



# USGS Flood Inundation Mapping Program

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U.S. Department of the Interior  
U.S. Geological Survey

# Disclaimer

Inundated areas shown should not be used for navigation, regulatory, permitting, or other legal purposes. The U.S. Geological Survey provides these maps "as-is" for a quick reference, emergency planning tool but assumes no legal liability or responsibility resulting from the use of this information.

# What is Flood Inundation Mapping?

- A Flood Inundation Map (FIM) is a planning tool that combines real-time streamflow information, hydrologic prediction, hydraulic modeling, and geographical information to provide interactive maps of expected flood conditions from streams overflowing their banks during times of high water.
- In communities that support FIMs, this flood potential information is available to help prevent loss of life and damage to property and is freely available over the Internet.

# FIMs can be used for...

- **Preparedness** - “What-if” scenarios
- **Timely Response** - tied to real-time gage and forecast information
- **Recovery** - damage assessment
- **Mitigation and Planning** - flood risk analyses
- **Environmental and Ecological Assessments** - wetlands identification, hazardous spill cleanup

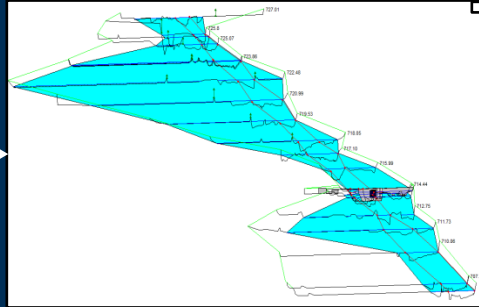


# FIM Utilization

USGS Streamgauge



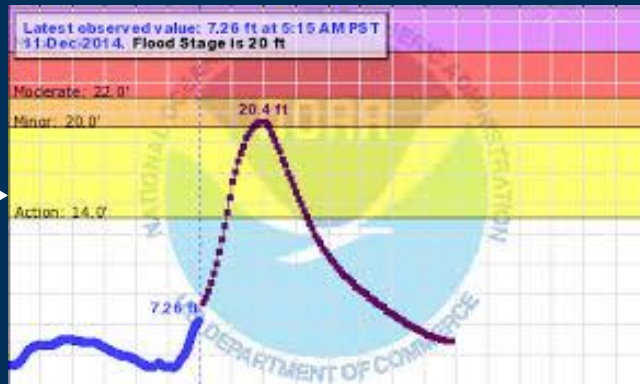
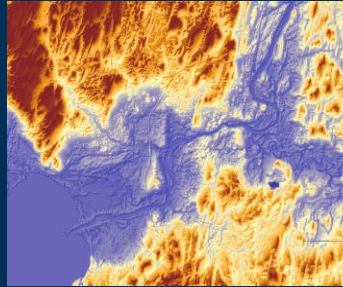
Hydraulic Model



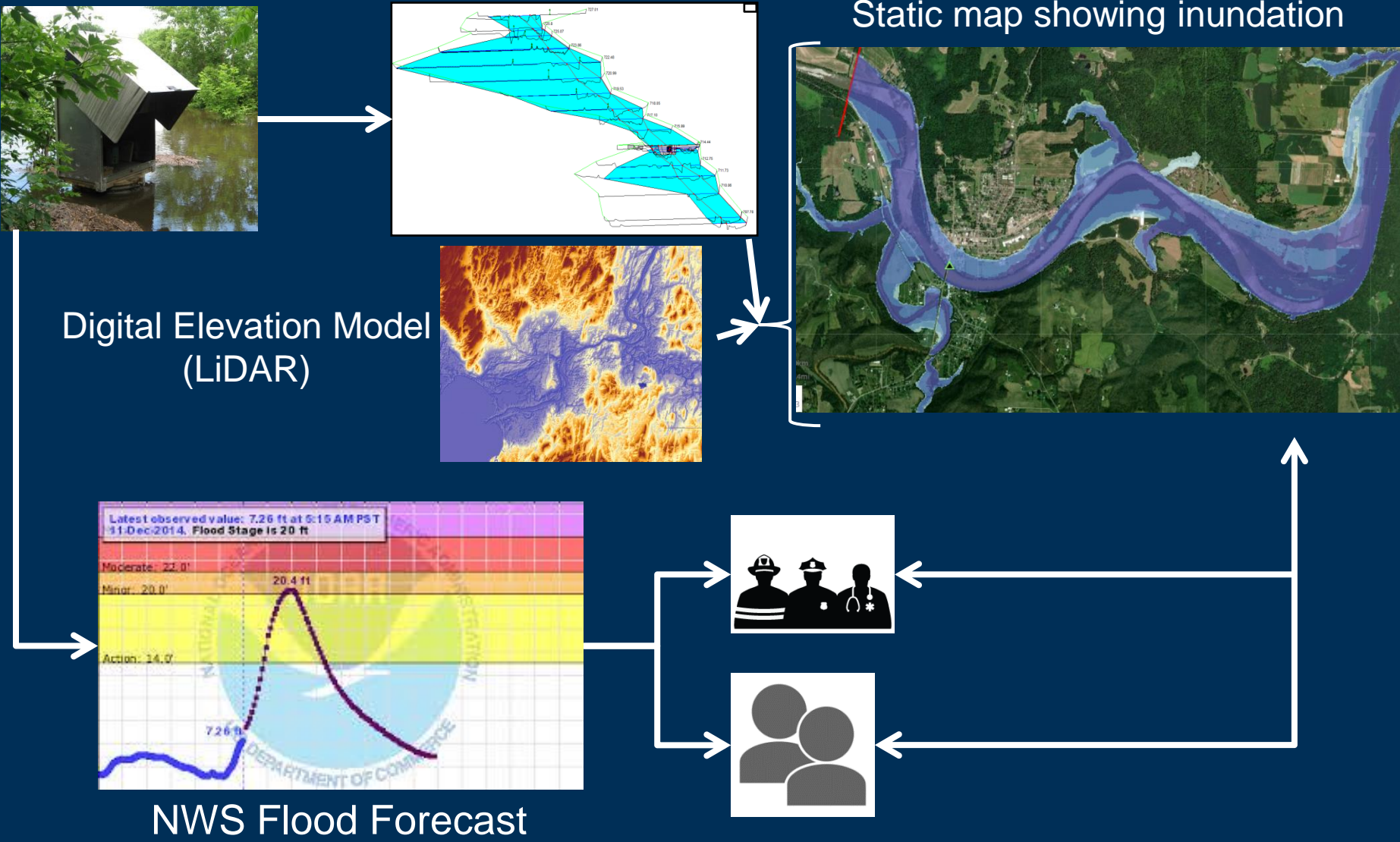
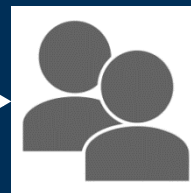
Static map showing inundation



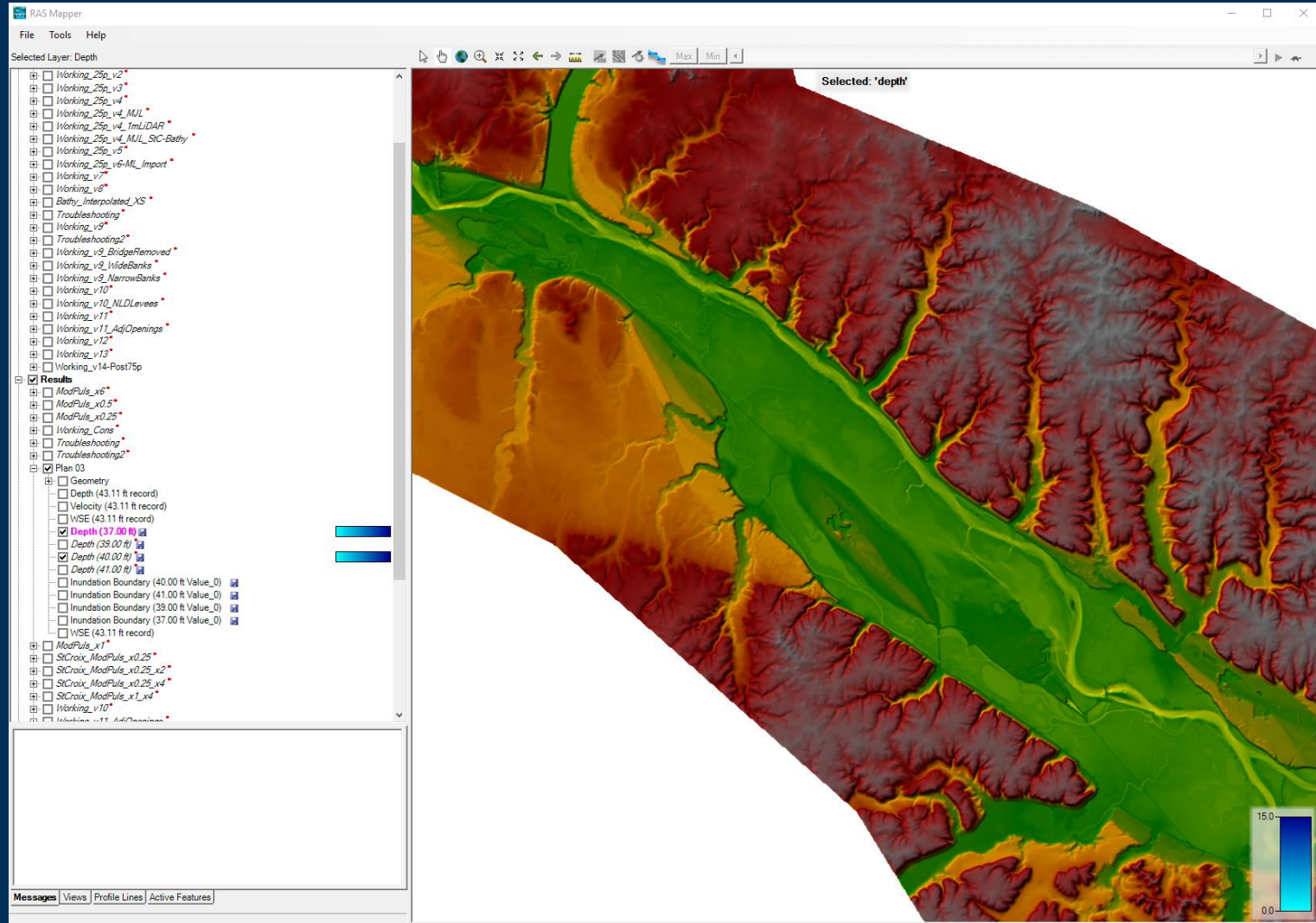
Digital Elevation Model (LiDAR)



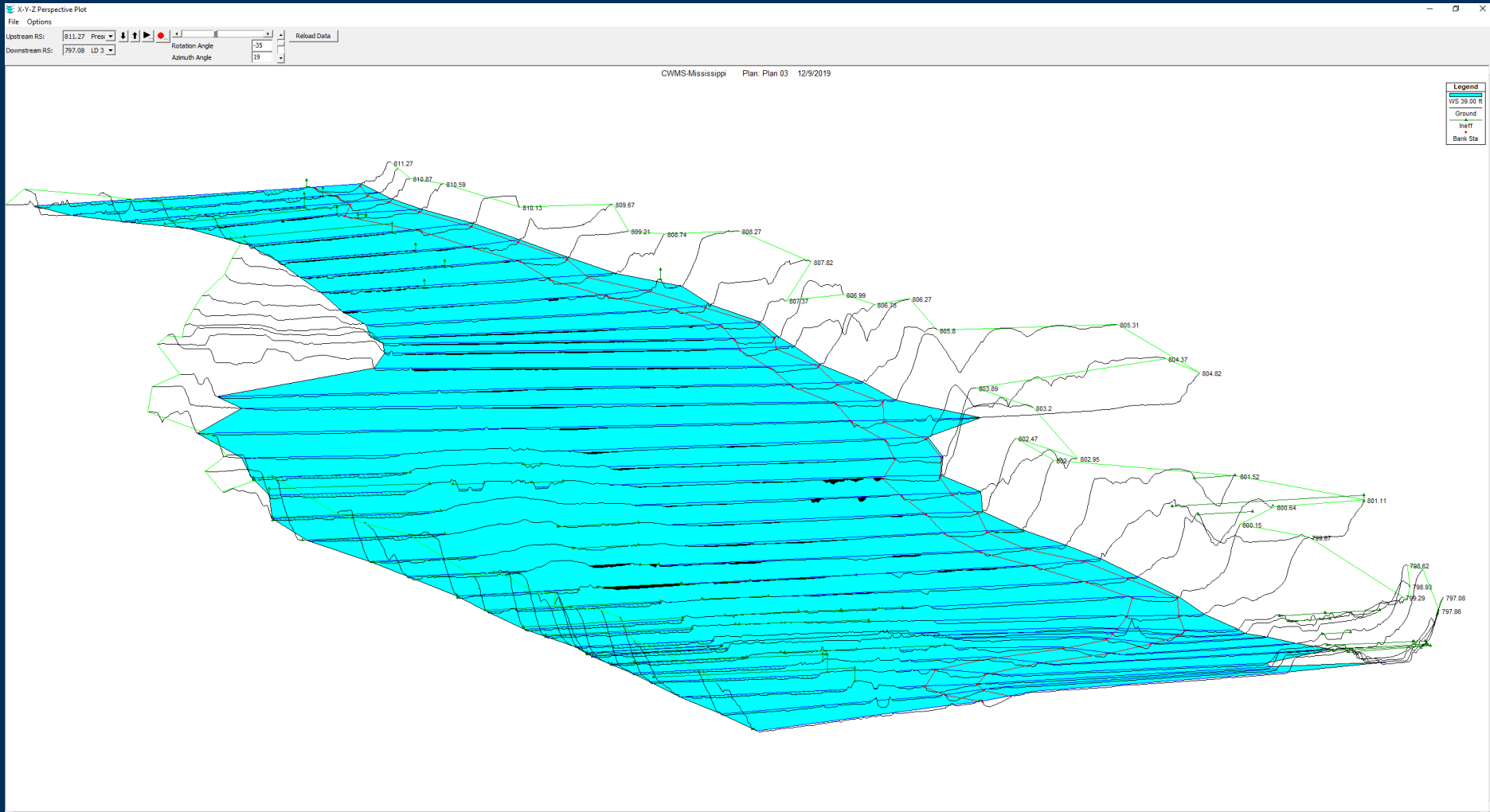
NWS Flood Forecast



# Model Raster

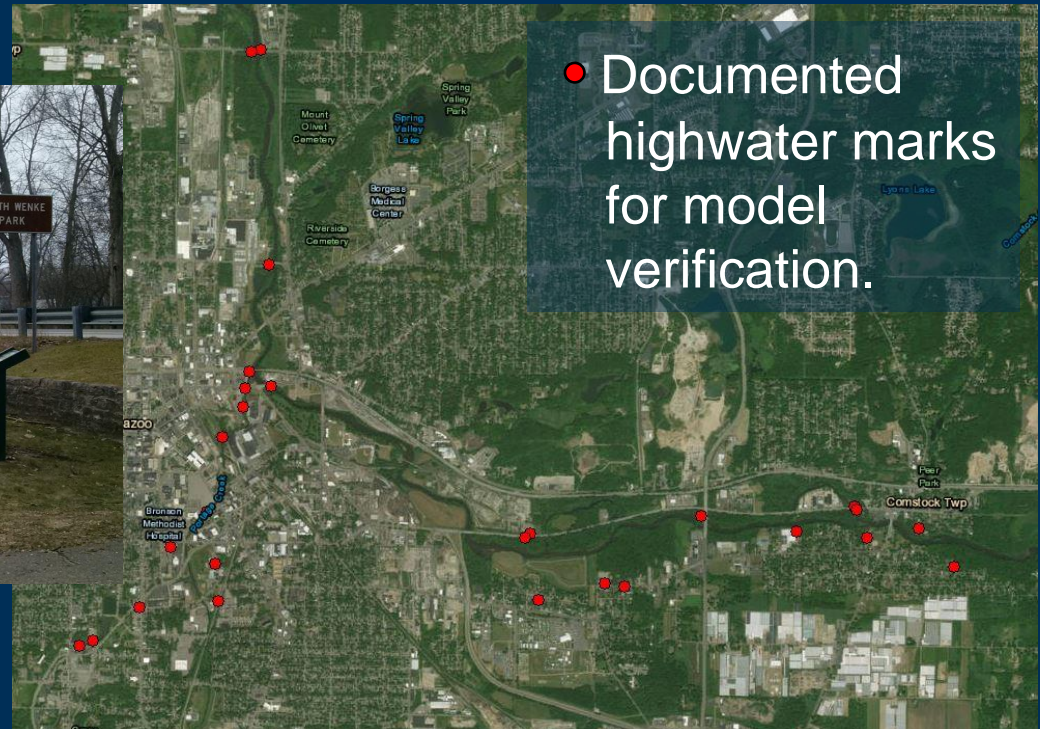


# Model



# Field Verification

- Highwater marks
- Aerial Photos
- Surveyed Bathymetry and Lidar ground truthing
- Additional Discharge measurements
- Stage Sensors

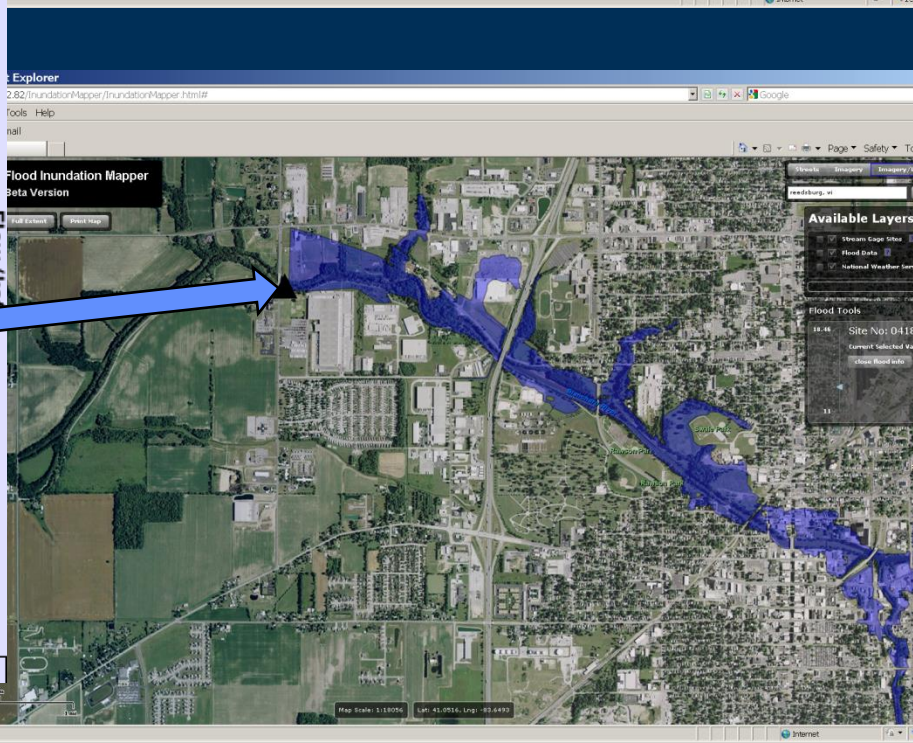
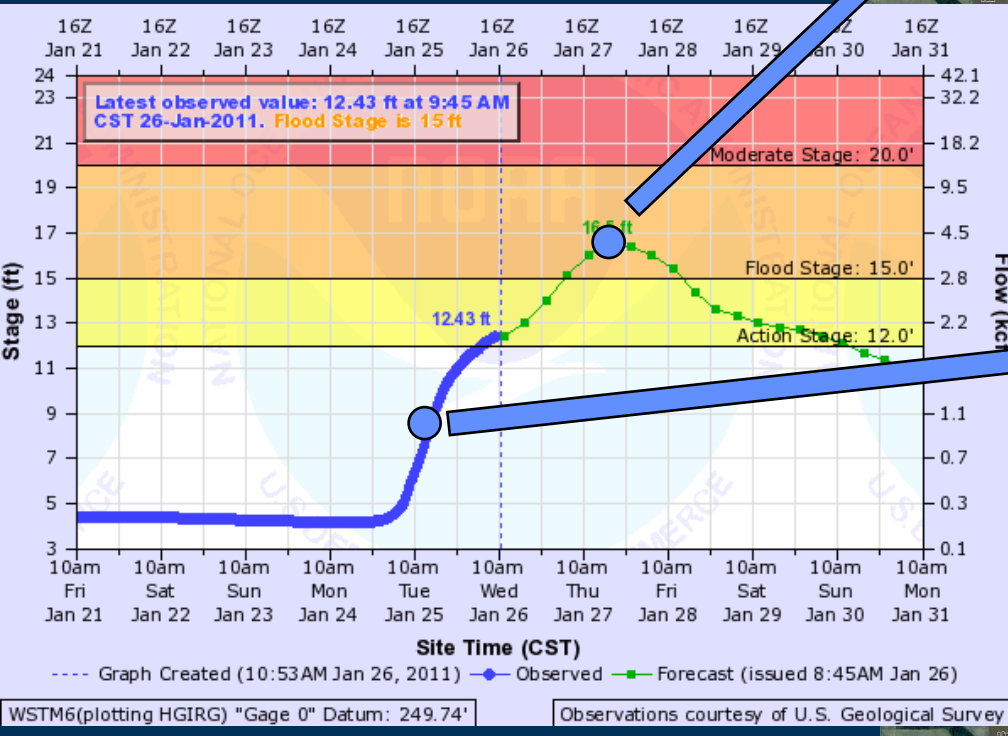
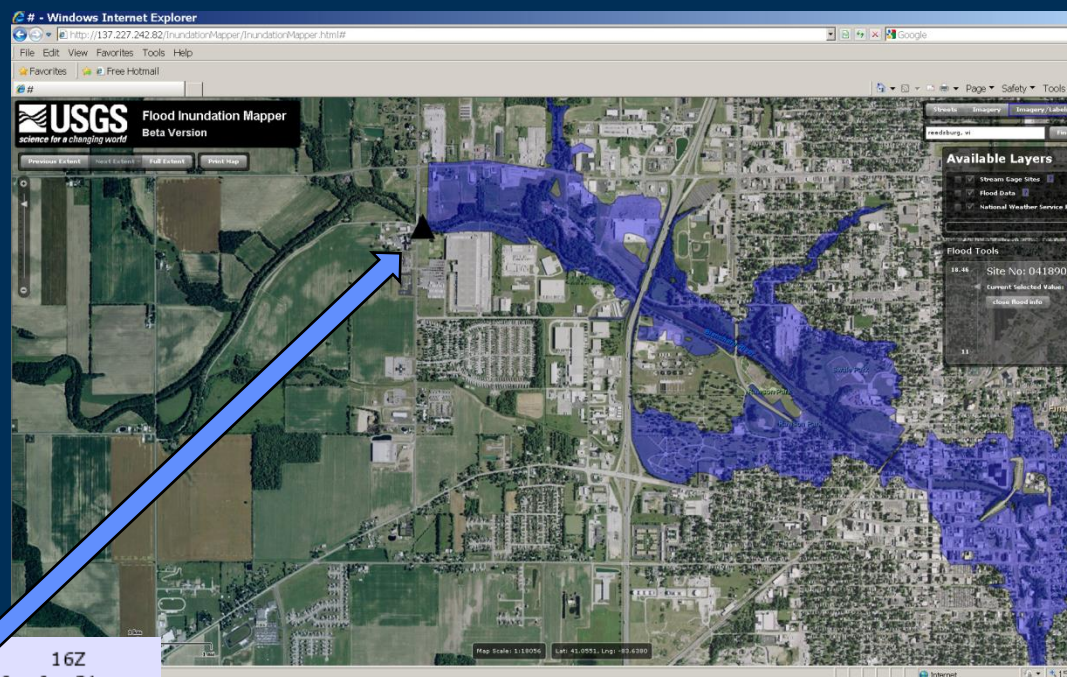




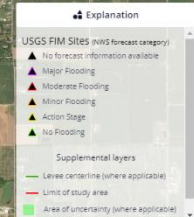
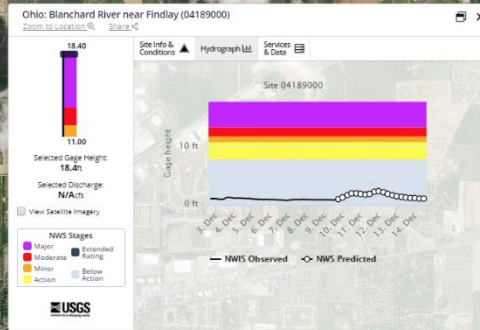
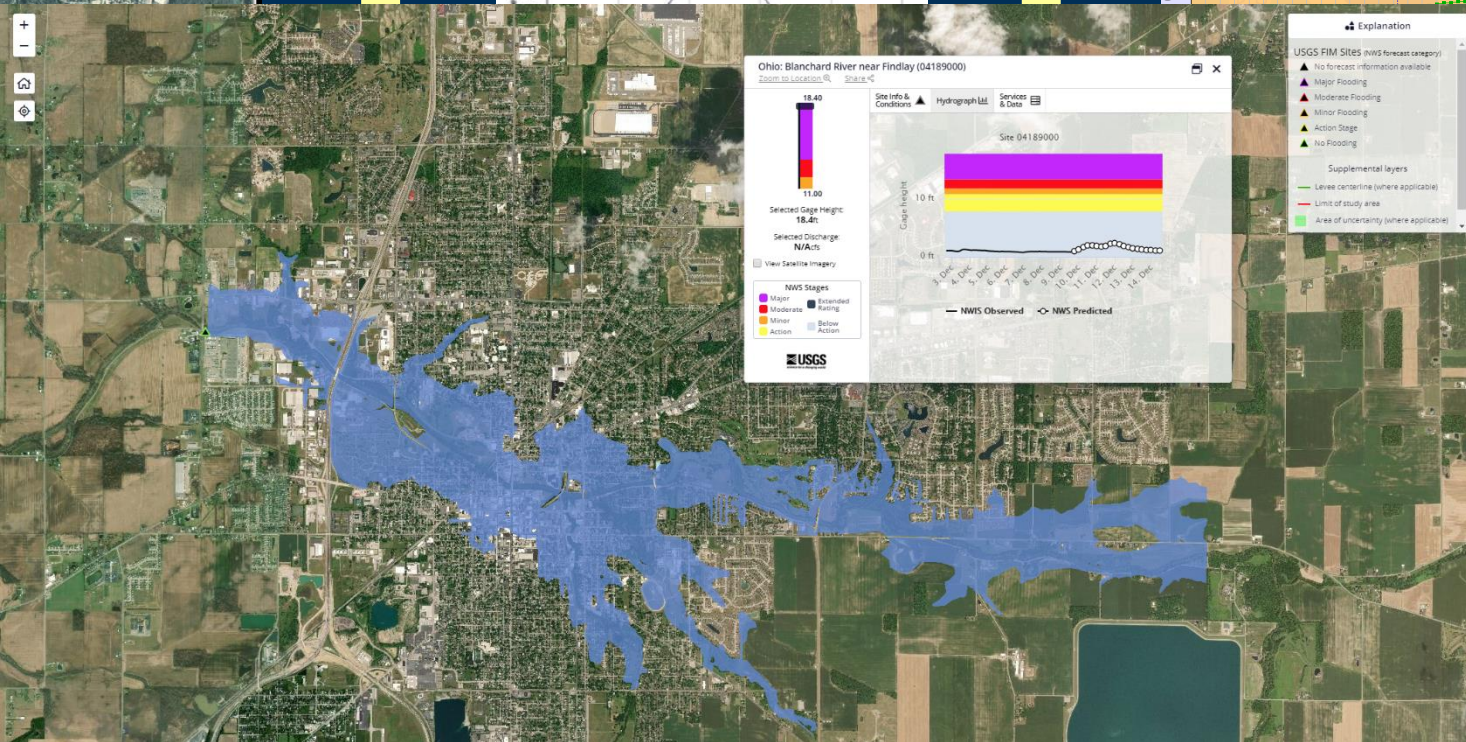
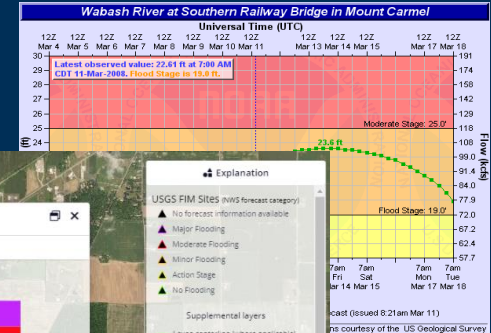
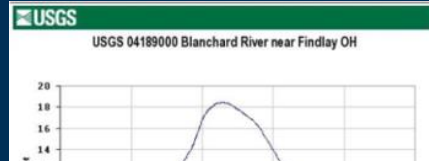
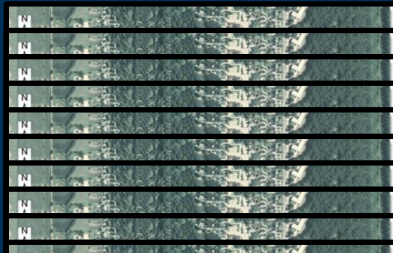
# Field Verification



# How FIMs Work: Map USGS measured or NWS predicted streamflow onto interactive maps to communicate risk



# FIM Mapper – more than just maps



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# Browser Window for USGS National FIM

**USGS**  
science for a changing world

Flood Inundation Mapper

Find Location

User Guide About Print

**Basemaps** +

**Map Layers** -

- National Weather Service Radar
- Flood Watches and Warnings
- AHPs Forecast Sites
  - Major flooding (3)
  - Moderate flooding (18)
  - Minor flooding (53)
  - Action flooding (56)
  - No flooding (1602)

Powered by WIM

**Explanation**

USGS FIM Sites  
(NWS forecast category)

- ▲ No forecast information available
- ▲ Major Flooding
- ▲ Moderate Flooding
- ▲ Minor Flooding
- ▲ Action Stage
- ▲ No Flooding

1:18,489,296  
51.714 | -135.751

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<https://fim.wim.usgs.gov/fim/>

# Flood Inundation Maps Bemiss, GA

**Observed / Predicted Flow**

Georgia: Withlacoochee River at Skipper Bridge Road, near Bemiss (023177483)

Selected Stream Water Level Elevation (NAVD83): 140.00ft  
Selected Discharge: 14200cfs

Date	NWS Observed	NWS Predicted
13 Feb	130.0	130.0
14 Feb	130.0	130.0
15 Feb	130.0	130.0
16 Feb	130.0	130.0
17 Feb	130.0	130.0
18 Feb	130.0	130.0
19 Feb	130.0	130.0
20 Feb	130.0	130.0
21 Feb	130.0	130.0
22 Feb	130.0	130.0
23 Feb	130.0	130.0
24 Feb	130.0	130.0

**Observed / Predicted Floodplain Extent**

Observed: Major, Moderate, Minor, Action  
Predicted: Extended Rating, Below Action



# Flood Depths FIM for Bemiss, GA

**USGS**  
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Flood Inundation Mapper

Find Location

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Explanation

Basemaps

Map Layers

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- Minor flooding (53)
- Action flooding (56)
- No flooding (1602)

Powered by **WIM**

Water depth  
Range: 7 - 8 ft

Georgia: Withlacoochee River at Skipper Bridge Road, near Bemiss (023177483)

Zoom to Location: 04 Share: 4

153.00

131.00

Selected Stream Water Level Elevation (NAVD83): 137.00ft

Selected Discharge: 4910cfs

View Satellite Imagery

View Depth Grids

NWS Stages

- Major
- Moderate
- Minor
- Action
- Extended Rating
- Alert
- Action

Stream Water Level Elevation (NAVD83)

150 ft

140 ft

130 ft

13 Feb 14 Feb 15 Feb 16 Feb 17 Feb 18 Feb 19 Feb 20 Feb 21 Feb 22 Feb 23 Feb 24 Feb

— NWS Observed — NWS Predicted

USGS

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# USGS WaterAlert

A screenshot of the USGS WaterAlert web application. The interface includes a search sidebar on the left, a central map, and a site information popup on the right. The search sidebar has several input fields: "Search by Street Address" (with "Enter Street Address" placeholder), "Search by Place Name" (with "Enter Place Name" placeholder), "Search by Site Number(s)" (with "Enter Site Number(s)" placeholder), "Search by State/Territory" (with a dropdown menu), and "Search by Watershed Region" (with a dropdown menu). The map shows a grid of streets and water features, with a red box highlighting a specific location. The site information popup displays the following data:

**Site Information**

**Site Number:** 04154000  
**Site Name:** CHIPPEWA RIVER NEAR MOUNT PLEASANT, MI  
**Site Type:** Stream  
**Agency:** USGS  
[Access Data](#)

**Streamflow:** 511 ft<sup>3</sup>/sec  
on 2018-05-14 at 05:15 EST (TSID 72160)  
**Stage:** 4.06 ft  
on 2018-05-14 at 05:15 EST (TSID 72161)

[Subscribe to WaterAlert](#)



# USGS WaterAlert



USGS WaterAlert

## Subscription Form

### Site Info:

Number: 04154000  
Name: CHIPPEWA RIVER NEAR MOUNT PLEASANT, MI  
Agency: USGS  
Transaction ID: cNSnF

### Send Notification To:

[about this...](#)

- My mobile phone  
 My email address

### Notification Frequency:

[about this...](#)

Hourly  
Daily

### Streamflow Parameter(s):

[about this...](#)

Recent value:

Discharge, in ft<sup>3</sup>/s

511 [\[peak chart\]](#)

Gage height, in ft

4.06 [\[peak chart\]](#) | [NWS flood stage = 8](#)

### Alert Threshold Condition:

[about this...](#)

- Greater than (>)  
 Less than (<)  
 Outside a range (< or >)  
 Inside a range (> and <)

Real-time value is greater than:  ft<sup>3</sup>/s

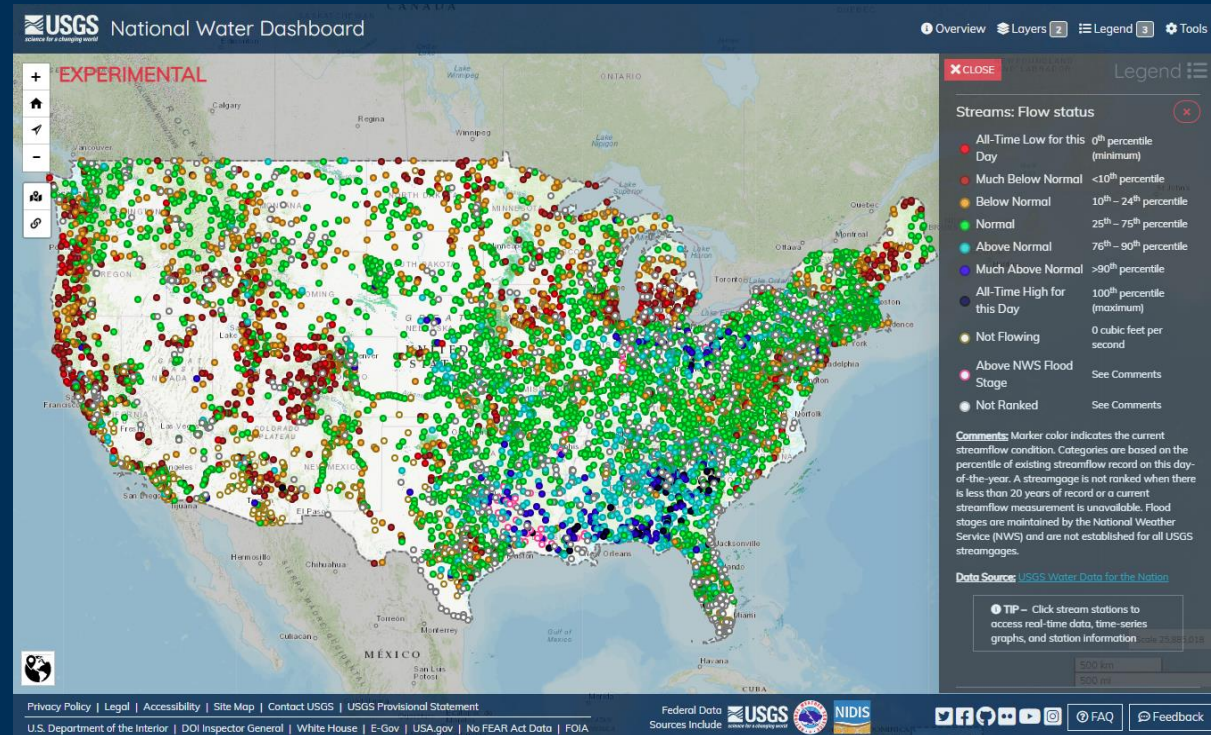
I have read and acknowledge the [Provisional Data Statement](#) and [Disclaimer](#).





# Introducing the National Water Dashboard

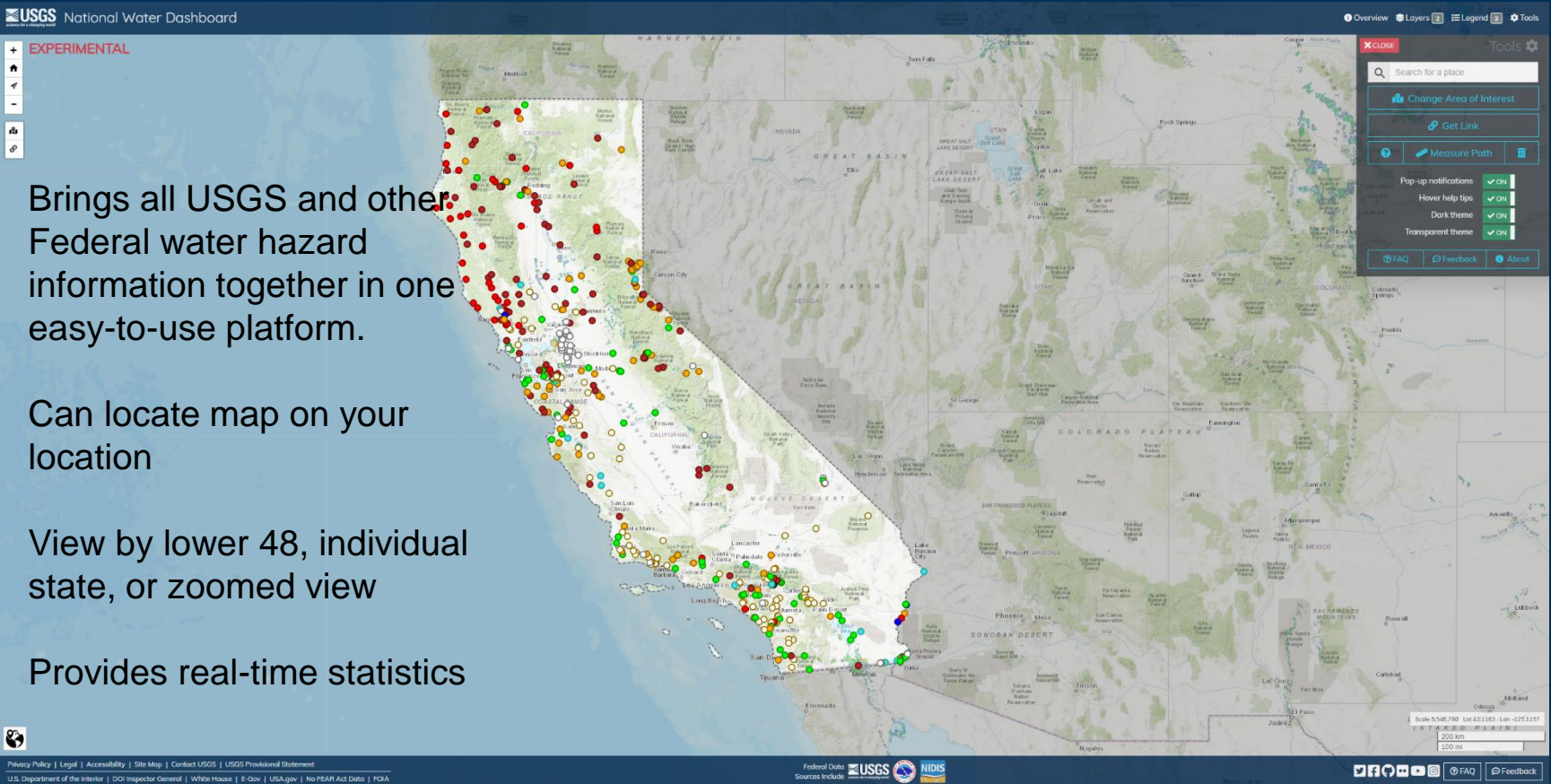
- Major new product from USGS
- Origins from the Texas Water Dashboard
- Launched on October 30, 2020
- Brings together ALL USGS real-time data into one modern, mobile-friendly interface
- Adds warnings and weather hazard information from sister federal agencies
- Will be a central data access portal for USGS moving forward



<https://dashboard.waterdata.usgs.gov/>



# National Water Dashboard



The screenshot displays the USGS National Water Dashboard interface. The main map shows the western United States, including California, Nevada, Utah, Arizona, and parts of Oregon, Idaho, and New Mexico. The map is overlaid with numerous colored circular markers (red, orange, yellow, green, blue) representing water hazards. The interface includes a search bar at the top right, a sidebar with navigation and settings options, and a footer with USGS and NIDIS logos, social media icons, and a feedback link.

- Brings all USGS and other Federal water hazard information together in one easy-to-use platform.
- Can locate map on your location
- View by lower 48, individual state, or zoomed view
- Provides real-time statistics

