

# Bexar County automates flood detection to protect drivers on flooded roadways



## Ensuring public safety with real-time flood detection & road weather conditions

### OVERVIEW

Flash flooding is the leading cause of weather-related fatalities nationwide, and Texas leads the country in both weather- and flood-related deaths. Bexar County, which is located in Central Texas and includes the city of San Antonio, is particularly vulnerable to flooding because storms stall along the Balcones Escarpment. In addition, its relatively dry climate and rolling hills create low water crossings that are highly susceptible to roadway flooding – earning this region the nickname “flash flood alley.”

Roy Alaqueinez, Civil Engineering Assistant for the County of Bexar Public Works Department, has worked with High Sierra Electronics for over 10 years helping to reduce the risk to the public.

## Overcoming operational challenges

With over 300 low water crossings, Bexar is one of the most frequently flooded communities in the United States. The absence of a reliable flash flood notification system for motorists has resulted in fatalities at flooded crossings. For the sake of public safety, the county needed a better way to prepare residents for roadway flooding and notify them when it was occurring. Without efficient flood alerting, Bexar County faced the following operational challenges:

### 1. NO DRIVER WARNING SYSTEM

The county was unable to notify motorists when flash floods were occurring at low water crossings.

### 2. MANUAL SITUATIONAL AWARENESS

County personnel had to manually deploy flood warning and road closure signage.

### 3. RESPONSE TIME INEFFICIENCY

Emergency personnel were frequently in dangerous situations due to lack of motorists awareness about flooded roads.

### REDUCING ROAD EMERGENCIES & SUPPORTING FLOOD PLANNING

By adopting Contrail software, High Sierra's High Water Detection System, and complete roadside monitoring stations, Bexar County has created a safer community, reducing the number of unnecessary fatalities on county roads during floods. In turn, that reduction has also increased workplace safety for area first responders and lowered emergency response costs overall.

In addition to protecting motorists in real time, the data collected by the HWDS is used by the San Antonio River Authority for future flood prediction and modeling. That work will ensure Bexar County can keep its citizens safe for years to come.

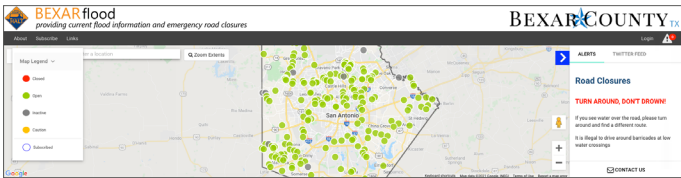


Our High Water Detection System project consists of installing monitoring systems throughout the county. High Sierra Electronics provided all the equipment, did all of the installations, and they continue to provide preventative maintenance on these systems. The company has provided quality products and professional service throughout this period. Our experience with High Sierra Electronics has been positive.

— Roy Alaqueinez  
Civil Engineering Assistant County of Bexar  
Public Works Department

# Solution: Adopting AEM technology

Since 2008, High Sierra Electronics has worked with Bexar County installing and maintaining our High Water Detection Systems (HWDS), which the county has locally named HALT (High-water Alert Lifesaving Technology). The HWDS uses a combination of rainfall and water level gauges to monitor conditions at low points on the roadways. This technology has offered Bexar County innovative solutions to improve motorist safety when flooding occurs on roadways.



## AUTOMATED MOTORIST WARNINGS

When water rises to an unsafe level at low water crossings, sensors automatically trigger flashing beacons and/or barrier gates to alert motorists of danger.



## IMPROVED RESPONSE TIME

Contrail software and HD PTZ Cameras use AI technology to provide real-time verification of accidents or endangered motorists, notifying emergency responders as needed.

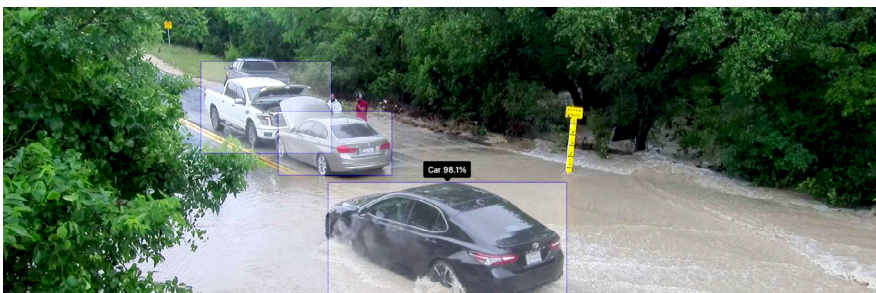


## REMOTE MONITORING & ALTERING

Operational staff receive text and email alerts when a system is activated to more efficiently monitor locations where drivers may need assistance.

# High Water Detection in action

On May 1, 2021, Bexar County experienced a major road flooding event. The HWDS, integrated camera system, and Contrail software all captured the event as it developed, activating warning beacons, flashing signs, and safety gates to protect motorists on the flooding roadways. The High Sierra system ensured motorists were aware of conditions in the most dangerous places, keeping them safe in an efficient and timely way.



# Why AEM?

High Sierra Electronics, an AEM brand, has been designing and manufacturing environmental monitoring systems for the protection of lives and property since 1992. Our comprehensive systems, from sensors in the field to a central software platform to visualize data, help identify threats posed by the weather, such as flooding, dangerous road conditions, and vulnerable dams and levees.

In 2017, Bexar County and High Sierra Electronics received a Project of the Year Award for Phase III from the Texas Chapter of the American Public Works Association in the \$5M - \$25M Disaster or Emergency Construction/Repair Category. Bexar County's HALT system uses the features below to protect motorists from the dangers of flooded roadways.

## 1. HIGH WATER DETECTION SYSTEM

Flashing lights and road crossing-arm gate barriers deploy automatically when flood conditions are present with the complete roadside warning system.

## 2. INTEGRATED PTZ CAMERA SYSTEM

Visual AI provides first responders with immediate automated notifications about stranded drivers on flooded roadways to improve response times.

## 3. CONTRAIL SOFTWARE

Web-based platform provides automated real-time hydromet data collection, visualization, advanced custom alarms and notifications, and two-way gate control.

