

From Field to Insight: Real-Time GIS for Disaster and Emergency Response

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Background

For over 25 years, Weston Solutions has been a trusted partner to EPA Region 6, supporting environmental responses under CERCLA and OPA, and leading large-scale federal disaster operations under ESF #3 and #10.

What began with static PDF maps and outdated MXD files has evolved into a dynamic, real-time geospatial response framework. Today, we harness the full Esri Enterprise platform—Field Maps, Survey123, QuickCapture, Dashboards, Experience Builder, StoryMaps, and Hub Sites—to drive live data collection, mission dashboards, public communication, and informed decision-making across all levels of Incident Command.

This framework has proven its value in some of the nation’s most complex disasters—from the Columbia Shuttle Recovery to Hurricanes Katrina and Harvey, the New Mexico Wildfires, and numerous oil and hazardous materials incidents.

By turning raw field data into real-time intelligence, our geospatial workflows enhance coordination, data integrity, and situational awareness—delivering measurable impact from routine responses to national emergencies. These case studies show how modern GIS transforms static maps into actionable, visually rich intelligence that powers data-driven decisions.



Case Study: Large-Scale Hurricane Response (ESF #3 and #10)

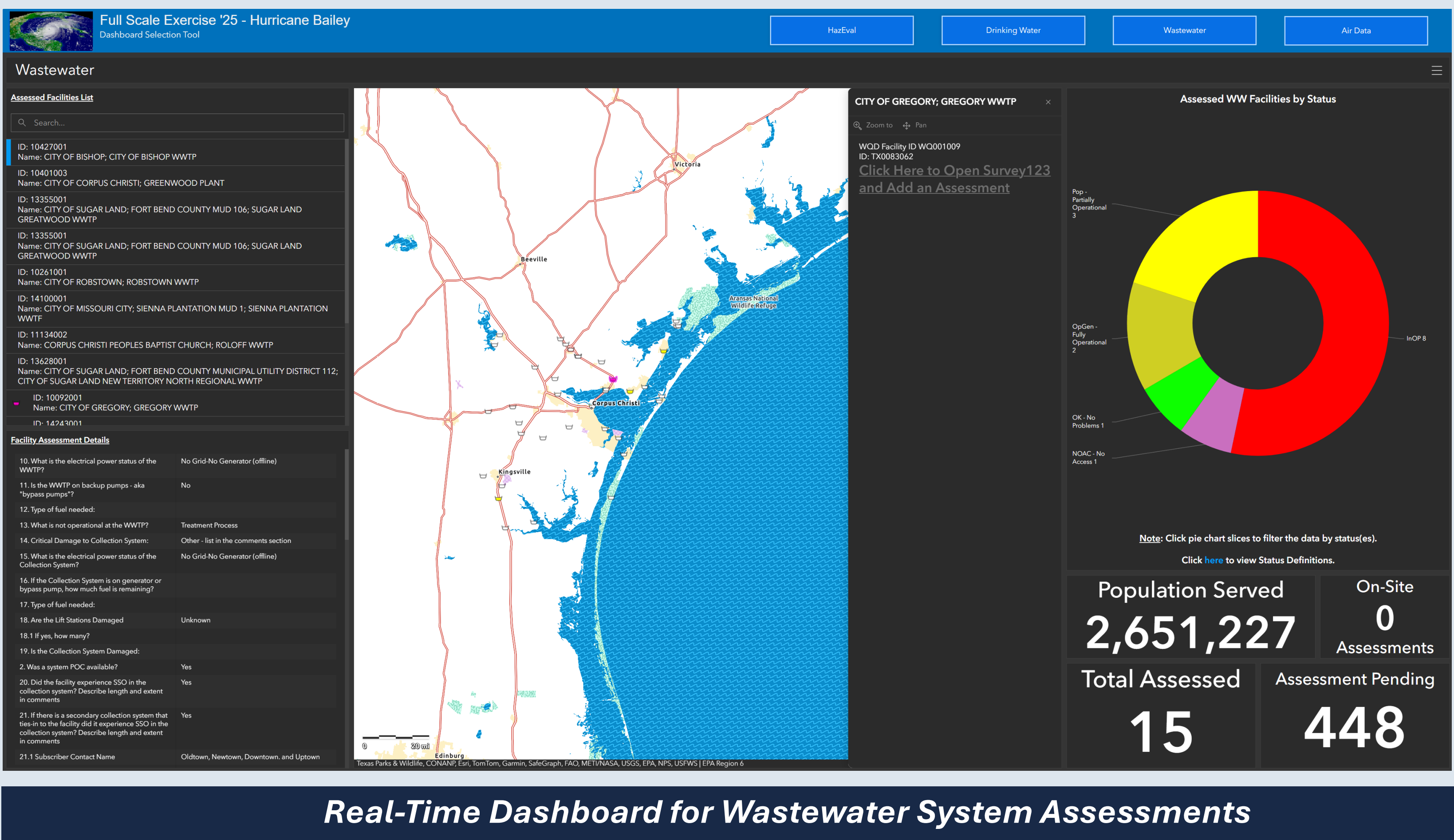
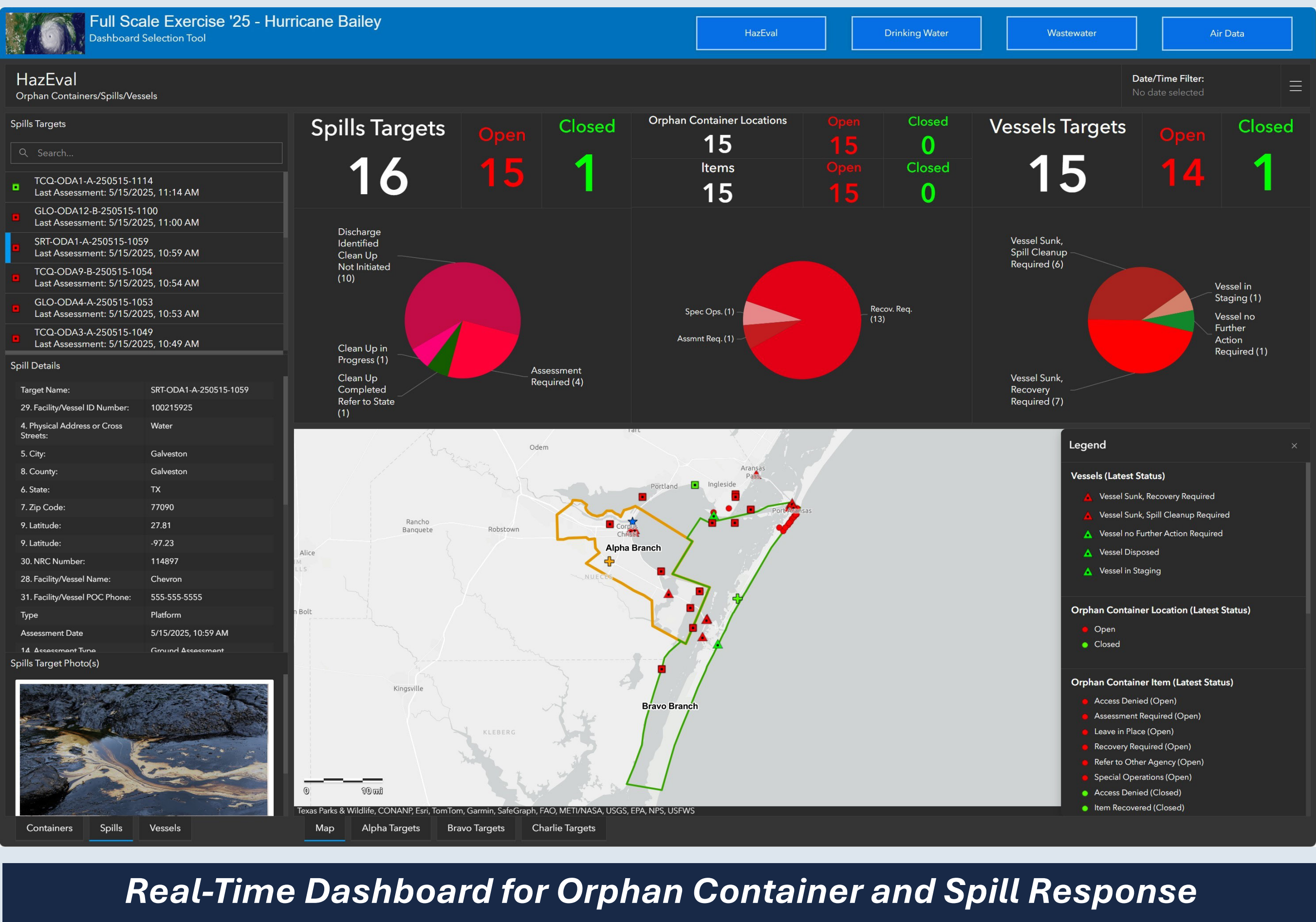
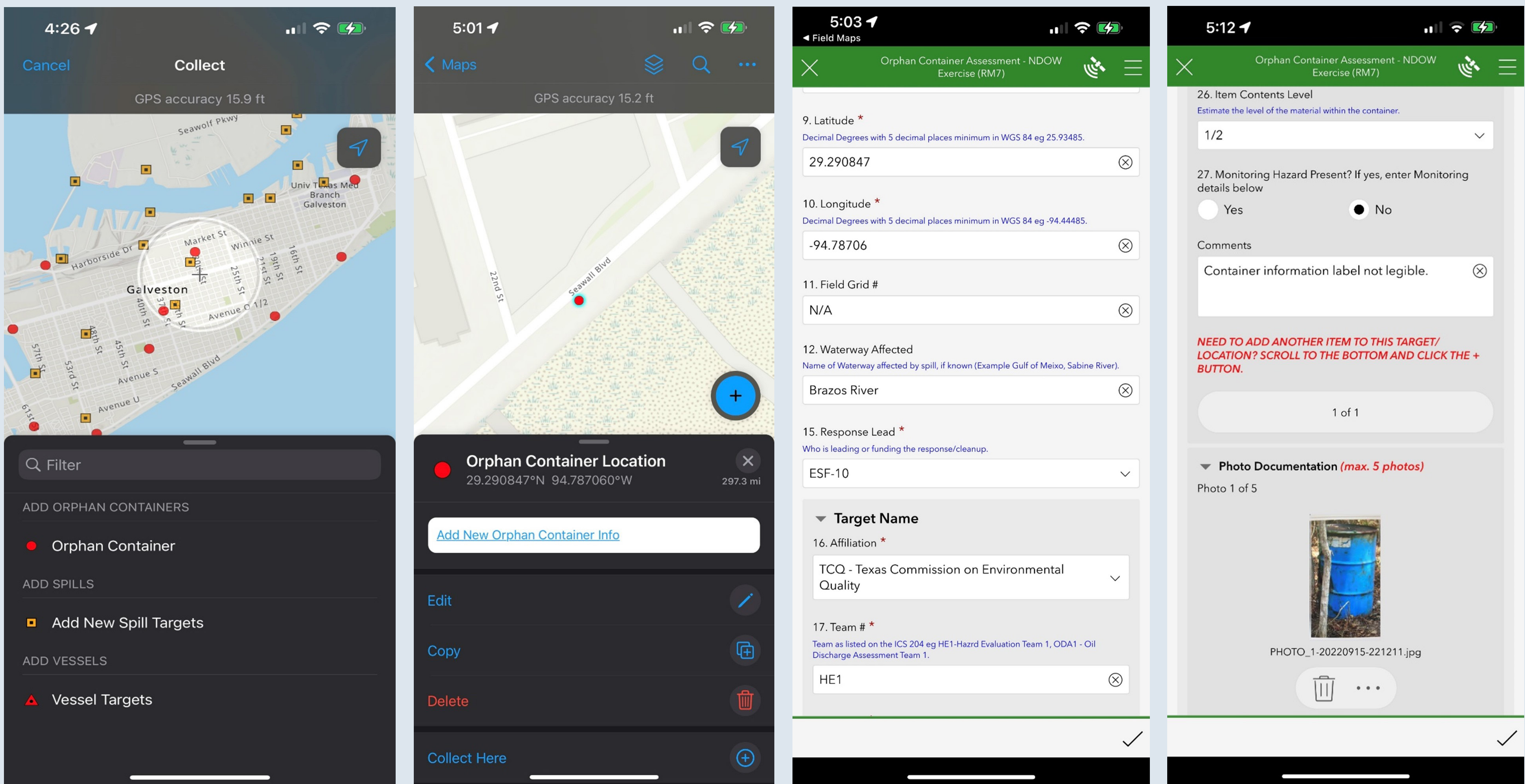
In the wake of major hurricanes, Weston supports EPA's ESF #3 and #10 missions by rapidly deploying scalable, GIS-enabled workflows powered by ArcGIS Enterprise and ArcGIS Online.

Since Hurricane Katrina, we’ve used a standardized framework to collect, manage, and report field data across operations—from debris management and infrastructure damage to hazardous material releases and environmental monitoring. These workflows have evolved from static tables to cloud-based systems, which incorporate geographic intelligence that dramatically improve data accessibility, integrity, and speed of insight.

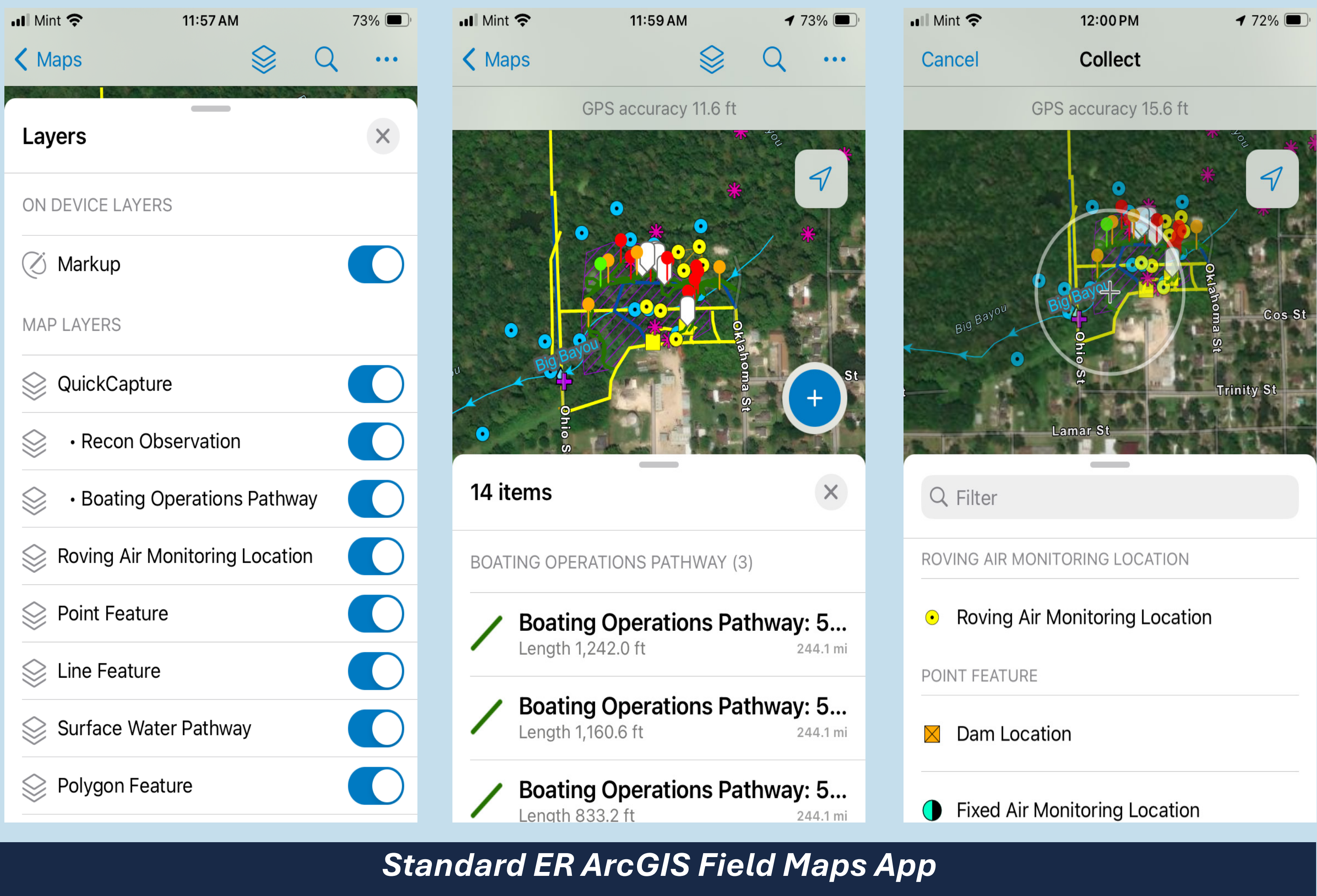
Key capabilities of these workflows include:

- **Mobile Data Collection** with Field Maps, Survey123, and QuickCapture for field assessments, sampling, and hazard documentation—including water and wastewater facility evaluations.
- **Real-Time Dashboards** to track mission progress and operational metrics across multiple data streams.
- **Web Maps** for seamless coordination with FEMA and state/local partners.
- **Centralized Data Management** in ArcGIS Enterprise for QA/QC, validation, and continuity.
- **StoryMaps and Hub Sites** for transparent public communication and partner engagement.

This system transforms raw field data into stakeholder-ready dashboards in minutes—accelerating decisions, enhancing coordination, and ensuring transparency. Proven in disasters like Hurricanes Harvey, Laura, and Ida, it has managed tens of thousands of records with high accuracy under pressure.



Case Study: Small-Scale Emergency Responses



For smaller, rapid-response environmental incidents—often after hours—Weston deploys a streamlined GIS workflow using ArcGIS Online.

Pre-configured emergency response templates allow field teams to quickly launch Field Maps apps for site sketching, photo documentation, and air monitoring—ensuring consistent, high-quality data from the outset.

Each Field Maps template includes:

- **Standardized forms** for consistent data collection and QA/QC
- **Sketch tools** for mapping site layouts and sampling points
- **Photo capture** for visual documentation
- **Smart forms** for real-time air monitoring data entry

Field Data synchs into AcGIS Dashboards, providing real-time situational awareness to field leads and EPA managers. Pre-built Dashboards and StoryMaps eliminate setup time and ensure consistency across responses.

All data are centralized in ArcGIS Enterprise for validation, integrity checks, and seamless sharing. When needed, StoryMaps can be quickly published to inform the public and agency partners—no reformatting required.

This scalable, GIS-powered workflow accelerates response, ensures data quality, and streamlines communication from field to final report.

