



Challenges of the first mile and last mile of flood warning systems

David C. Curtis, PhD, PH, F.EWRI

WEST Consultants

Guadalupe River Basin, Texas



Kerrville



Upper Guadalupe River Basin



Guadalupe Flood Timeline

- Wednesday, July 2
 - TDEM announced activation of state emergency response resources
 - 3:41 p.m. NWS posed on X "scattered moderate to heavy showers continue to develop and expand to the Hill Country."

Guadalupe Flood Timeline

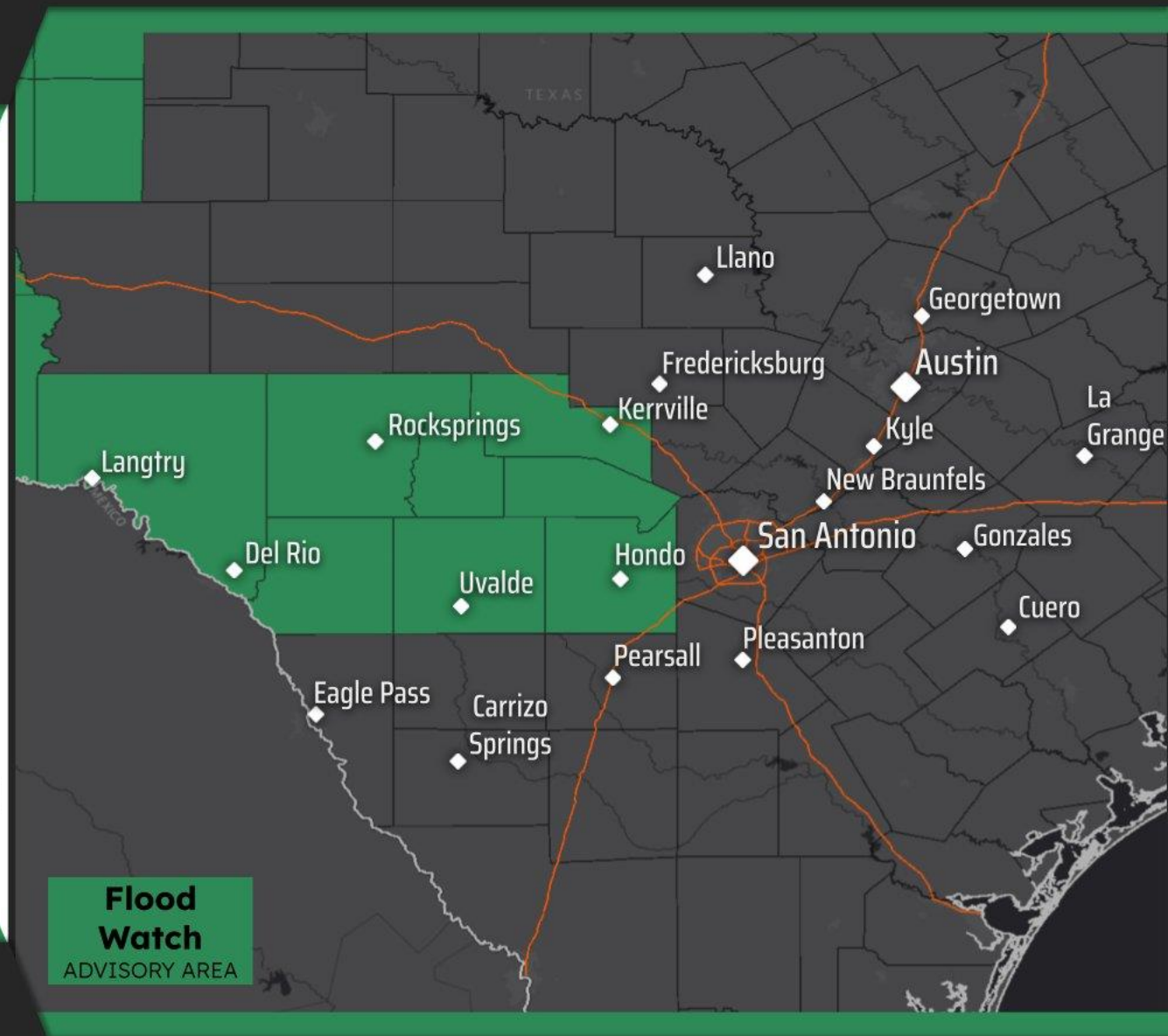
- Thursday, July 3
 - 8:47 a.m. TDEM posted on X "As we head into the holiday weekend and the flood threat in West & Central TX continues, stay weather aware!"
 - TDEM Region 6 Assistance Chief had "personally contacted the judges and mayors in that area and notified them all of potential flooding." He said it was unclear exactly where in the region the storm would hit.
 - 1:18 p.m. NWS issued a flood watch, "local heavy rainfall could cause flash flooding."
 - At 2:35 p.m. the flood watch was [announced](#) on X, saying "pockets of heavy rain are expected and may result in flooding."

Flood Watch

Turn around. Don't drown.
Latest info at weather.gov/ewx



Until 7 AM CDT Friday



NATIONAL WEATHER SERVICE
AUSTIN/SAN ANTONIO

Follow: @NWSSanAntonio

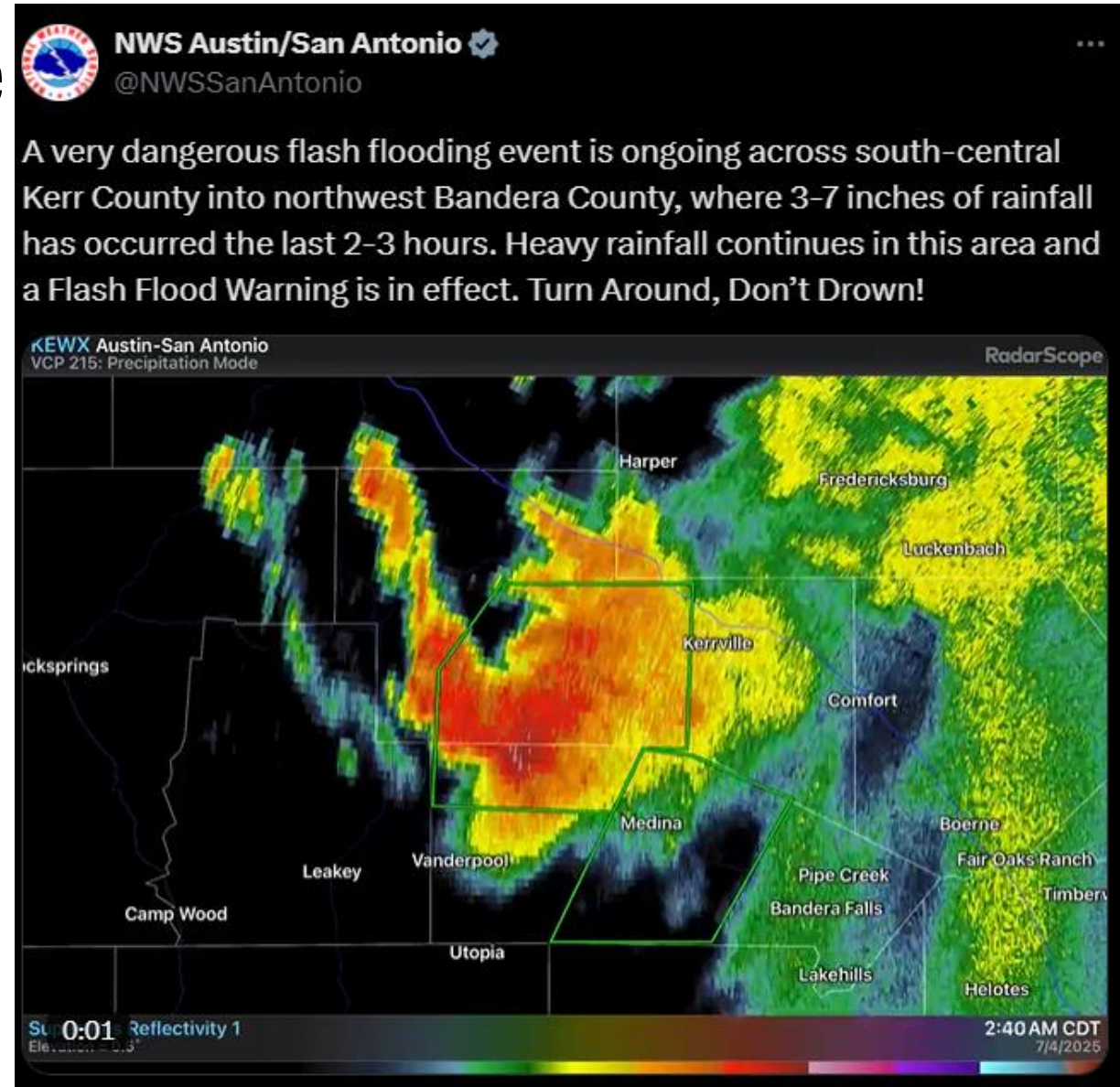
Updated: July 3, 2025

Guadalupe Flood Timeline

- Thursday, July 3
 - 6:10 p.m., NWS [Weather Prediction Center](#) issued an assessment for Texas Hill Country about "heavy rainfall," mentioning "flash flooding likely."
 - 11:41 p.m., NWS posted a flash flood warning.
- Friday, July 4
 - 12:26 a.m. NWS [Weather Prediction Center](#) said "flash flooding likely overnight with significant impacts possible."
 - 14 flash flood warnings issued between 1:14 a.m. and 10:46 a.m.

Guadalupe Flood Timeline

- Friday, July 4
 - 4:15 a.m. NWS San Angelo [posted](#) on X that there was a flash flood emergency.
 - 4:23 a.m. NWS Austin/San Antonio [posted](#) on its X account about the flash flood emergency



Guadalupe Flood Timeline

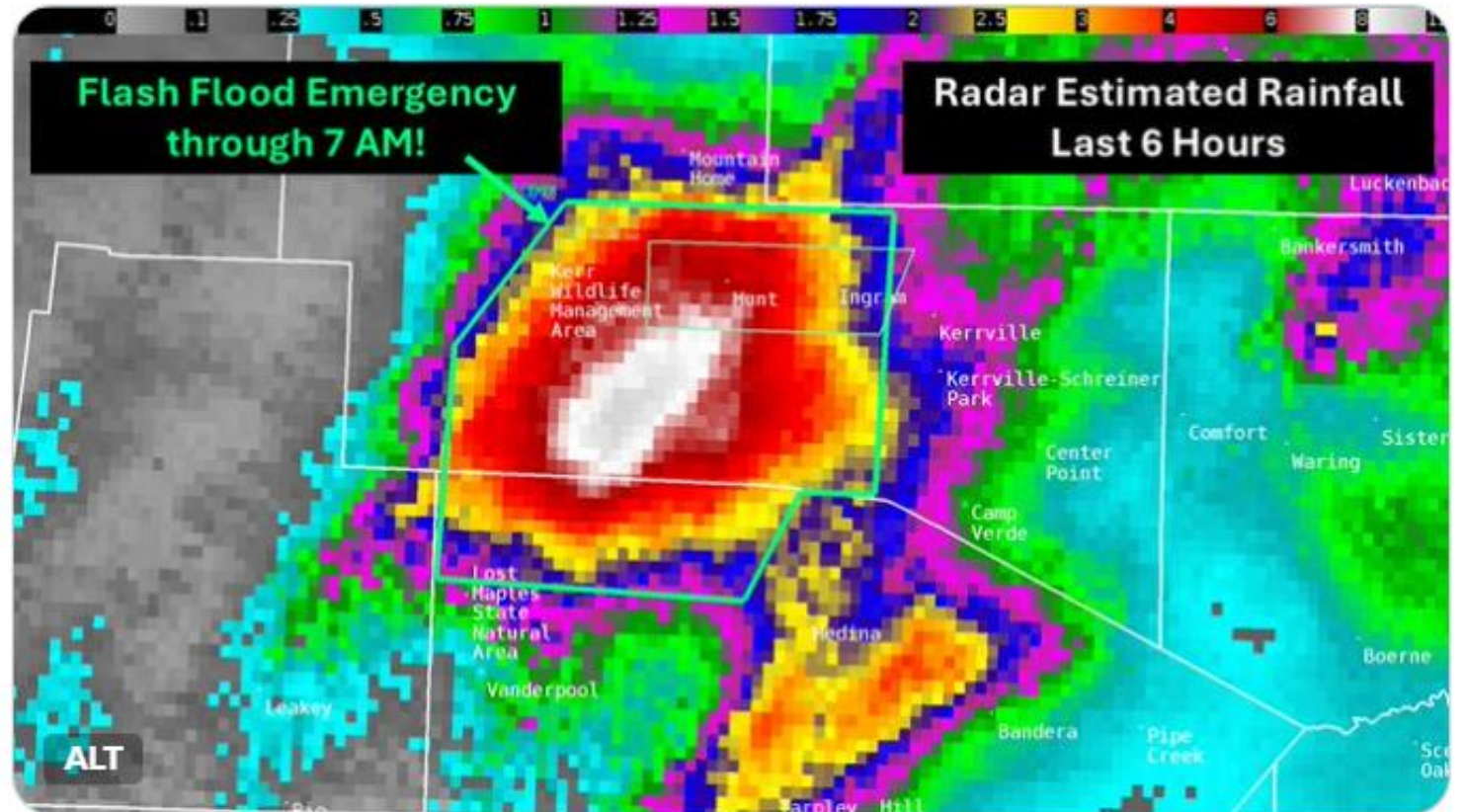
- Friday, July 4



NWS Austin/San Antonio

@NWSSanAntonio

Low water crossings are flooded and the Guadalupe River at Hunt has reached Major Flood stage.

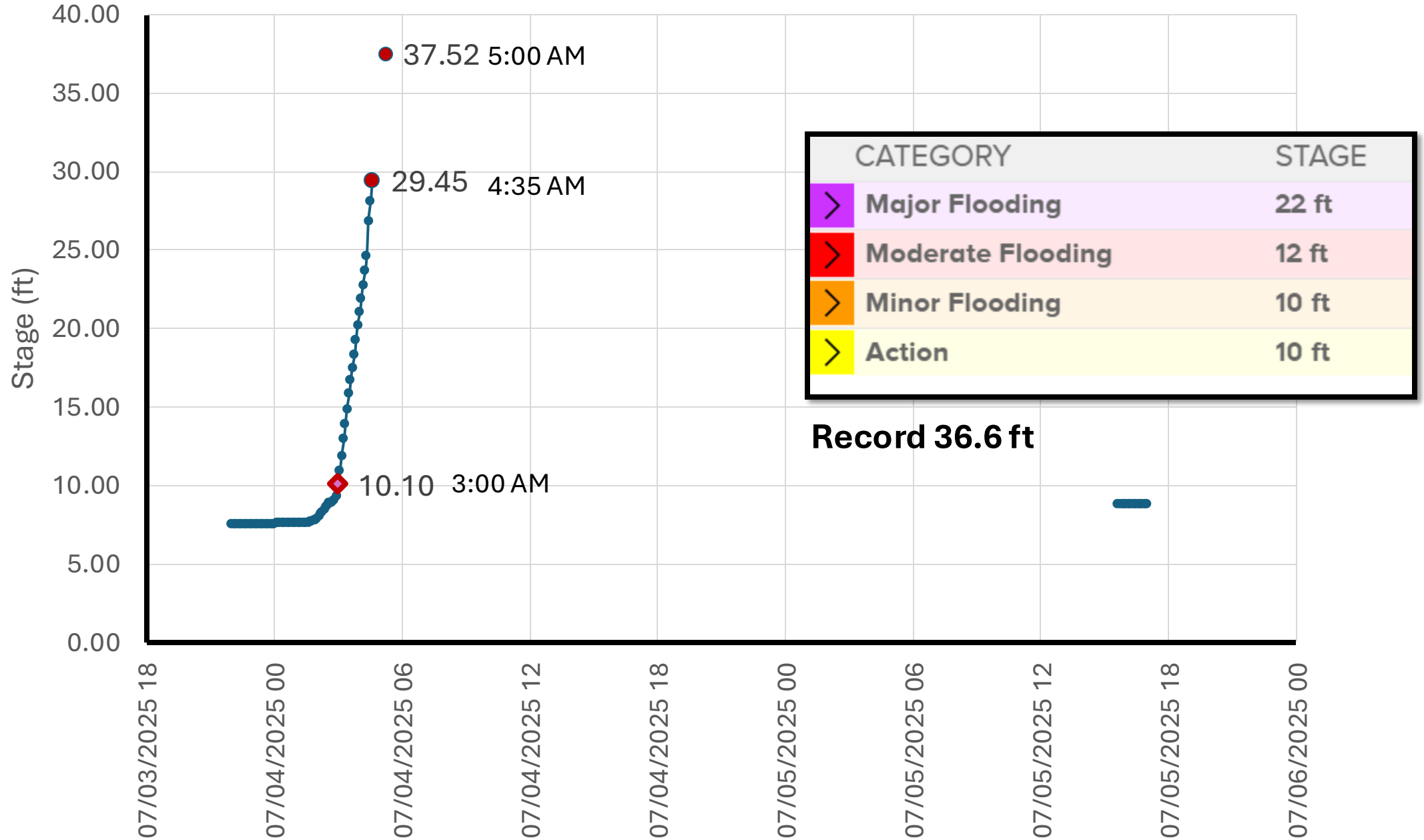


2:23 AM · Jul 4, 2025 · 42.6K Views

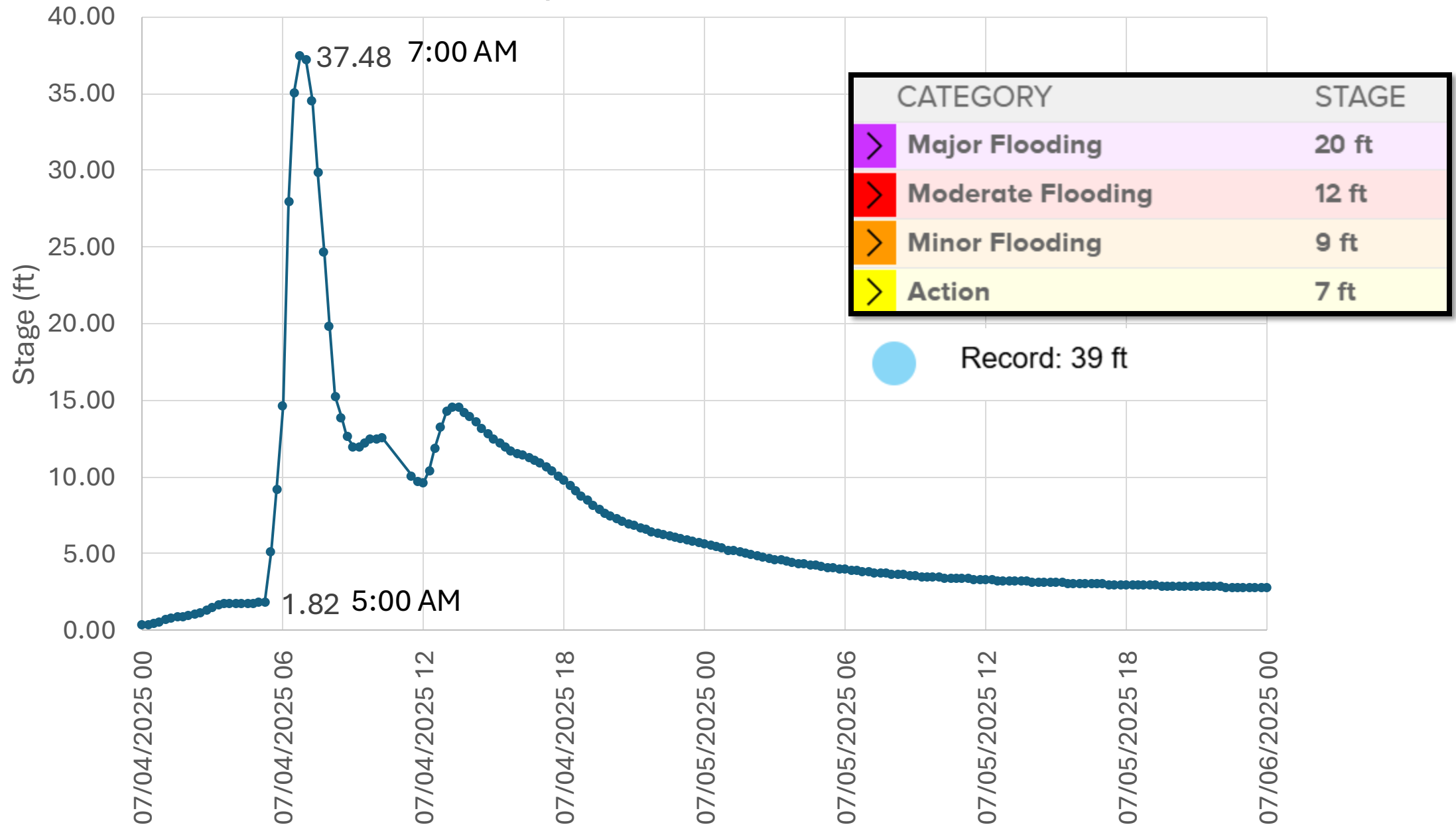
Low Water Crossing, Guadalupe River



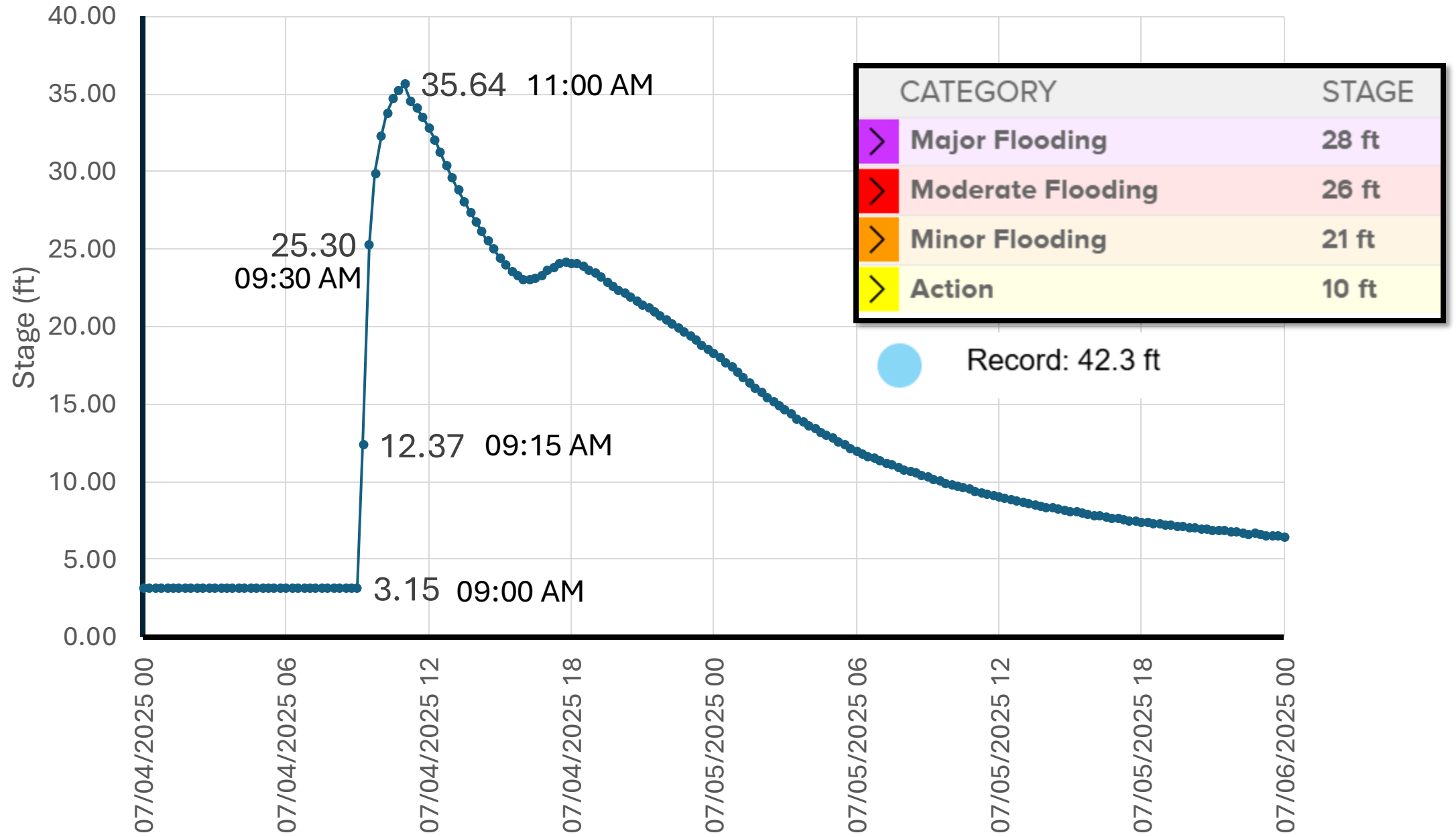
Guadalupe River @ Hunt



Guadalupe River @ Kerrville



Guadalupe River @ Comfort



Flood Monster

- 5-mile “Wedge” of water
 - 6” Leading edge
 - 40’ (Average) in back
 - 55’ max, confirmed.
- Rate of Rise ~1-2 ft/minute

Source: Michael Pantel, Charlie Hastings





Challenges

- First Mile
- Last Mile



Recommendations??

