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# Early Flood Warning System

## Early*Flows*

Spencer Johnson, PE CFM

Henry McCall, EI

# About the Speaker

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Spencer Johnson, PE, CFM

Water Resources  
Practice Lead

BS Civil Engineering, ULL  
- BS Petroleum  
Engineering, LSU

6 years experience  
in Water Resources  
Engineering



Henry McCall, EI

Engineer Intern

BS Civil Engineering, LSU

# What is EarlyFlows

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*Local Precision, Global Insight: Flood Forecasting that Evolves with Your Community*



Fully automated



Integrates multiple technological components and data into a comprehensive online flood warning system

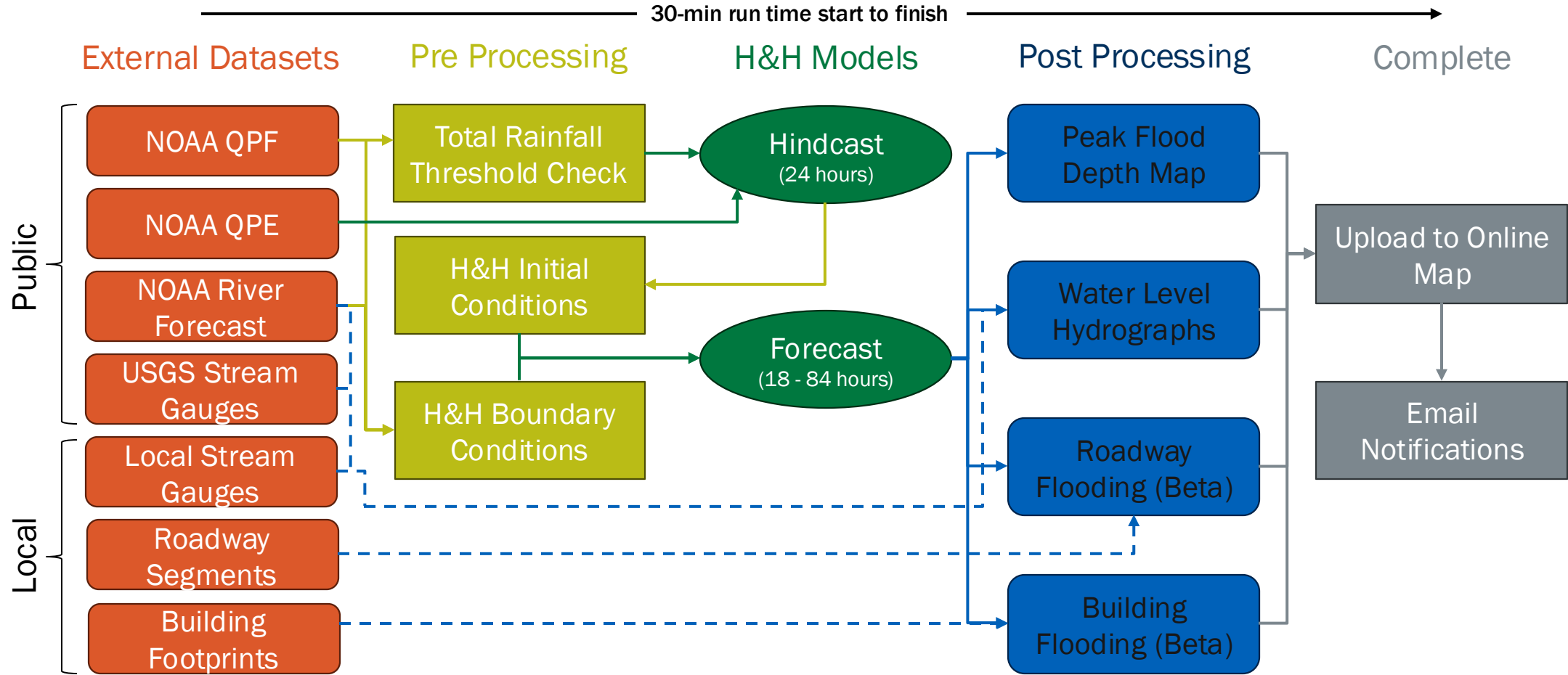


Provides residents, emergency responders, and local governments the critical heads-up to save lives and reduce damages



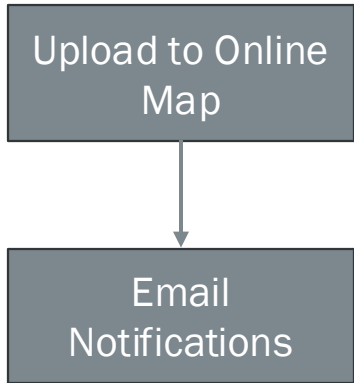
Provides valuable points to lower flood insurance rates through the FEMA CRS program

# Automated Flow Chart



# Automated Flow Chart

Complete



A new Central Early FloWS run has been completed. A run summary and links to the full results are available below.

### Run Finished

- 04-24-2025 04:37 AM

### Forecasted Maximum Rainfall Total

- 1.87 in

### Locations projecting major flooding

No Locations in this category

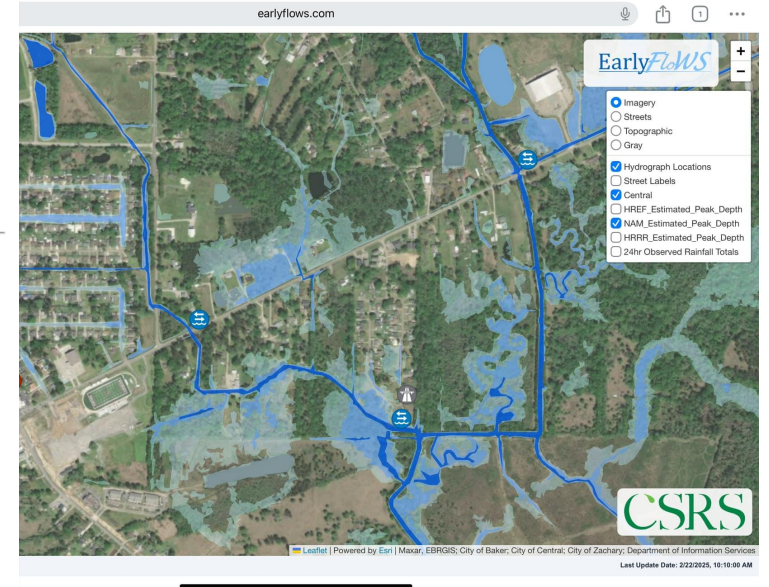
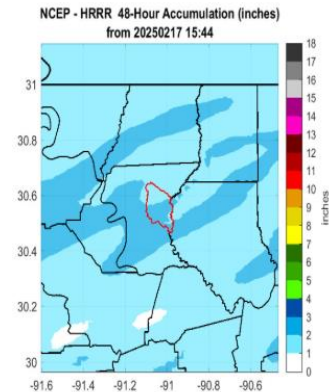
### Locations projecting moderate flooding

No Locations in this category

### Locations projecting minor flooding

[Blackwater Bayou @ Gurney Rd](#)

[Blackwater Bayou @ McCullough Rd](#)

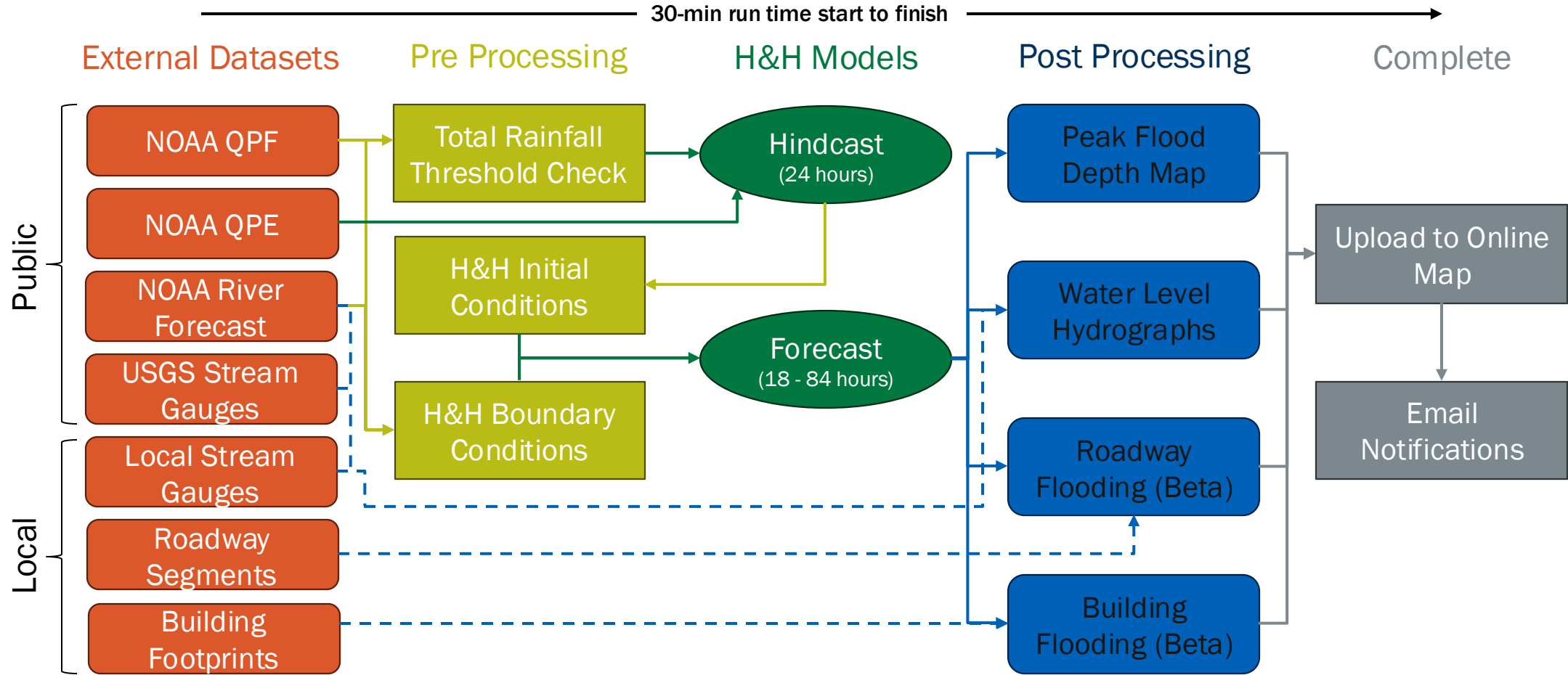


To see all forecast information visit: [Central Early FloWS Website](#)

For any questions, please contact [CSRS Flood Warning System](#).

The information provided herein is based on projections and forecasts and may not accurately reflect current or future conditions. Additionally, these models may not include all variables that may affect flood risk. Due to the inherent

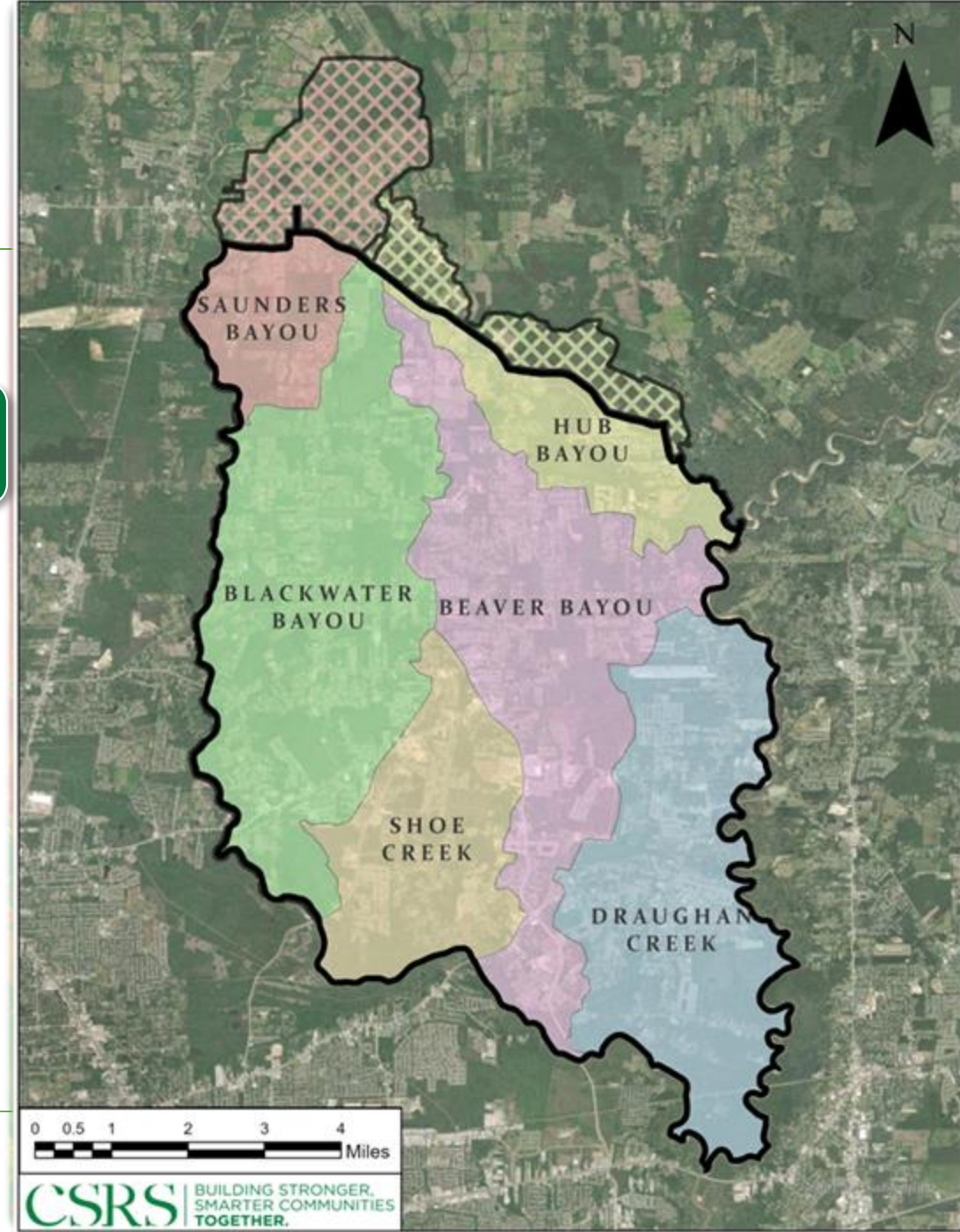
# Automated Flow Chart



# HEC-RAS Model

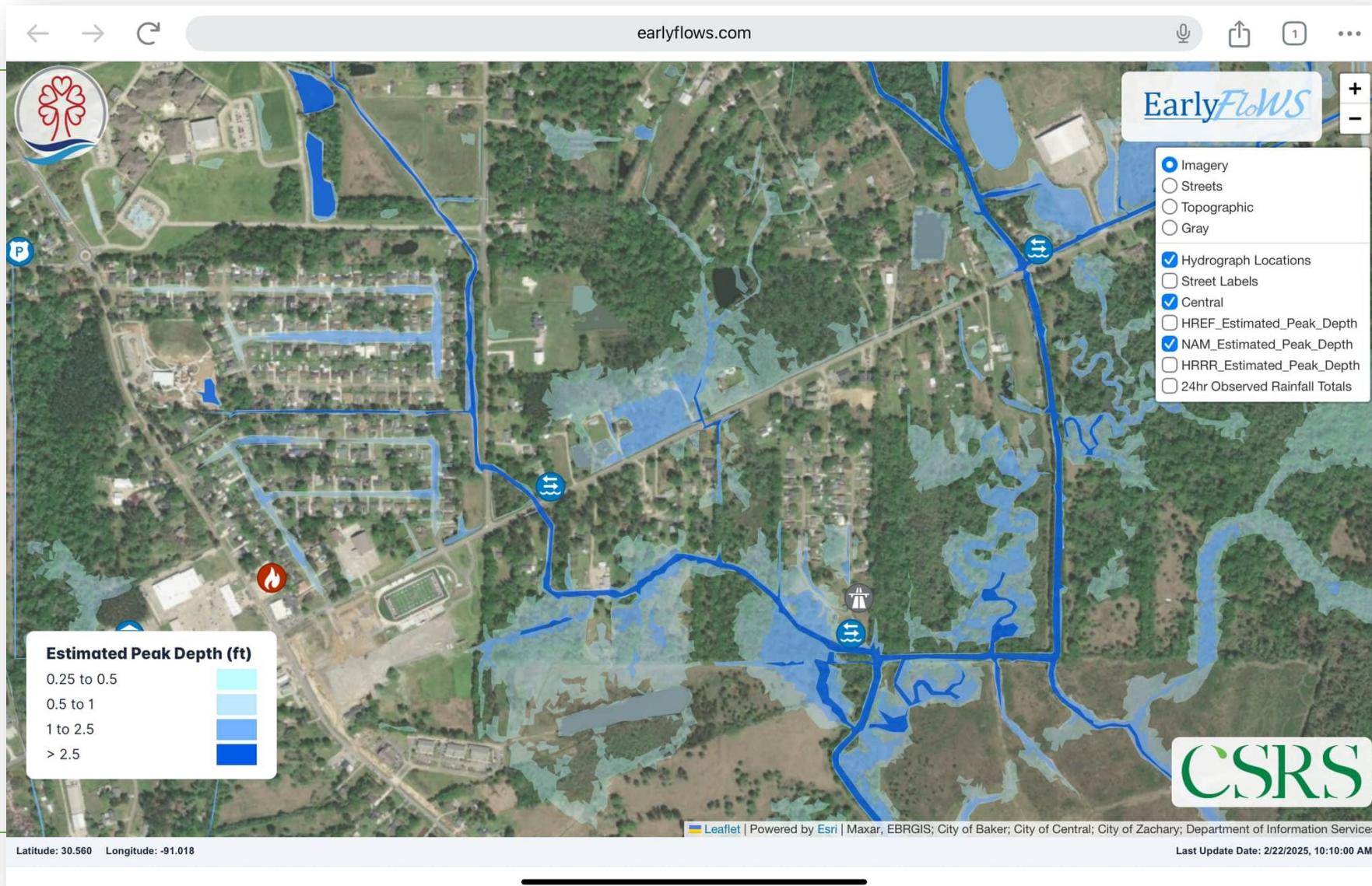
## Run Time is King

- Single model to replace 6 existing watershed models
- 250' base mesh – 70,725 cells
- Breaklines along channels & ridges
- Traditional structures replaced w/ Manning's override regions
  - Increased values to simulate culverts & bridges
  - 1.5x to 15x increases
- Manual calibration

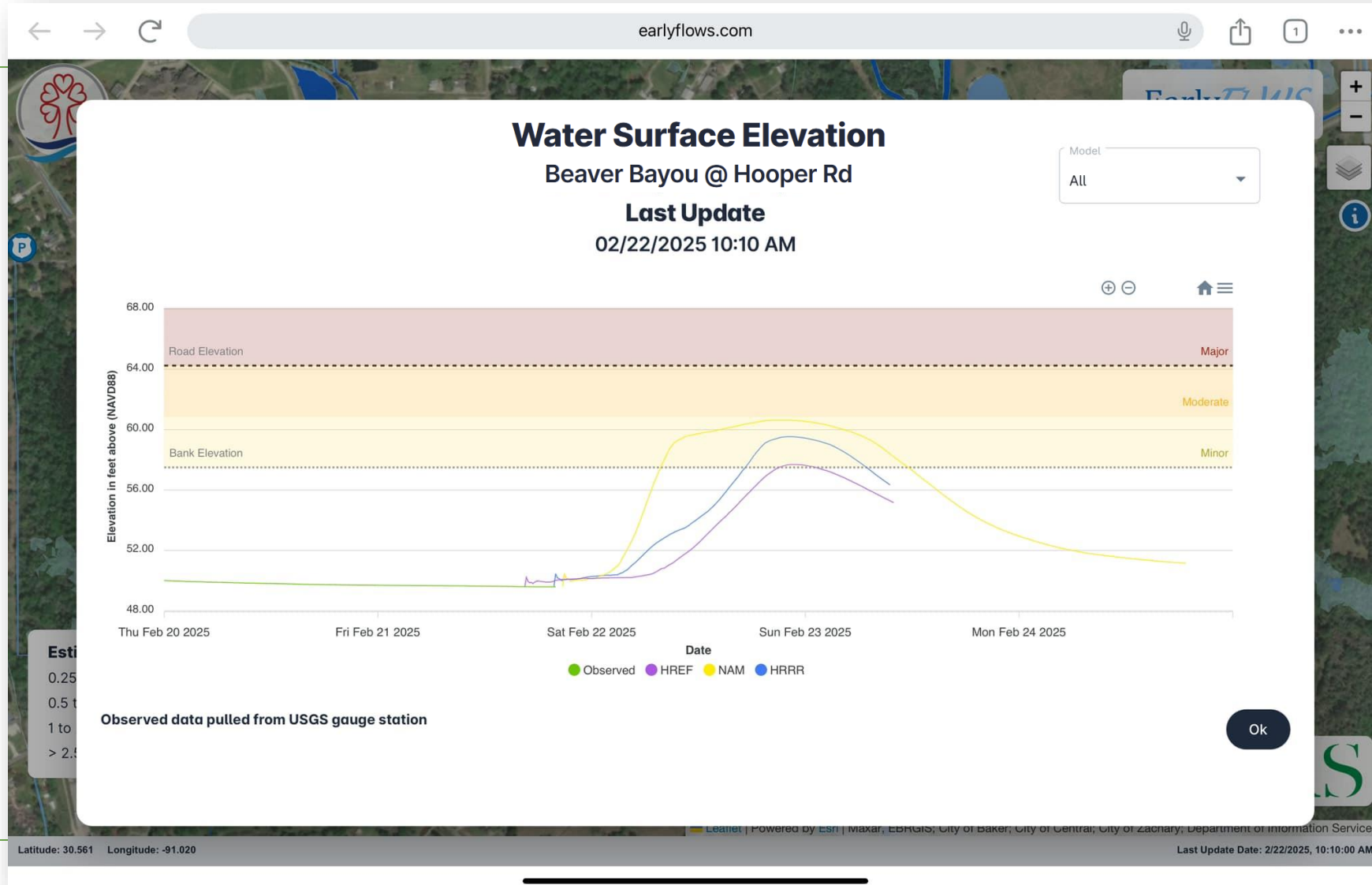




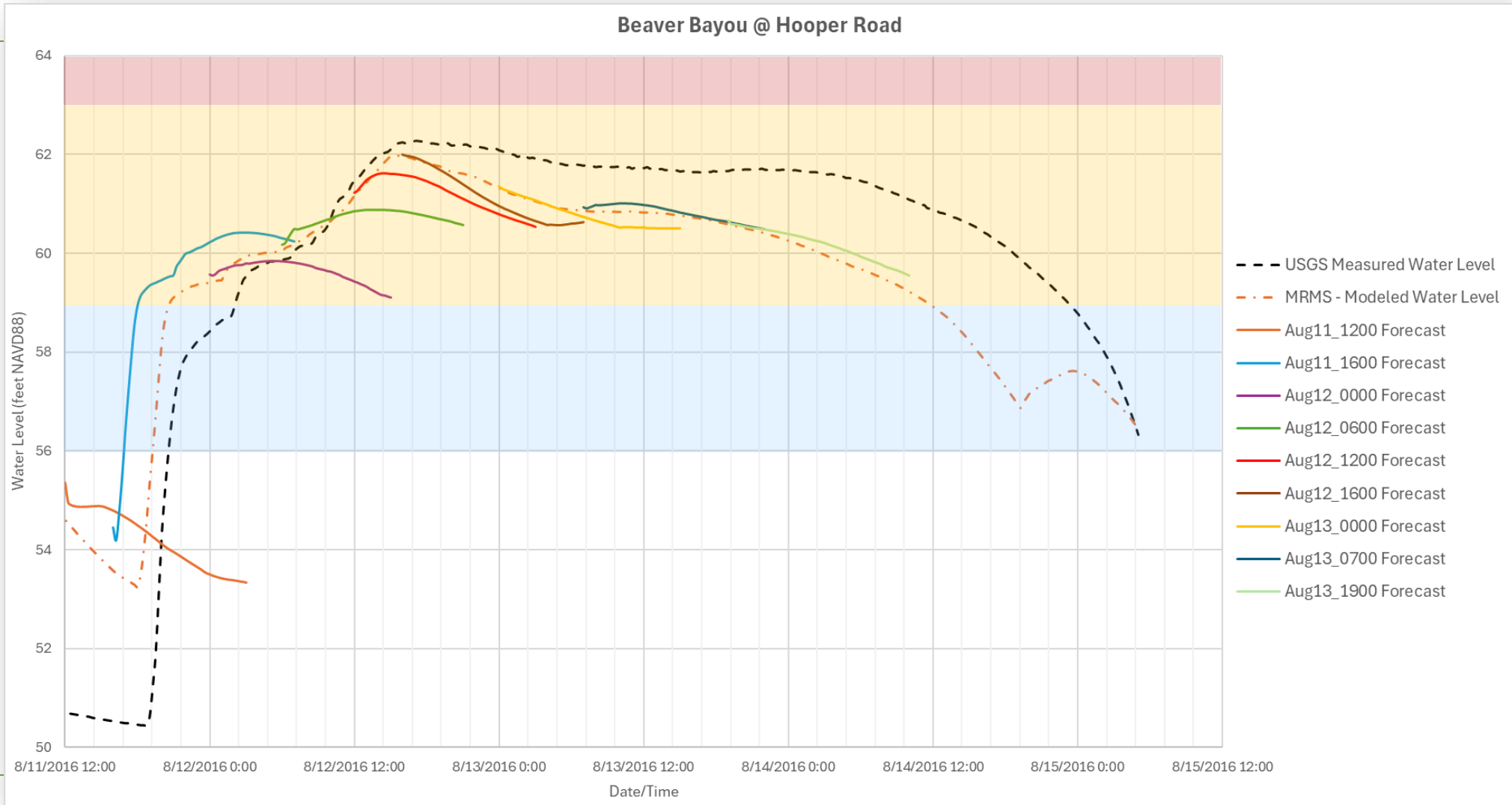
# Online Interface



# Online Interface



# How Accurate is it???



# Biggest Challenges

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## Technical

- Uptime
- Optimization of data handling
- Measure model performance
  - Speed
  - Accuracy

## Non-Technical

- Dissemination of information
- How do we get residents to understand the data
- Maps, rasters, & hydrographs are not always intuitive

# What's Next?

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## Additional Features

- Hindcasts & historic forecasts
- Roadway & structure flooding estimates
- Forecasted rainfall rasters

## Model Performance

- Continued calibration to real events
- High- & low-flow model geometries
- Soil saturation corrections

# Thanks

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Stokka Brown, MS PE CFM

Principal & Water Resources Practice Area Leader at CSRS

BS Civil Engineering, ULL - MS Civil Engineering, Carnegie Mellon

13 years experience in Water Resources Engineering



Justin Dunnam

Student Intern

MS Mathematics, UWF; PhD Mathematics Candidate, ULL