

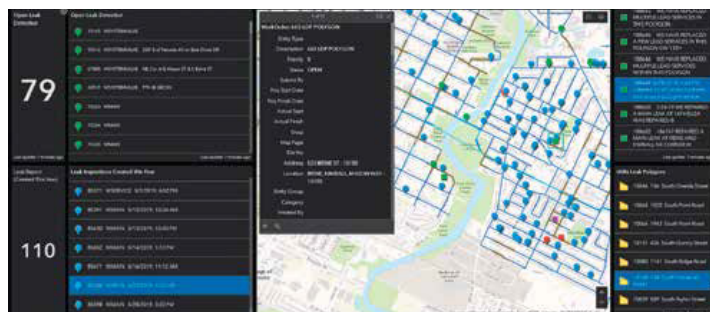
USING SATELLITE DATA FOR WATER MAIN INSPECTIONS

In Wisconsin, satellite data is helping Green Bay Water Utility (GBWU) do water infrastructure maintenance more quickly and efficiently. But switching from manual surveying methods to using satellite imagery would have been anything but easy if not for the help of **POWER Engineers, Inc.** (powereng.com).

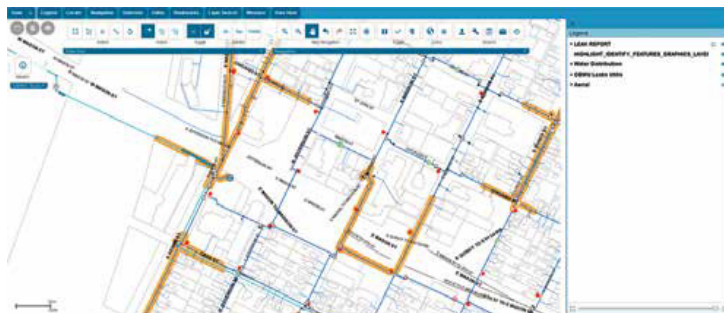
Previously when GBWU needed to survey its underground infrastructure, the 120-year-old utility hired a contractor to use special equipment to listen for leaks in every inch of its distribution system. Because the system was so large, with approximately 450 miles of distribution main, 36,000 service pipes, and 48 miles of supply mains, the contractor could only cover about 20 percent of the utility's pipes per year. On average, about 1 percent of the area the contractor surveyed ended up having a leak that required further investigation and possible repair.

In March 2019, GBWU started using satellite data provided by **Utilis** (utiliscorp.com) that identifies leaks by detecting treated water in places where it shouldn't be. This enabled the company to locate four times as many leaks than it could have with its previous ground-surveying method. But this was the first time the utility had received satellite imagery, so to get it to work with its GIS, POWER had to transform the data. In part, this meant projecting the satellite data to match Brown County's coordinate system.

Working with GBWU, POWER also implemented ArcGIS Dashboards to give the utility new ways to monitor its leak data. Additionally, POWER established new procedures in GBWU's existing asset management system from **Cityworks** (cityworks.com) so the utility could more efficiently identify leaks and make plans to fix them.



Satellite data helps GBWU detect potential leaks, shown in light orange. The utility then uses Cityworks AMS to create work orders for leak inspections by selecting the polygons directly on the map.



Green Bay Water Utility's (GBWU) Open Leak Detection and Leak Inspections dashboard displays the current status of leak mitigation.

Last spring alone, satellite imagery helped GBWU identify 207 points of interest scattered throughout its entire system that showed excess treated water in places that should only contain groundwater, rain, snow, or surface water. These hot spots, as GBWU operations manager Brian Powell refers to them, cover 1,000 feet of water main, or about 11 percent of the system. In the past, it would have taken GBWU at least six months to monitor this much of the system.

Not only has GBWU's new maintenance approach detected more leaks, but it has also reduced how often field crews have to go out to do leak detection by 5 percent.

