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With the Skadi Smart Handle, mapping exposed infrastructure in trenches like this one becomes not only safer, but more efficient. Eagle Pass Water Works System (EPWWS) adopted the Skadi Smart Handle™ when acquiring their Skadi® 300, after success with the Arrow Gold+®.

User
Eagle Pass Water Works System

Partners
Esri, Texian Geospatial

Industries
Water, Wastewater

Challenge
EPWWS needed a reliable way to build an accurate GIS from years of utility records while improving the accuracy and efficiency of field asset data collection.

Solution
Skadi Smart Handle™, Skadi® 300 GNSS Receiver, Arrow Gold® GNSS Receiver, ArcGIS® Field Maps

Results
The implementation of high-accuracy GNSS receivers, including the Skadi Smart Handle, helped EPWWS collect more accurate asset data and formally establish a GIS department that now supports utility operations, planning, and more. Today, they collect accurate data safely in the field and confidently share with stakeholders.

FROM DOTS TO DASHBOARDS: EAGLE PASS WATER WORKS SYSTEM MODERNIZES ASSET MANAGEMENT WITH HIGH-ACCURACY GIS

Eagle Pass Water Works System (EPWWS) is a Texas-based utility serving over 20,000 customer accounts across 30 miles of assets in the Eagle Pass and Maverick County area near the south-central U.S. border. In October 2025, EPWWS officially formalized its GIS department, led by GIS Supervisor Wendy Garcia, marking a major milestone in the utility's decade-long GIS journey. Today, the four-person GIS Department plays a critical role in supporting water and sewer operations, planning, and development projects. Its implementation across the utility was the culmination of years of effort.

THE CHALLENGE: UNUSED DOTS ON A LEGACY DEVICE

For nearly a decade, EPWWS struggled to establish a functional GIS program, though each effort helped pave the way. Initial efforts began in 2010 with leadership's support to find a data-collection method to build a reliable GIS. During the early stages, a GIS technician reporting to management led field data collection using a legacy handheld GPS device. The device's black-and-white interface displayed Xs and dots on a grid as data was collected, but the information remained on the handheld device until it was post-processed and transferred to a desktop map. Data in the desktop map were then cleaned up and prepared for a third party to configure into a general, shareable map of the utility system.

"The data-collection efforts were daily, although they became a challenge for the technician as there was no visual field reference to assist with the data collection, especially in questionable areas when trying to locate old water and wastewater infrastructure," Garcia said.

In 2020, Garcia was hired as the GIS Lead, adding a second element to the GIS effort. Although the longtime human resource (HR) professional had no GIS experience, she had a passion for problem solving. Her enthusiasm for the journey motivated her to learn as much as possible about EPWWS's water-distribution and wastewater-collection systems to build a GIS that would suit the needs of the organization and community. The goal was to create a GIS that would serve EPWWS stakeholders not just today, but well into the future.

STARTING FROM EXISTING RECORDS

EPWWS had a plethora of construction plans, project records, and as-builts. Garcia began combing through these to identify information that was still useful and to further influence the data-collection strategy.

Around this time, Esri had just released ArcGIS® Pro, which would replace EPWWS's legacy desktop ArcGIS software. Garcia saw this as an opportunity to start fresh by learning ArcGIS Pro. She communicated with local Esri Account Manager Jay Hoffman, who encouraged her to connect to a local GIS services provider and Esri partner, Texian Geospatial, for training.

The turning point came in 2022, when Garcia collaborated in the Annual Water & Wastewater Regional Conference, hosted by EPWWS. There, she connected with Texian Geospatial Principal Consultant David Pritchard, who offered data-collection training.

"When David performed a demonstration about real-time data collection, it blew my mind!" Garcia said. "This painted a real picture of what direction to take and what the system needed to achieve."

Pritchard showed Garcia an Arrow Gold® GNSS receiver that, when connected to a local RTK station, streamed survey-grade locations directly into a mobile device running ArcGIS Field Maps — which captured not only the location data, but also any additional attributes — directly into an ArcGIS web map in real time and, ultimately, ArcGIS Pro.



The EPWWS GIS team use the Skadi Smart Handle, Skadi 300 GNSS receiver, and ArcGIS Field Maps to map inside a pump station vault. The technology combination allows the team to "point-and-shoot" into the vault.

By this time, EPWWS's management saw a greater need to expand the GIS efforts. This led EPWWS to hire two new GIS technicians, Armando De La Garza and Luis Avila. The GIS technicians initially began using the utility's legacy handheld device. Not long after, however, the GIS team received the full support of leadership to invest in their first Arrow Gold GNSS receiver.

The real-time high-accuracy field GIS gave the technicians a clearer picture of EPWWS's assets during field data collection. Garcia envisioned endless use cases.

"Now, a field technician who didn't remember if they had captured an asset before could see if they had it on the map already, thereby eliminating duplicate work or forgetting to collect missing assets," Garcia said. "This is when we started making a difference."

THE RESULTS

By late 2025, EPWWS GIS technicians had mapped around half of the utility's water and wastewater assets. By October, the GIS Department was officially founded, and Garcia was promoted to GIS supervisor.

"Now, we take every opportunity there is to collect data," Garcia said. "Whenever the water distribution or wastewater collections departments identify missing information in the map or expose a mainline, they reach out to us, and we go to the field and collect it.

GIS Technician Julian Villarreal, who transferred to the GIS Department from the Meter Department in November 2025, said he previously used the EPWWS GIS map whenever he couldn't find a meter.

"Sometimes a meter could be in weird places," Villarreal said. "Now, we can find an asset on our company iPads immediately, even if it's been covered with dirt, debris, or even paved over."

UPGRADING TO SKADI GNSS

To further streamline data collection, EPWWS has recently invested in a Skadi 300™ GNSS receiver and Skadi Smart Handle™, both from Eos Positioning Systems. Internally, the Skadi 300 is similar to the Arrow Gold, but when combined with the smart handle, it takes advantage of built-in sensors to enable even safer and more efficient data-collection capabilities. In some cases, that means GPS-ing a newly installed asset in a trench without climbing down into it.

"The Skadi Smart Handle has been a great addition to our survey-grade GNSS receiver equipment," Garcia said. "New developments require us to collect assets that lie in over four-foot-deep trenches. This was sometimes impossible, as the safety of our technicians is our number-one priority. Luckily, this issue was addressed when we received the Skadi. Depth is no impediment now, since the integrated laser allows our personnel to use the extensible mode to collect these assets without the need to walk down into the trenches."