



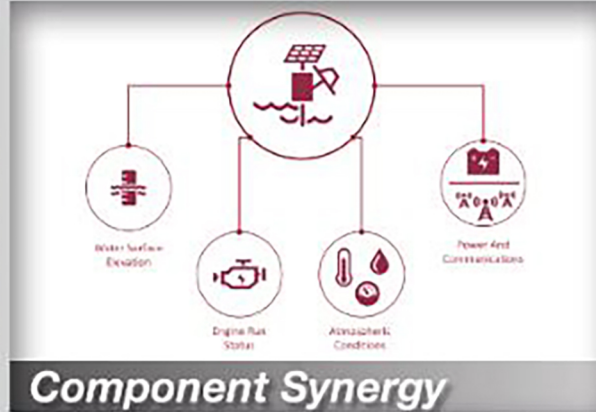
**Company Canal Pump Station**



# PUMP STATION MONITORING SYSTEM



**Monitoring Equipment**



**Component Synergy**



**Data-Driven Dashboard**



**GIS Integration**

*Technology driving innovative monitoring solutions to better inform future drainage and flood protection planning.*

**CHALLENGE:** Lack of real-time and historical data to properly manage forced drainage systems.

**SOLUTION:** A remote monitoring system capturing client-pertinent data used to promote sustainable water management strategies.

**INNOVATION:** Customized “smart” system modernizing drainage infrastructure.

**COMPLEXITY:** Self-contained, self-powered, weatherproof, connected—in remote, harsh conditions.

**UNIQUE ASPECT:** Combined use of modern technologies, including IoT, AI, and GIS, driven by engineering analyses.

**RESULT:** Reliable, real-time and historical data shaping future engineering projects and lowering maintenance costs for existing drainage and flood protection infrastructure.

**Location:** Lafourche Parish, LA  
**Client:** North Lafourche Conservation, Levee, and Drainage District (Raceland, LA)  
**Entering Firm:** T. Baker Smith, LLC (Houma, LA)





The North Lafourche Levee District (NLLD) works to improve drainage and enhance flood protection for approximately 65,000 residents north of the Intracoastal Waterway in Lafourche Parish, Louisiana, serving approximately two-thirds of the parish's population. The District includes over 250 miles of levees and drainage canals and over 40 pump stations that comprise a network of 28 forced drainage systems in north Lafourche.

Managing pump station infrastructure has been an ongoing challenge as the process depends upon human intervention and Parish personnel. The lack of real-time water level data and engine-run status readily available led to a series of challenges and issues. One of the primary issues involved over-pumping forced drainage areas as pumps can be damaged and the integrity of levee systems compromised. Not only does this cause unnecessary expense for the Parish, but it also causes erosion and subsidence of the land in these forced drainage areas. Given these issues, NLLD saw the need for a monitoring system that allows them to have the critical data necessary to manage the District properly.

TBS worked with NLLD to design, build, and install a monitoring system, solving the data problem. To modernize the pump station infrastructure, TBS was required to design a physical self-contained, self-powered, weatherproof, and internet-connected monitoring system. A unique combination of technology was used to build the physical station, as well as the supporting cloud infrastructure, providing a user-friendly way of accessing critical data. The combination and implementation of this new pump station monitoring technology provides multiple benefits for both NLLD and the community. In addition to the primary benefit of collecting data, other resulting benefits include:

- Minimizing land subsidence
- Reduced levee maintenance costs
- A system of operations accountability for staff and operators based on historical data
- A tool that can be used to educate operations staff and the public
- Use of historical data to understand operation requirements and prioritize future capital projects

Furthermore, the monitoring system has a number of secondary benefits to the community. In coastal Louisiana, the challenges faced by communities are often multi-faceted. The combination of subsidence, relative sea-level rise, and the uncertainty of tropical storm events create a steadily increasing flood risk to coastal communities. The infrastructure funding challenges faced by levee and drainage districts similar to that of NLLD are daunting when compared to their limited budgets. By taking steps to minimize drawdown of forced drainage systems, the rate of subsidence of the land and levee system acceleration is mitigated, and levee maintenance and damage to pump equipment is minimized. This allows the limited public funds to be concentrated where they are most needed, which is vital for the long-term sustainability of these communities.

The pump station monitoring solution designed for NLLD solved the challenges and difficulties in managing the District's many forced drainage areas, and the innovation also provides a new and effective way for the District to manage their systems into the future.