

# Trinity River Authority Automates Operations at Lake Livingston Dam



## Increasing flood resilience and public safety with real-time weather monitoring

### OVERVIEW

The Lake Livingston Dam sits northeast of Houston, Texas, crossing the Trinity River and creating the Lake Livingston Reservoir. The main purpose of the 2.5-mile-long dam is water conservation. Because the dam supplies water to the city of Houston and the four surrounding counties, it is important to make sure the dam is well maintained and has high quality hydrometeorological data collection.

Chad Holton, Assistant Manager of Operations and Emergency Management Coordinator for the Trinity River Authority, works to minimize risks at the dam. OneRain's Contrail® hydrometeorological management software helps Chad collect important data needed to automate gate operations to control water levels in the dam.

## Overcoming operational challenges

Prior to switching to OneRain's Contrail, managing data collection consisted of using paper records and rain gauges located around Lake Livingston. These sensors were manually monitored and recorded by the hour. This presented many issues that slowed data collection and timeliness of warning systems, putting downstream communities at a higher risk for dangerous flooding.

### 1. MANUAL DATA COLLECTION

Data had to be collected manually, meaning staff needed to physically be at the dam to monitor water and precipitation levels.

### 2. RESPONSE TIME INEFFICIENCY

Data collection was not being done in real time, decreasing valuable time for preparing and alerting downstream communities of flooding events.

### 3. OUTDATED DATA MANAGEMENT

Weather data collected from the dam was stored on one computer, increasing the risk of losing important historical and present data if there were a system failure.

### PROTECTING THE COMMUNITY WITH MORE EFFICIENT DAM OPERATIONS

By adopting Contrail, the Trinity River Authority has increased operational safety and efficiency leveraging real-time data collection and visualization. Automated data collection and mobile notifications ensure that personnel are always aware of crucial water levels in the dam without having to be physically present. Contrail helps dam managers, staff, and local communities increase safety by providing the information and tools needed to maintain and continuously monitor dam operations.



Contrail definitely makes our jobs here at the dam easier. Calculating our desired discharge, for example, used to take 30 minutes. Now it's right there for us when we need it. I love how the dashboard is customizable. I can view all the rain gauges and river gauges in one place. And I have a robust and secure data trail. If we are ever questioned about why we made a decision, this can be invaluable. I am also really impressed with Contrail's customer support. They are always there when something unexpected happens.

— Chad Holton

Assistant Manager of Operations and  
Emergency Management Coordinator

# Solution: Adopting AEM technology

Monitoring and managing the Lake Livingston Dam before Contrail was time consuming and inefficient. Manual monitoring and relying on private rain gauges from residents around Lake Livingston did not provide the most accurate data and required extensive hands-on action. AEM's OneRain technology has been able to offer the Lake Livingston Dam innovative solutions to increase the safety of the dam



## AUTOMATIC DATA COLLECTION

Operational staff make more efficient use of their time with remote automatic monitoring instead of manually recording data every hour.



## INCREASING FLOOD RESILIENCE

Downstream communities from the Lake Livingston Reservoir have longer response lead times through real-time data collection and warning systems.



## CLOUD-BASED DATA STORAGE

Mission-critical deployments at the dam itself as well as within TRA's geographically-separated data center provide greater data accessibility and redundancy to ensure continual monitoring and alarming.

## A prominent landmark

The Lake Livingston Reservoir plays a significant role for Houston, Texas, and the surrounding areas. It covers over 83,000 surface acres and is the largest single-purpose reservoir in Texas, used for water conservation. Lake Livingston has also begun a hydropower project that provides clean energy for up to 12,000 households in East Texas. Keeping the dam operational and providing accurate hydrometeorological data is essential for the safety of surrounding communities.

12K

Homes rely on clean energy from Lake Livingston



## Why AEM?

AEM's OneRain brand has been the leading provider for rainfall data and services since 1992. OneRain's technology is reliable and continually evolving with technological advancements to provide accurate real-time data to maintain safety of people and infrastructure. Systems are tailored to customers specific needs. Trinity River uses the features below to help them manage their operations:



### 1. CONTRAIL GATEOPS™

Automated required outflow calculations and discharge rates keep downstream communities safe by analyzing rainfall, streamflow, and water level.

### 2. ADVANCED ALARMS AND NOTIFICATIONS MANAGEMENT

Customizable alarms notify staff that gates need to be lifted as soon as precipitation rates exceed one inch of rain per hour based on real-time data collection.

### 3. STORMDATA™ REAL-TIME GARR WITH BASIN AVERAGING

Real-time gauge-adjusted radar-rainfall data with basin-average rainfall calculates the average rainfall over the dam basin for runoff modeling, increasing accuracy of predicted water levels.