

# FIRES, FLOODS, AND MUD: STATUS AND TRENDS

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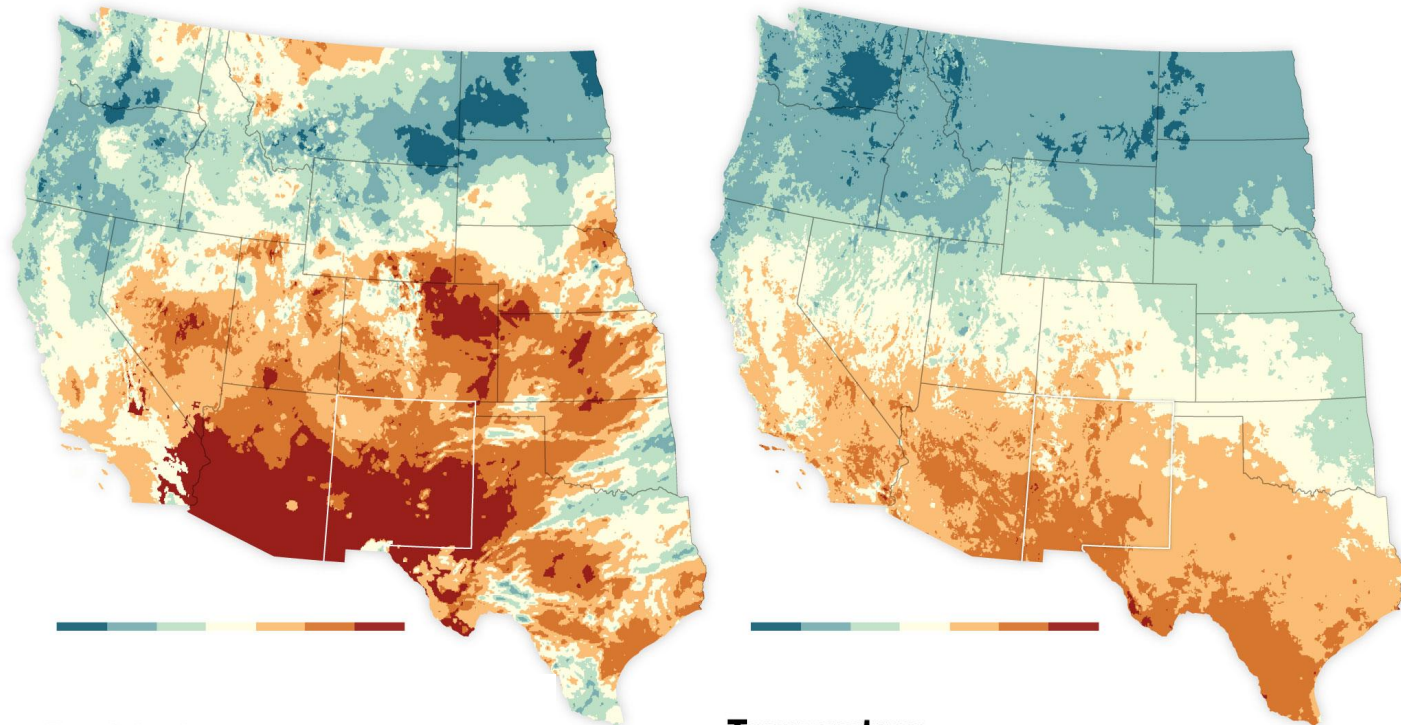
Director, NM Water Science Center, U.S. Geological Survey



# A 'Perfect Recipe for Extreme Wildfire': New Mexico's Record-Breaking, Early Fire Season

The New York Times

APRIL 2022



**Precipitation** APRIL 2022

**Temperature** APRIL 2022

Record wettest      Near normal      Record driest

Record coldest      Near normal      Record warmest

- Driest or near-driest April on record
- Above-average springtime temperatures
- Sustained high winds
- Long-term, extreme drought
- Heavy fuels accumulation
- > 900,000 acres burned in 2022



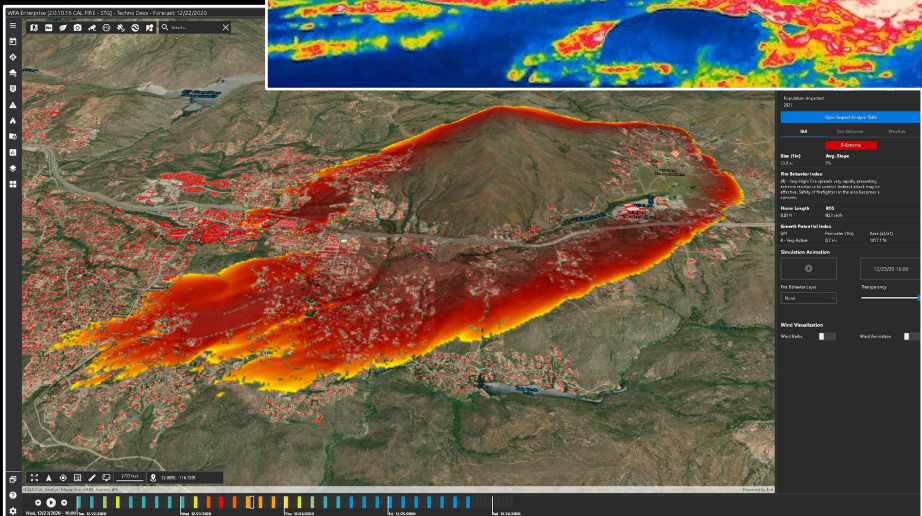
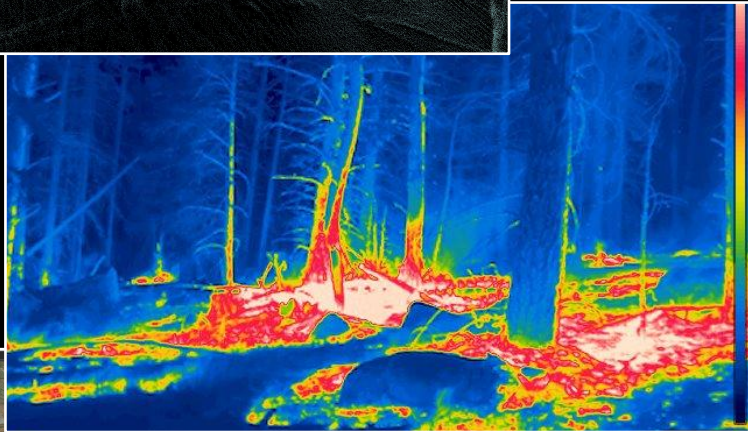
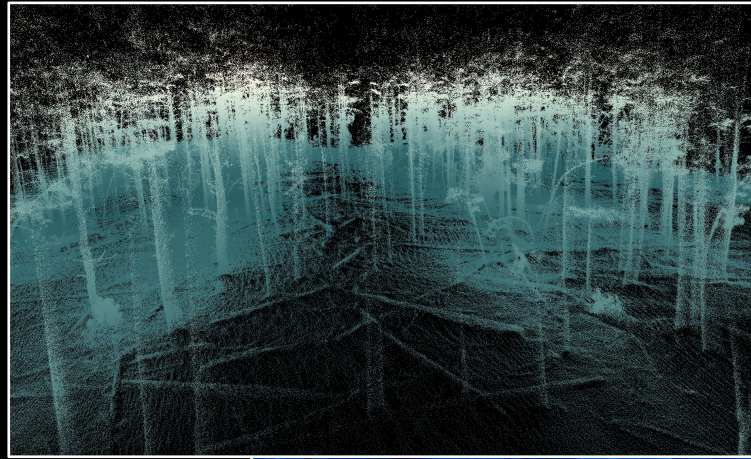
# STATUS: FIRES, FLOODS, AND MUD



- Wildfires of uncharacteristic severity
- Wildfires of uncharacteristic seasonality
- Soil hydrophobicity
- Tree mortality, burning of surface vegetation and organic matter  destabilization of soils
- Rainfall intensity and duration
- Surface water flow and soil erosion
- Delayed forest recovery



# TRENDS: FIRES, FLOODS, AND MUD



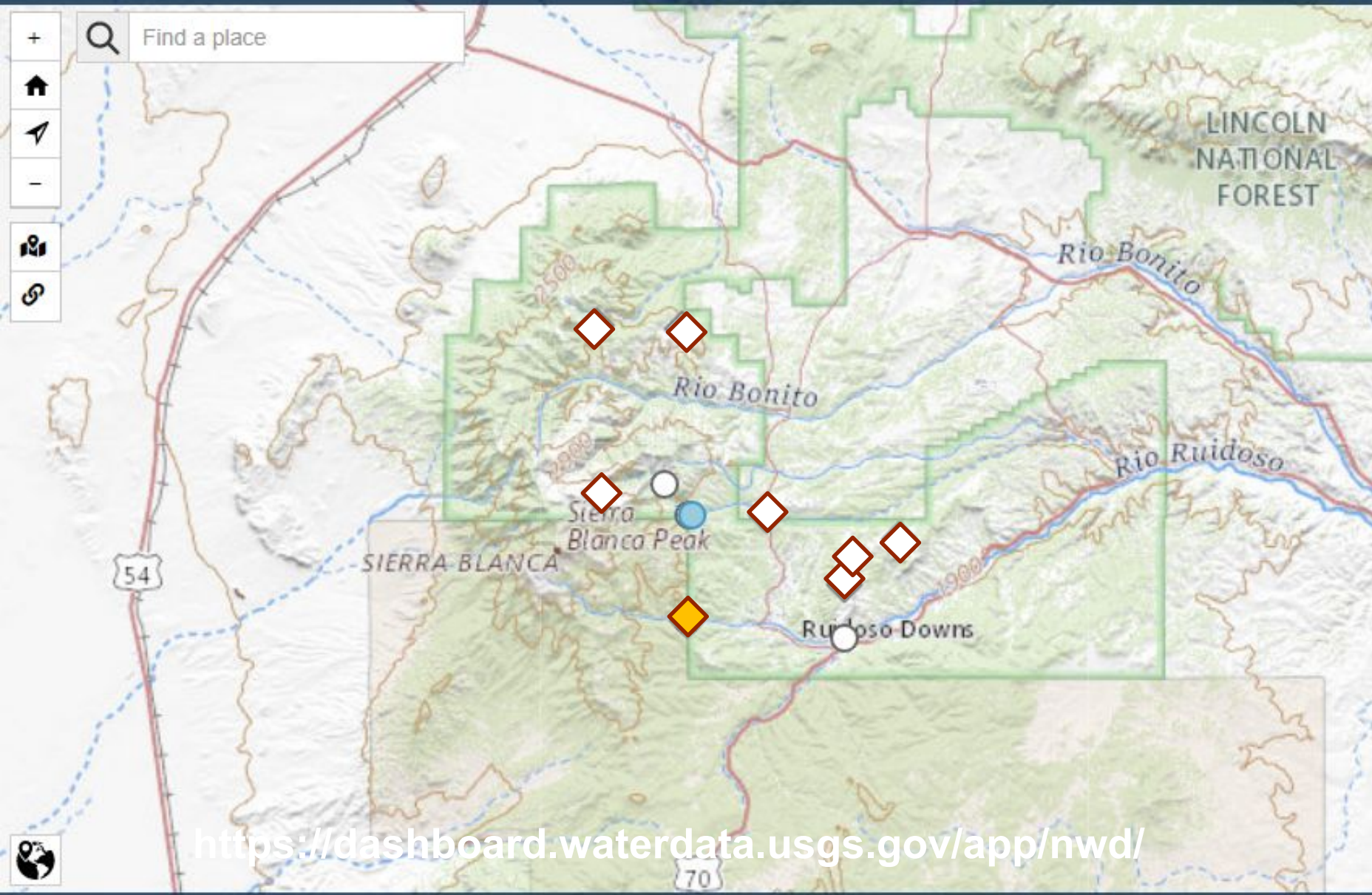
- **USGS interdisciplinary, applied wildfire hazards research program**
  - Link 3D fuels mapping, models (fire, hydrologic, and debris flow), real-time fire observations, and monitoring to identify vulnerable watersheds
  - Model hazards for years (not months) after wildfires
  - Account for changing climate and ongoing vegetation recovery
  - Build capacity among tribes to monitor and predict post-fire hazards
  - Consequences for communities, cultural resources, ecosystems, and species





# New Mexico Post-Wildfire Response: USGS, New Mexico Water Science Center Perspective







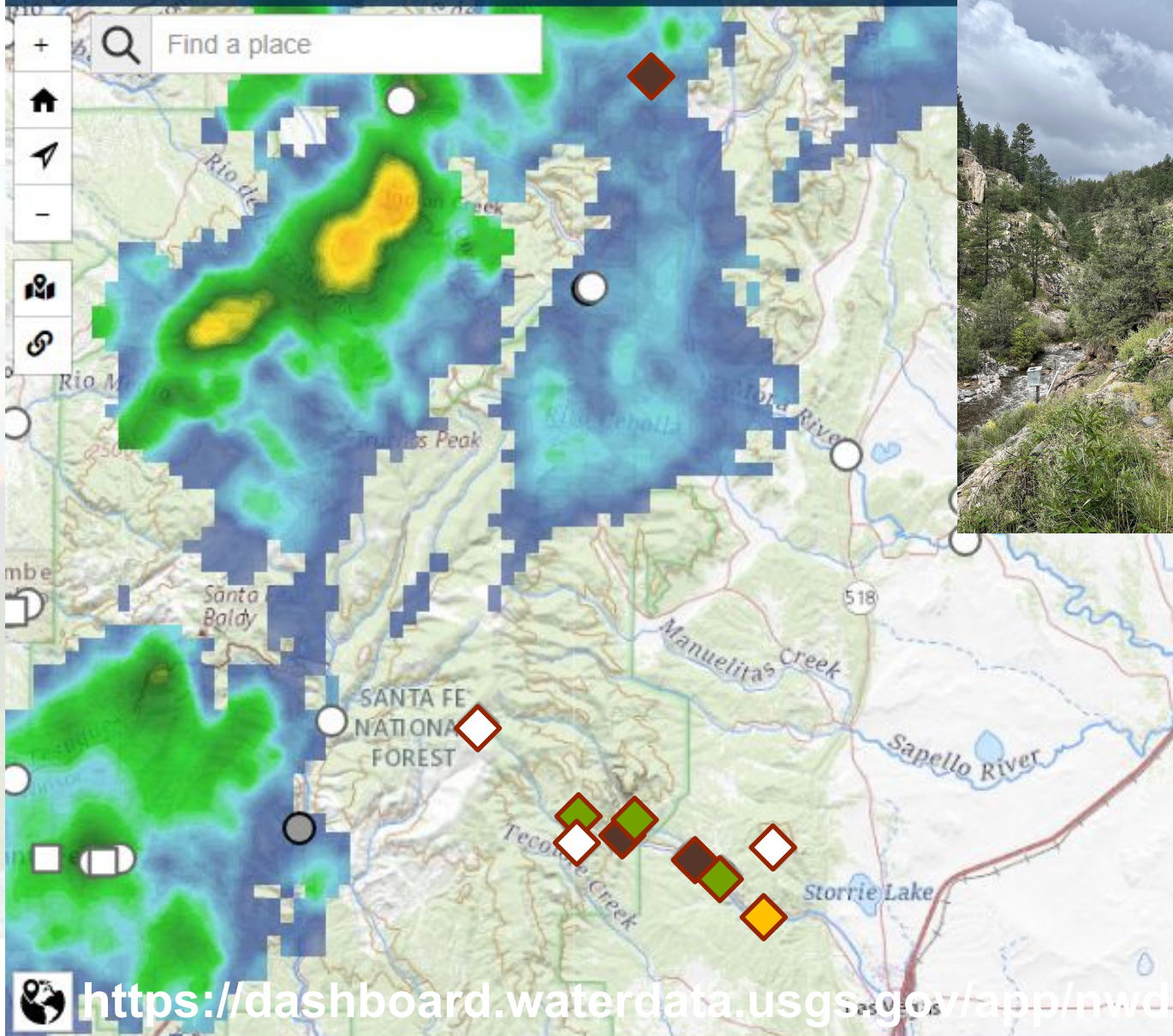
## Nogal/McBride Fires Deployment Status

- precipitation: 7 gauges 
- precipitation/stage/discharge: 1 gage 



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



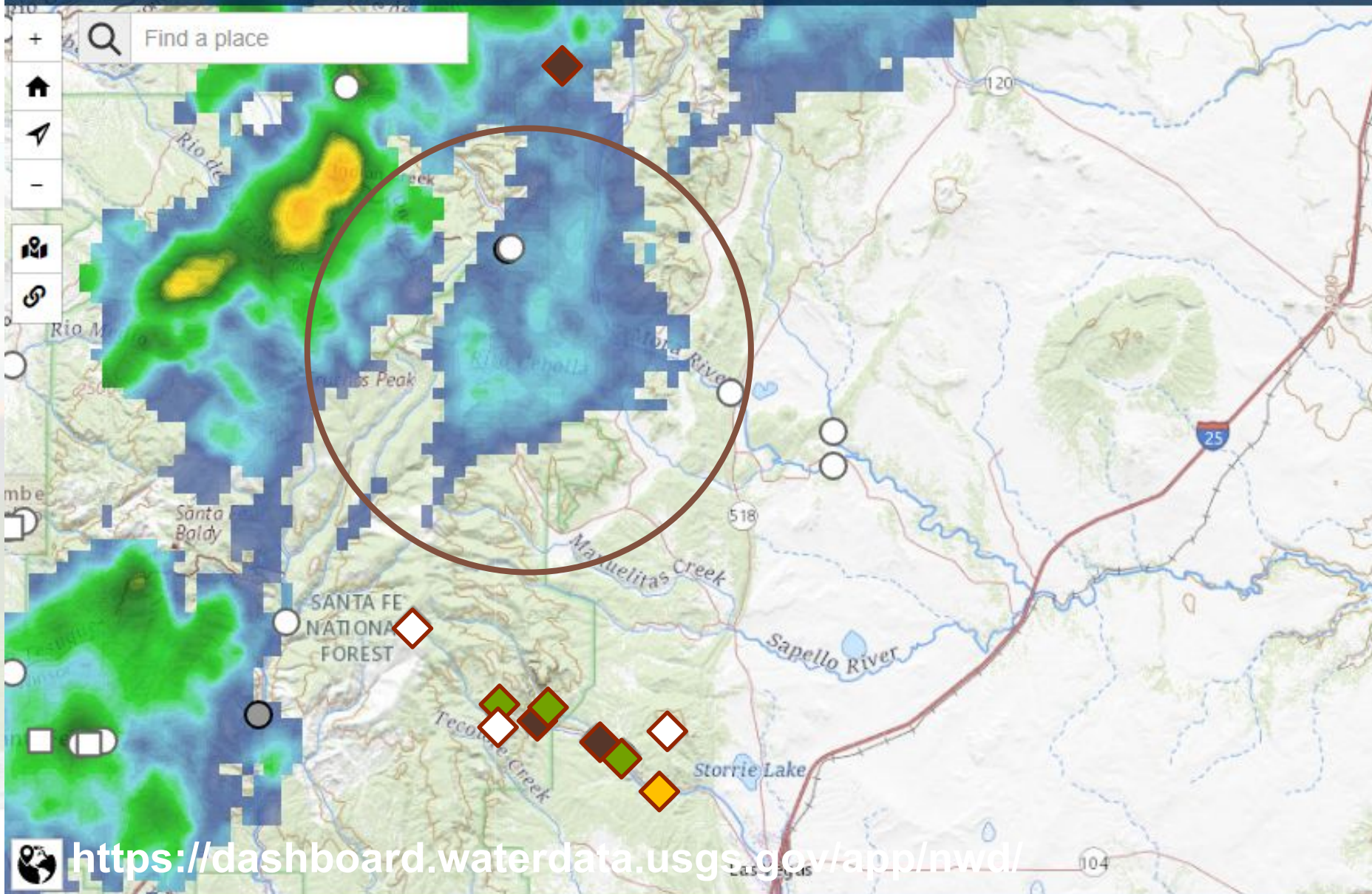


## Hermits Peak/Calf Canyon Deployment Status

- precipitation: 4 gages ◊
- precipitation/stage: 3 gages ◆
- precipitation/stage/turbidity: 3 gages ◆
- precipitation/stage/discharge: 1 gage ◆
- web cams will be deployed at 1-3 sites

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



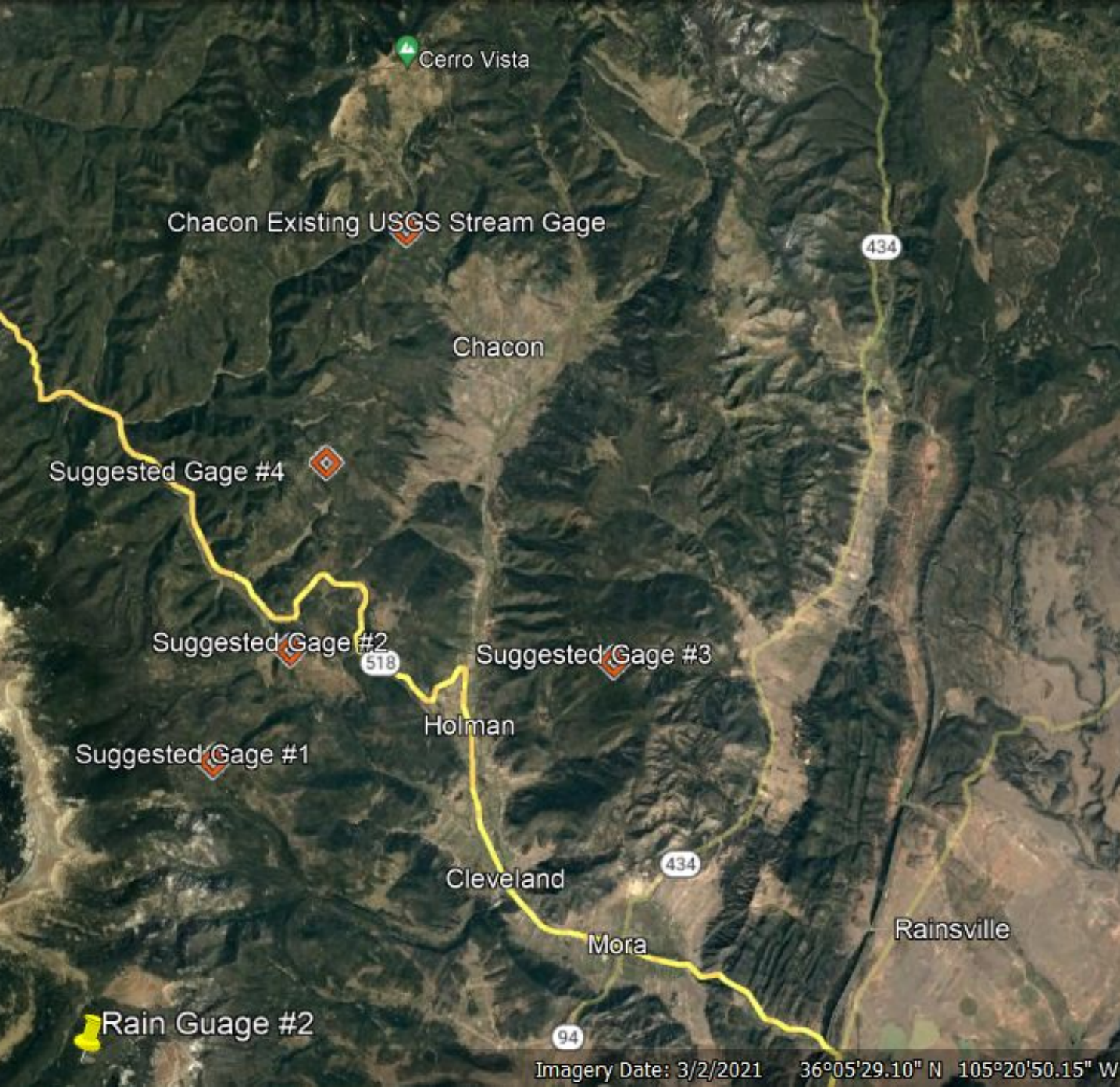


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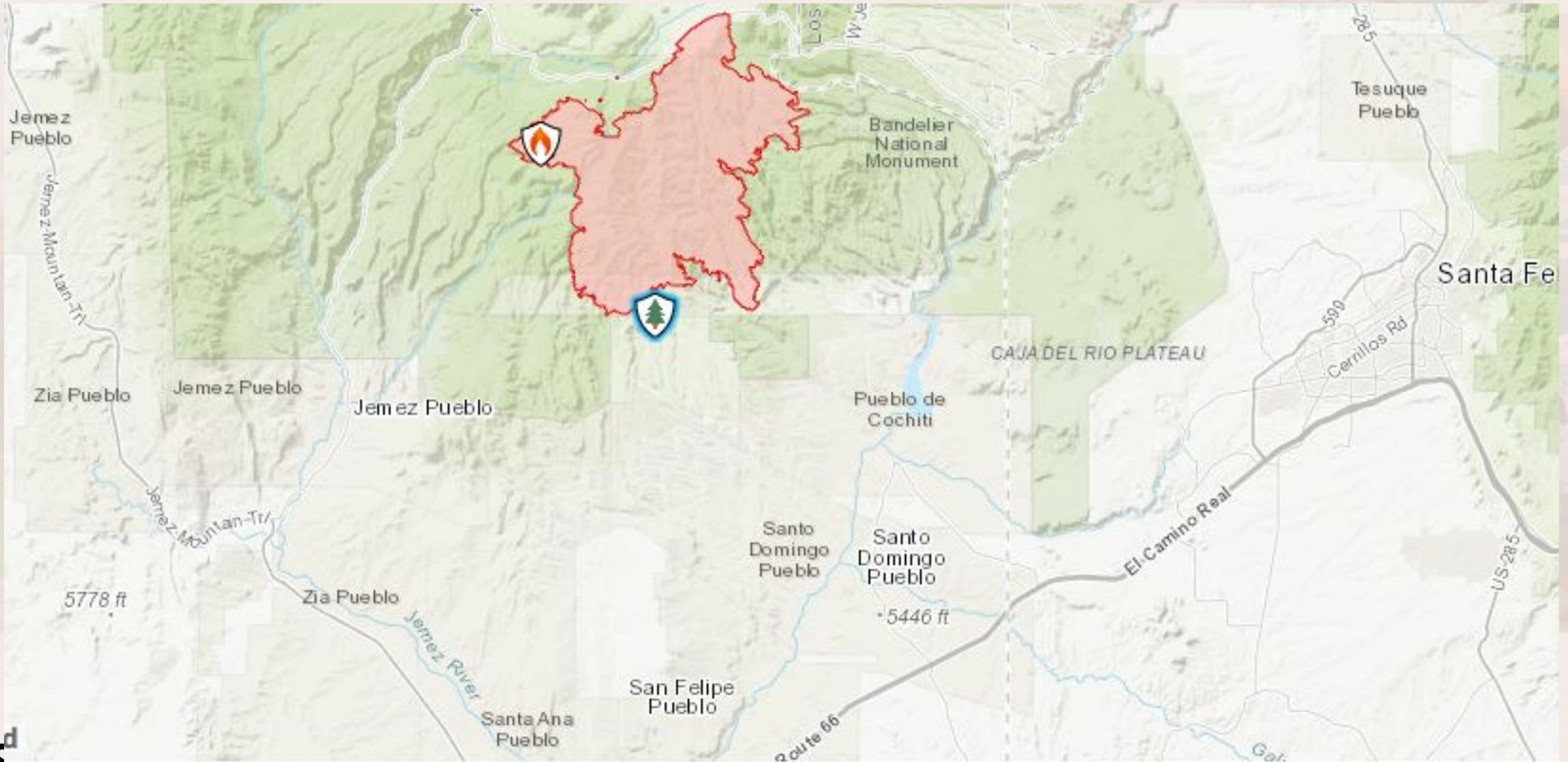
## Hermits Peak/Calf Canyon:

Collectively proposed precipitation gages in support of NWS and emergency response efforts in Mora and Pecos Watersheds



# Cerro Pelado – not yet mission assigned

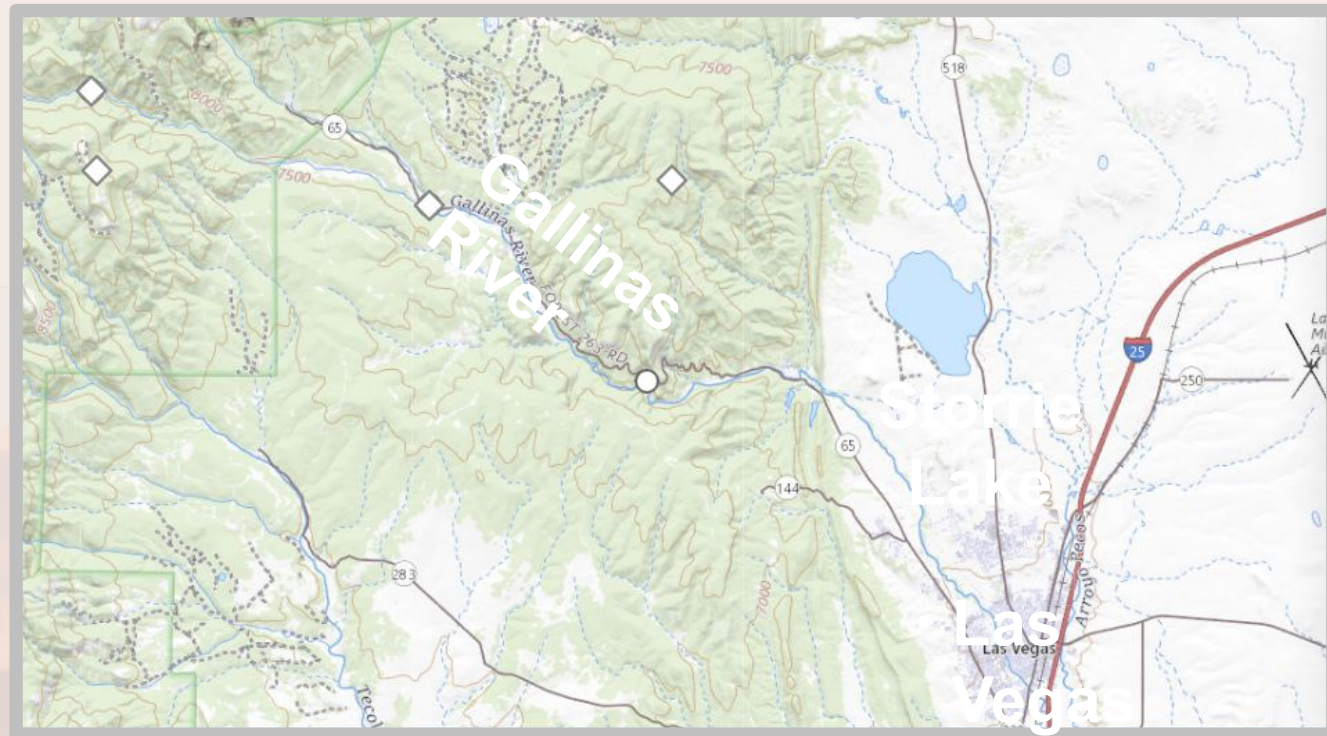
- Potentially Impacted Pueblos: Cochiti, Jemez, Santa Ana, Santo Domingo





# Las Vegas, NM and Storrie Lake

- Las Vegas (population 13,166) is downstream of Gallinas Watershed within the Hermit's Peak-Calf Canyon Burn Scar
- The City relies on the Gallinas River and Storrie Lake for drinking water
- USGS is participating in a Federal Task Force to help address the drinking water issue.





<https://waterdata.usgs.gov/monitoring-location/08380500/>

## GALLINAS CREEK NEAR MONTEZUMA, NM

IMPORTANT [Legacy real-time page](#)

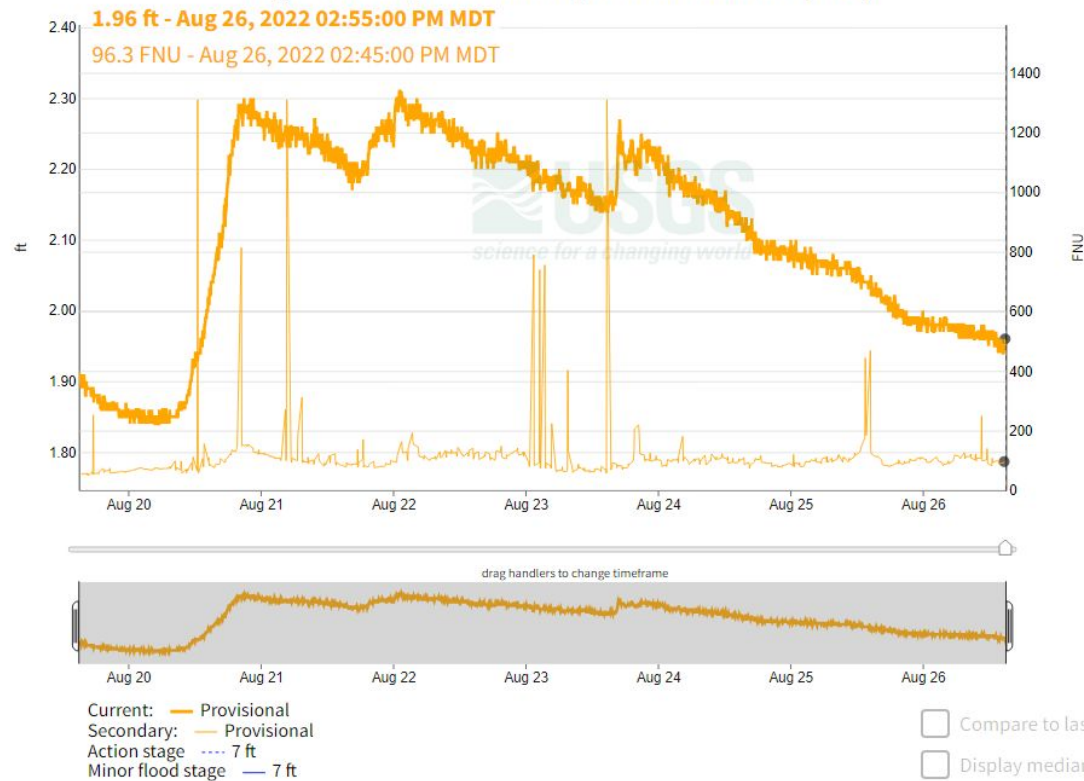
Monitoring location 08380500 is associated with a STREAM in SAN MIGUEL COUNTY, NEW MEXICO. Current conditions of DISCHARGE, DISSOLVED OXYGEN, GAGE HEIGHT, and MORE are available. Water data back to 1900 are available online.

7 days  30 days  1 year

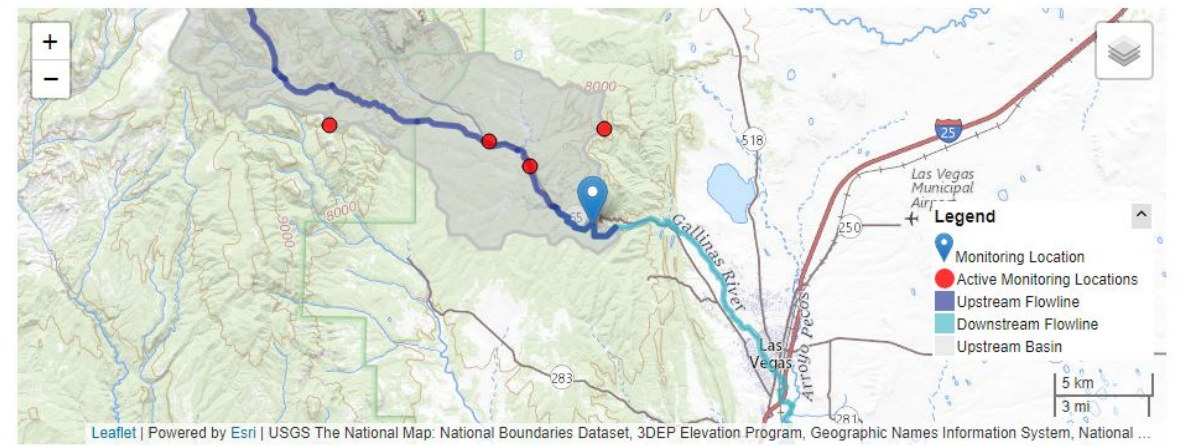
Change time span

Gage height, ft

Turbidity, water, unfiltered, monochrome near infra-red LED light, 780-900 nm, detection angle  $90 \pm 2.5^\circ$ , formazin nephelometric units (FNU)

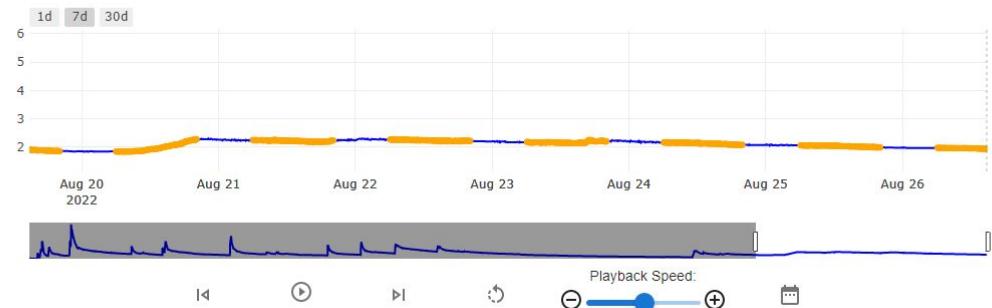


IMPORTANT Data may be provisional - [learn more](#)



## Storrie Lake Diversion near Montezuma

Interactive Hydrograph (Beta)



[https://apps.usgs.gov/hivis/camera/NM\\_Storrie\\_Lake\\_Diversion\\_near\\_Montezuma](https://apps.usgs.gov/hivis/camera/NM_Storrie_Lake_Diversion_near_Montezuma)