



Save Paper!
Scan QR for Web Story

City of Santa Barbara Fights Drought by Upgrading Mobile GIS Workflow

The City of Santa Barbara, located roughly 90 miles north of Los Angeles, supplies water to approximately 95,000 residents. With California's unique drought conditions, state water suppliers face challenges surrounding conservation, water-loss prevention, and system maintenance. The city wanted high-quality asset data for responding to fluctuating drought conditions.

In 2014, Santa Barbara decided to optimize its water system by establishing a goal to replace all 27,500 water meters within five years.

"Instead of just doing a regular meter replacement based on age, we decided to handle this task comprehensively to set ourselves up for the future," said Theresa Lancy, water distribution supervisor at the City of Santa Barbara.

A Slow Legacy Field Data Collection Workflow

While replacing water meters, the city wanted to collect the new meters' locations with high accuracy.

In the past, the legacy mobile app that staff were using without a GPS did not allow them to locate individual meters. Meters were instead correlated with a parcel.

"We used the parcel number for a general idea of location," Lancy said. "But in circumstances where multiple meters are located on a single parcel, knowing which meter was associated with a particular location was especially difficult."

Since meters often sat within one foot of each other, Lancy and her team wanted a higher level of accuracy. As a proof of concept, they borrowed a GPS receiver from a sister department.

This equipment used a mobile base station to provide differential corrections, but the station needed to be manually set up and broken down on every trip. This took an hour of field work every day, slowing down the meter

location collection. In 2018, the City of Santa Barbara looked for a faster data collection workflow.

Moving to a Faster Field Data Collection Workflow

Since the city was already using the Esri platform, Lancy and her team chose ArcGIS® Field Maps (formerly ArcGIS Collector) as their new mobile app. Field Maps established accuracy thresholds, while ArcGIS Online let multiple employees edit and utilize the updated web maps simultaneously.

The next step was to find a GPS receiver that was compatible with Field Maps. An employee suggested the Arrow Gold® GNSS receiver from Esri partner Eos Positioning Systems. The Arrow Gold receiver provided centimeter accuracy and was also compatible with iOS devices the city already owned.

The only missing piece was the source of real-time kinematic (RTK) corrections.

Initially, the team connected the Arrow Gold receiver to a base station 19 miles away. This base station was expected to provide centimeter-level accuracy, but it proved outdated and challenging to connect to.

Next, the team instead opted to install another Arrow Gold receiver as a permanent base station on the roof of the distribution building.

"Because the cost and effort involved was fairly minimal, it just made a lot more sense to go ahead and set up our own base station," Lancy said. "We also thought there could be other groups in the city that would use this system."

Locating Meters Quickly and Efficiently

Since adopting the new solution, Santa Barbara doubled its rate of meter-location collection. Field crews no longer spend an hour per day setting up and dismantling the temporary base station. Now, they are ahead of schedule in meeting their initial goals.

Moreover, installed assets are recorded with centimeter accuracy, using the Arrow Gold receiver and Field Maps, meaning individual meters formerly sharing a parcel can now be uniquely identified. The city has mapped 100 percent of its water meters. This information will be vital to future efforts

to implement automated metering.

Customers have benefited from faster repairs and increased water conservation.

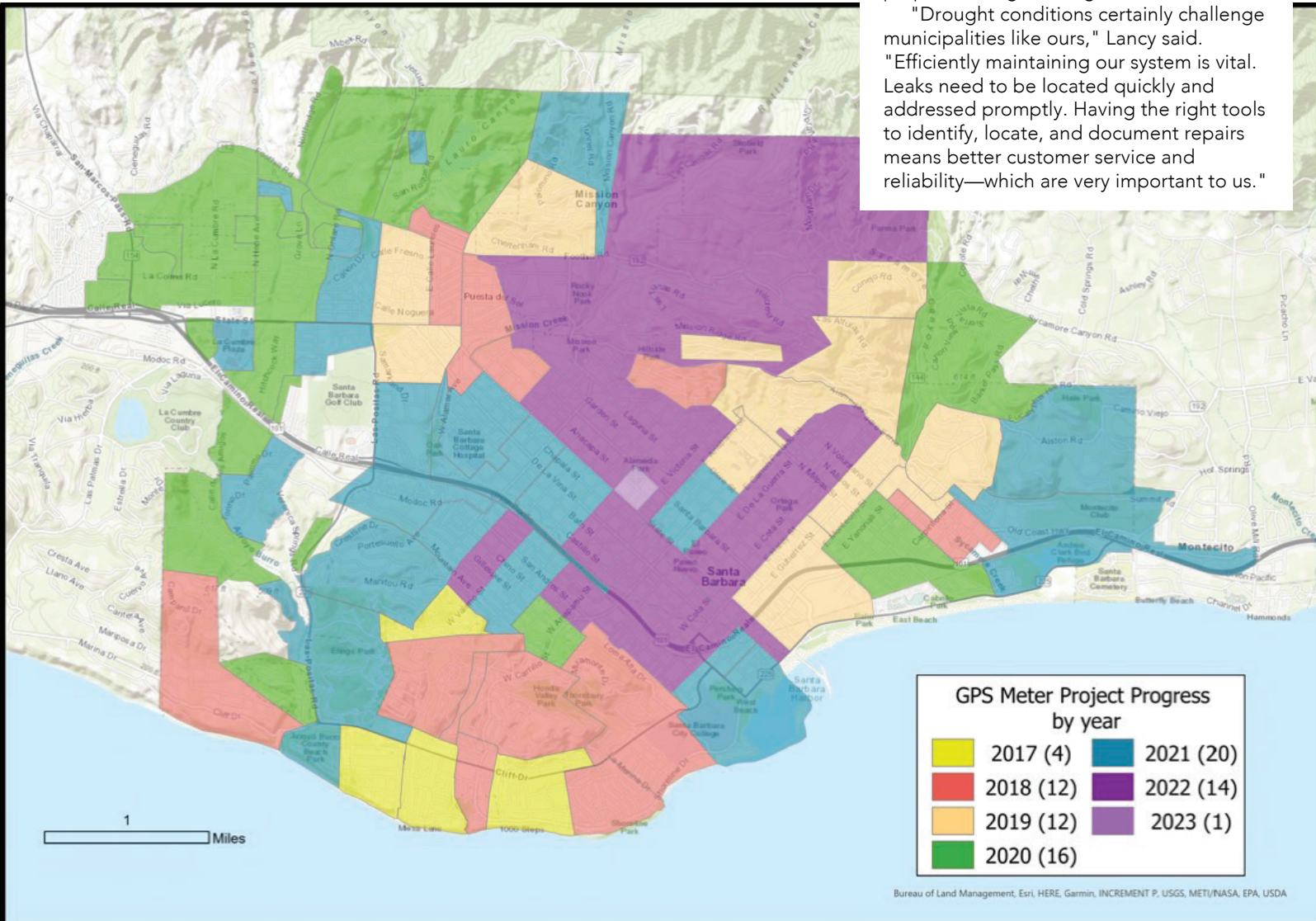
Because the Field Maps/Arrow Gold setup is so user-friendly, field crews have been able to expand their project scope. For instance, crews now map new hydrant and valve installations.

"Once we got the product and started using it, we realized how to expand the use of the Arrow Gold [receiver] and Field Maps for other applications," Lancy said.

In 2018, the city established a new goal: to replace 2 percent of its 300 water-main miles per year. With all the upgrades, the city expects to be better prepared to fight drought.

"Drought conditions certainly challenge municipalities like ours," Lancy said.

"Efficiently maintaining our system is vital. Leaks need to be located quickly and addressed promptly. Having the right tools to identify, locate, and document repairs means better customer service and reliability—which are very important to us."



↑ The city has mapped 100% of their water meters. This information will be vital to future efforts to implement automated metering. Moreover, they have integrated this technology into new installations as well as emergency-response applications.

This article was updated in June 2023 by Eos Positioning Systems to reflect the city's updates which include adopting ArcGIS Field Maps and completing the meter-mapping projects.