everywhere in between.

Funded by a grant Koshmieder discovered, employees can use it remotely.

Current residential water meters are being replaced with smartmeters that allow employees to collect usage data by simply driving past a property.

They can also detect leaks from things like burst pipes inside a home.

Every year they're purchasing \$20,000 worth of the meters and installing them in-house to save money, DeBalko said.

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Headquartered in Israel, Asterra has an office in San Diego, California, as well as the United Kingdom and Japan; and it has done more than 700 projects in 64 countries.

Asterra markets itself as an earth observation company capable of monitoring mining, levees and soil moisture under roads and railways, and that it can see landslides and sinkholes before they happen.

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