

# Real-time Weather and Stream Monitoring Sensors and Stations

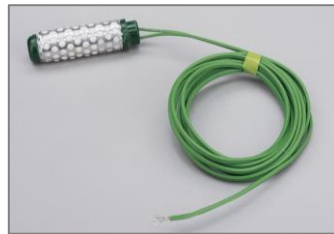
## Professional Grade Commercial Weather Stations and Sensor



Rain, Wind, and Temp Weather Station



Stand-alone Rain Gauge Station

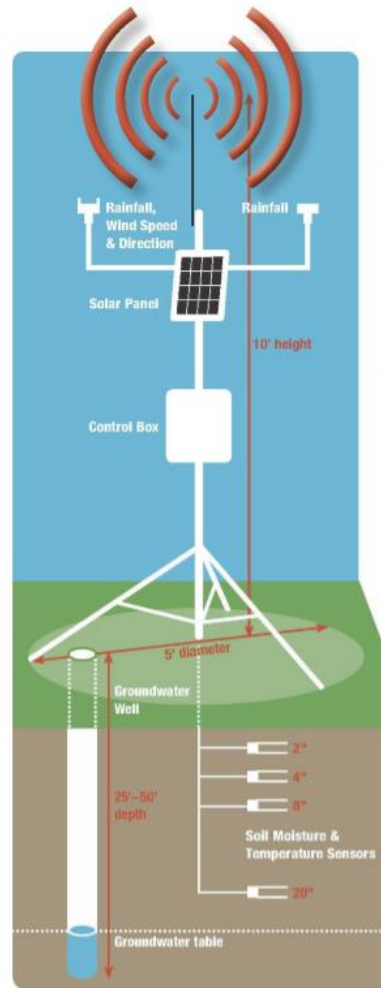


Soil Moisture Sensor



Stream Sensor Station

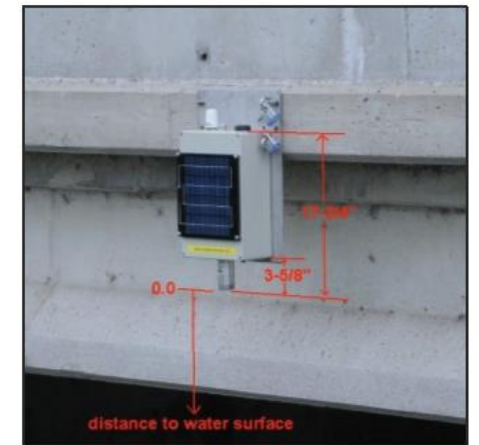
## Iowa Flood Center Sensors and Stations



Hydrologic Station



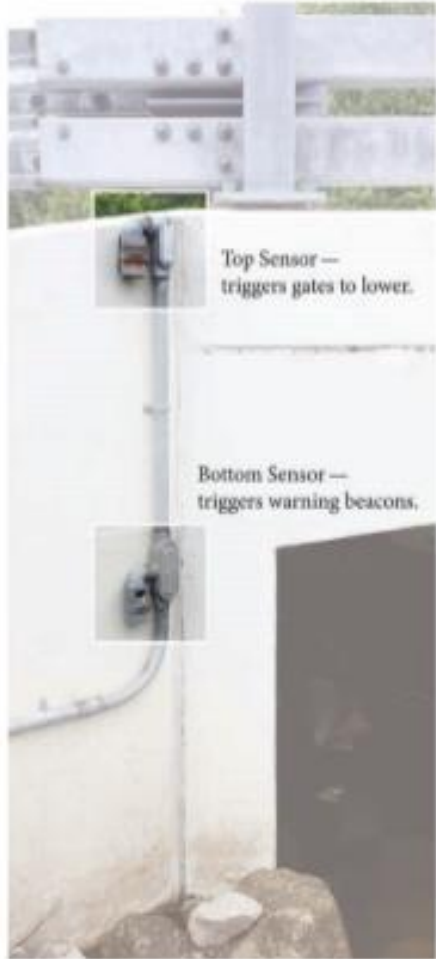
Rain Gauge and Soil Moisture Station



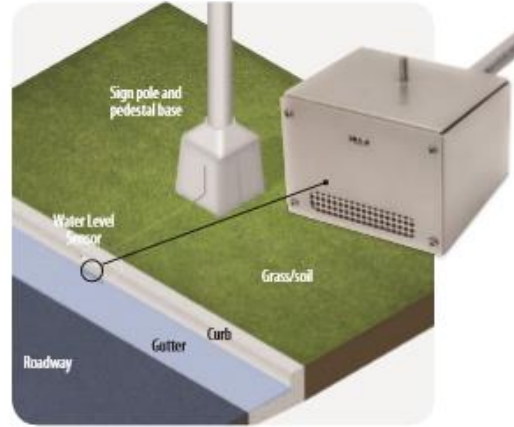
Stream Level Sensor

# Roadside Water Detection – Warning and Alerting Systems

Single or Multiple Flood-level Sensors can be Installed  
Fiber Optic and Ultrasonic Sensor Types also available



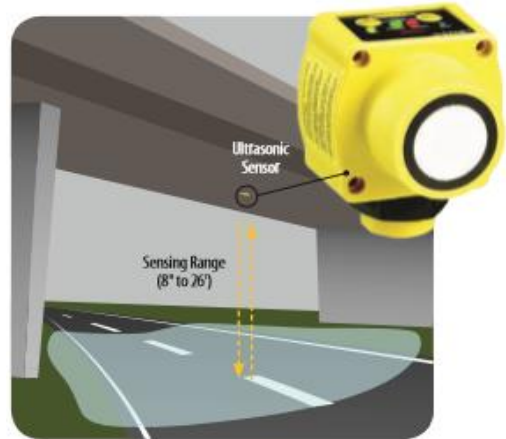
Flood sensor mounted on bridge.



Three sensors trigger separate functions.



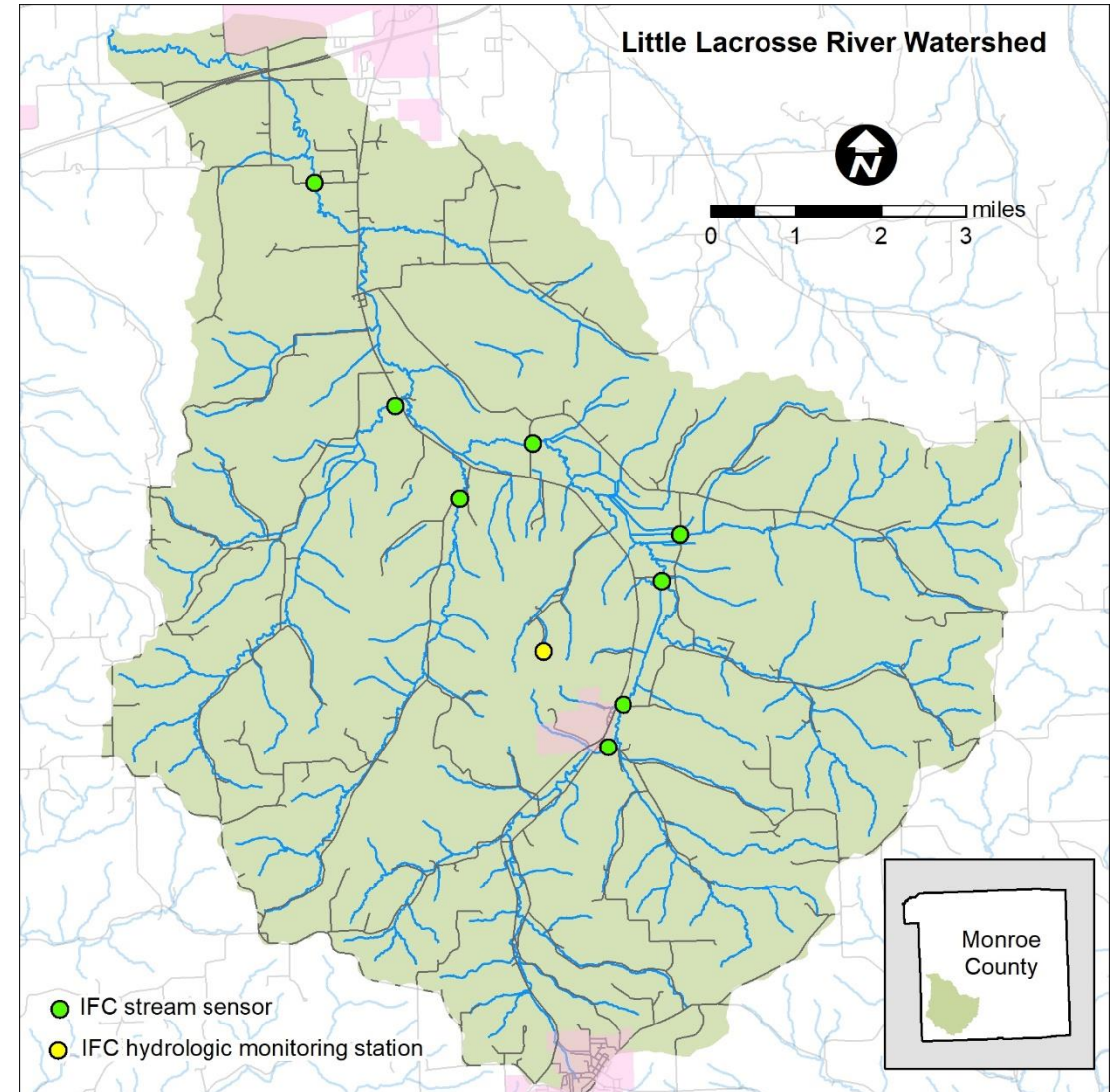
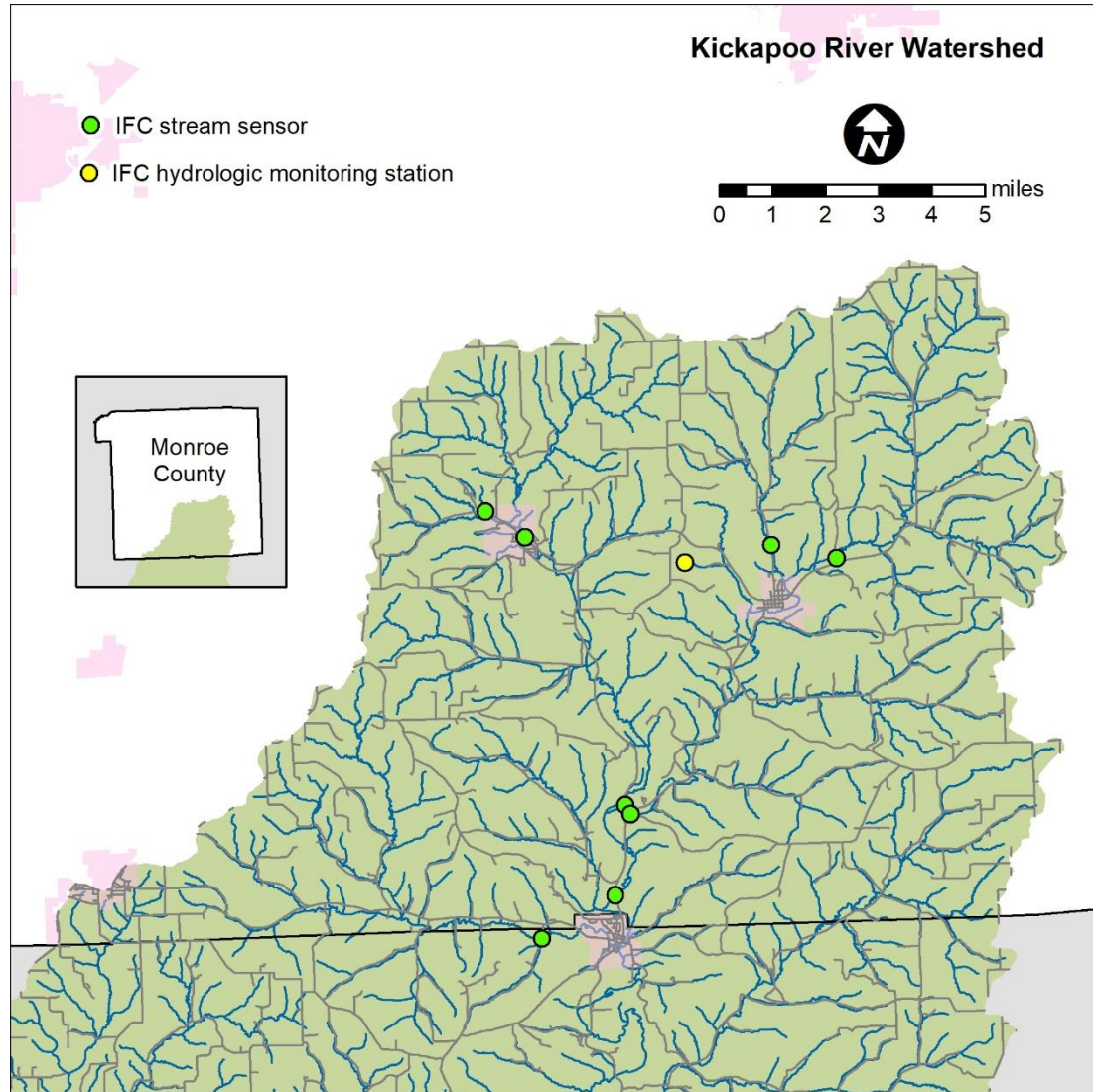
Sensor mounted at underpass.



Dual or Single BlinkerBeacon™

# Sensor Deployment Scenarios for Watersheds

Iowa Flood Center Recommendation:  
1-Hydrologic/Weather Station and 8-Stream Level Sensors per watershed

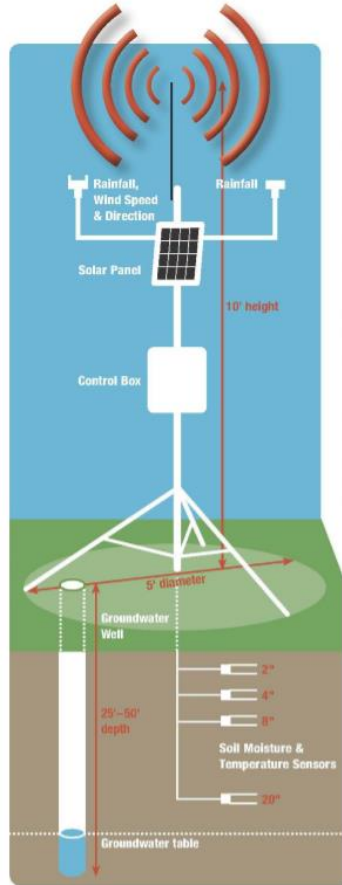


# Data Platform and Information System Management

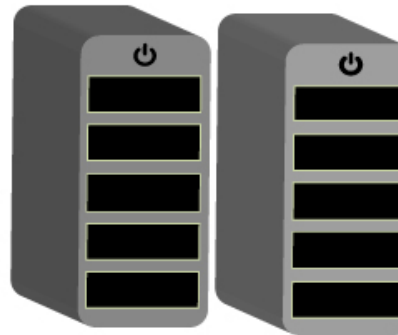
Stations / Sensors  
Cellular or Wi-Fi Transmission

Data Storage and Processing

User Interface  
Internet Web or Mobile Applications



Cloud Server  
OR  
Local In-House Servers



## IOWA FLOOD INFORMATION SYSTEM

The IFIS is a one-stop web-platform to access community-based flood conditions, forecasts, visualizations, inundation maps and flood-related information, visualizations and applications

LAUNCH IFIS



IFIS Widget



Video Guide

Text Alerts



ABOUT



FEATURES



TOOLS



# Data Platform and Information System Management

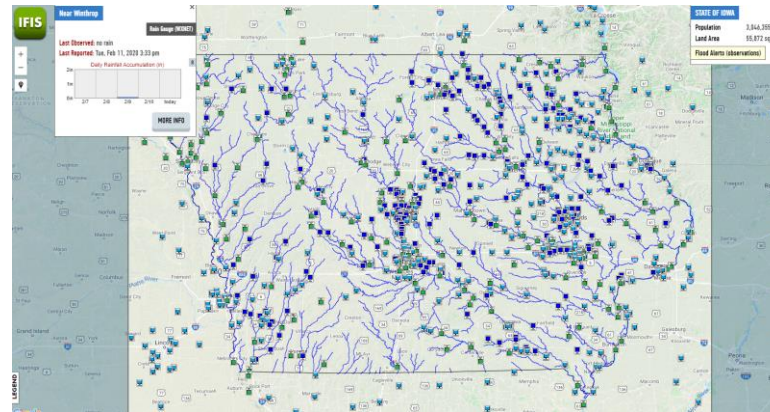
Local Level Option:  
Register Devices with NWS  
Citizen Weather Observer Program (CWOP)



- Register stations / sensors with CWOP
- Data is stored and managed by NWS
- Data can be served through NWS local data page
- Alerting system can be established with NWS
- Reporting time is hourly but could possibly be decreased to 15 minutes.

State Level Option:  
Develop Platform similar to Iowa Flood Center  
Information System

IOWA FLOOD INFORMATION SYSTEM



- Develop stand-alone platform for state level coverage
- Data can be stored and managed by state agency
- Data can be served through Google Maps Interface
- Alerting systems can be established
- Reporting time is dependent on sensor and reporting intervals can range from 5 – 15 minutes

Regional Option:  
Upper Mississippi Information System



- Regional Level Platform – Iowa Flood Center and National Science Foundation partnership
- Manage and serve water-quality and quantity data
- Data Platform addresses big data needs of several states and provides access to large data sets that are managed independently.
- Data Partnership opportunity
- Further details to be determined...

# Equipment and Data Service Cost Estimates

## Local Level Option:

Register Commercial Devices with NWS  
Citizen Weather Observer Program (CWOP)

### EQUIPMENT (2 Watersheds)

2 Weather Stations (\$1,500 ea)  
16 Sensor Level Stations (\$1,500 ea)

**\$27,000**

### DATA SERVICE

Partnership with NWS - CWOP

**FREE SERVICE**

### MAINTENANCE

Wi-Fi / Cellular Service Plan (\$300/yr)  
Equipment maintenance (\$1000/yr)

**\$1,300 / Year**

## State Level Option:

Deploy IFC stations/sensors and develop  
platform similar to Iowa Flood Center  
Information System

### EQUIPMENT (2 Watersheds)

2 Hydrologic Stations (\$9,400 ea)  
16 Stream Level Sensors (\$4,500 ea)

**\$90,800**

### DATA SERVICE

Basic Platform & Interface (\$500K)  
Adv. Platform w/Modeling (\$1 – 2 mil)

**\$500K - \$2 Million**

### MAINTENANCE

Scalable services based on data storage,  
processing, retrieval, and monthly usage

**SCALABLE COSTS**

## Roadside Detection / Alerting System Option:

### EQUIPMENT (2 Watersheds)

2 Detection System (\$4,200)  
4 Warning Poles w/ Beacons (\$4,400 ea)

**\$26,000**

### ALERTING SYSTEM

Web Activation and Cellular Service  
for Alert-Based System (\$500 / system)

**\$1000 / Year**

USGS PARTNERSHIP or  
UPPER MISSISSIPPI PARTNERSHIP  
To Be Determined...