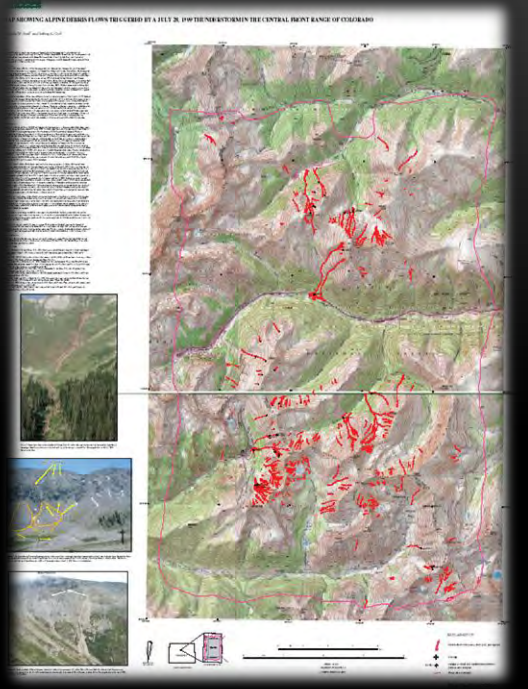
USGS AND EMERGENCY MANAGEMENT LOCAL COORDINATION

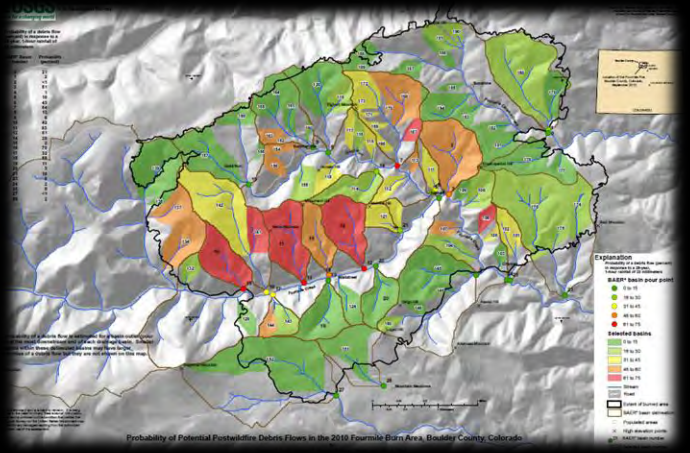
"We knew from our hydrology, meteorologists, and computer modeling how much rain in a given time period would result in specific cubic feet per second stream flow, and the flooding that would result from this stream flow. What took me by surprise were all of the side-hill landslides and debris flows that came into the main canyons and creek channels. The Office of Emergency Management, and local law enforcement and fire districts are worried, and are anxious for any data that can help them to prepare for future landslide incidents."

Dan Barber, Boulder County Office of Emergency Management, January 10, 2014.

USGS LOCAL SUPPORT

- Products showing landslide and debris potential
- Products showing drainage problems causing flooding.
- Setting up live video streaming on high hazard areas.
- Installing stream and rain gauges.
- Providing reports.
- Public Information





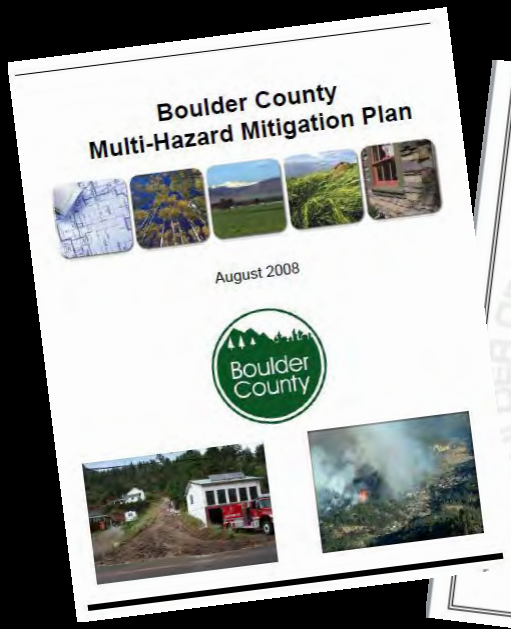
COLORADO RISKS

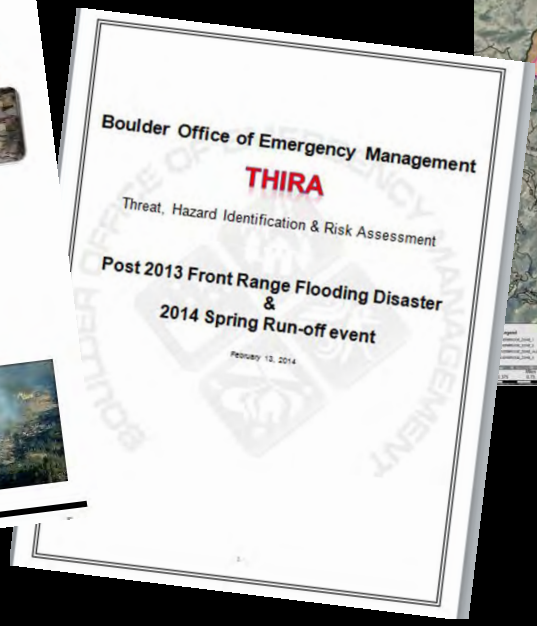
- Wild Fires
- Thunderstorm Intensity Events
- Saturation and Inundation Events

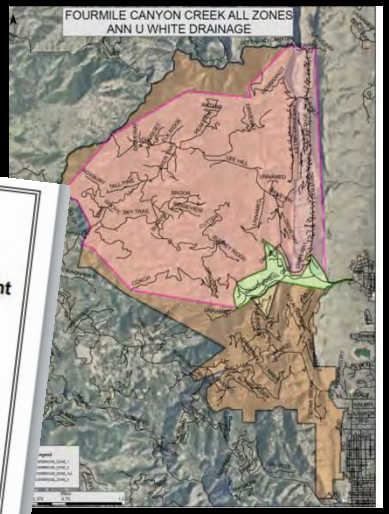
DEBRIS DAMS INCREASE DEVASTATING FLOODING AND DEBRIS FLOWS ARE FAST AND DEADLY

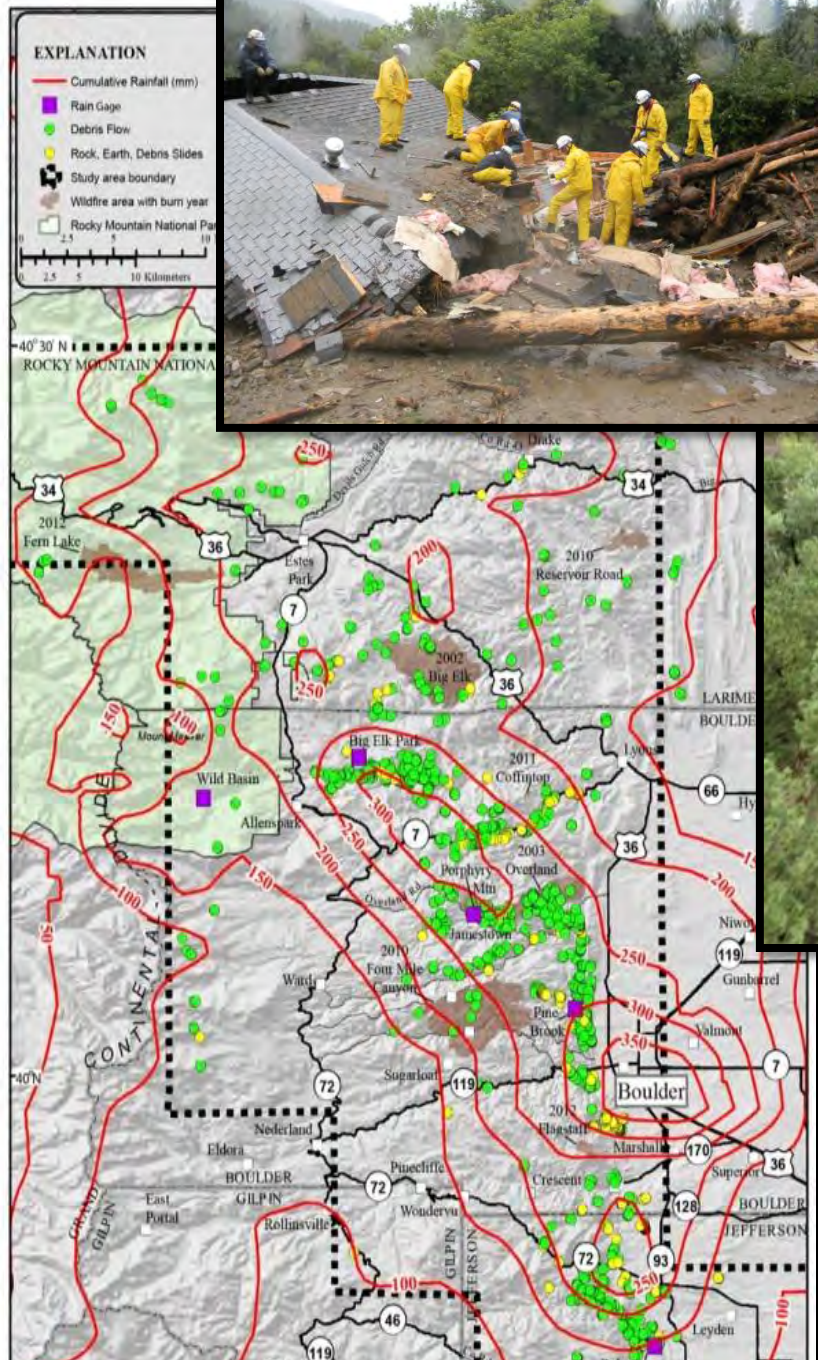
THE CURRENT PRACTICES

- Provide public education about the hazards and risks of landslides.
- Provide information on the signs of pending landslide.
- Develop adequate public warning messages, polygons and multiple public warning systems
- Develop plans





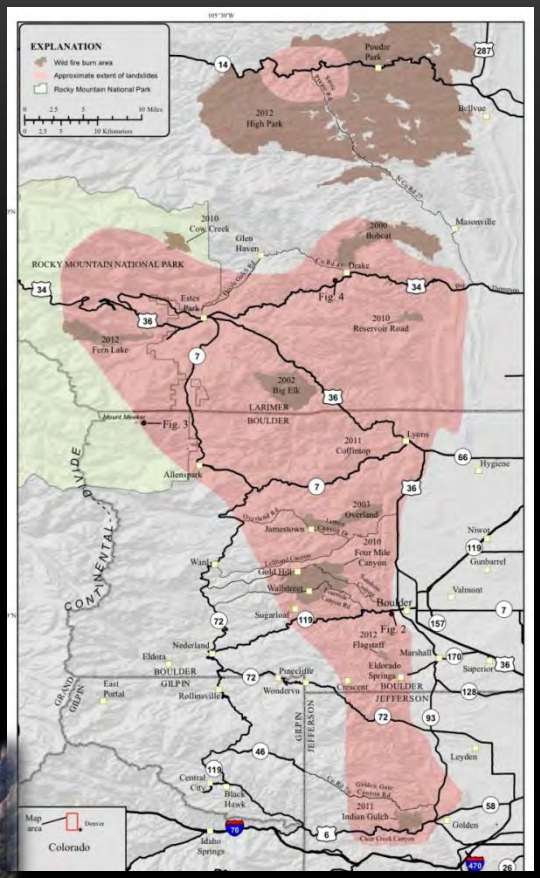




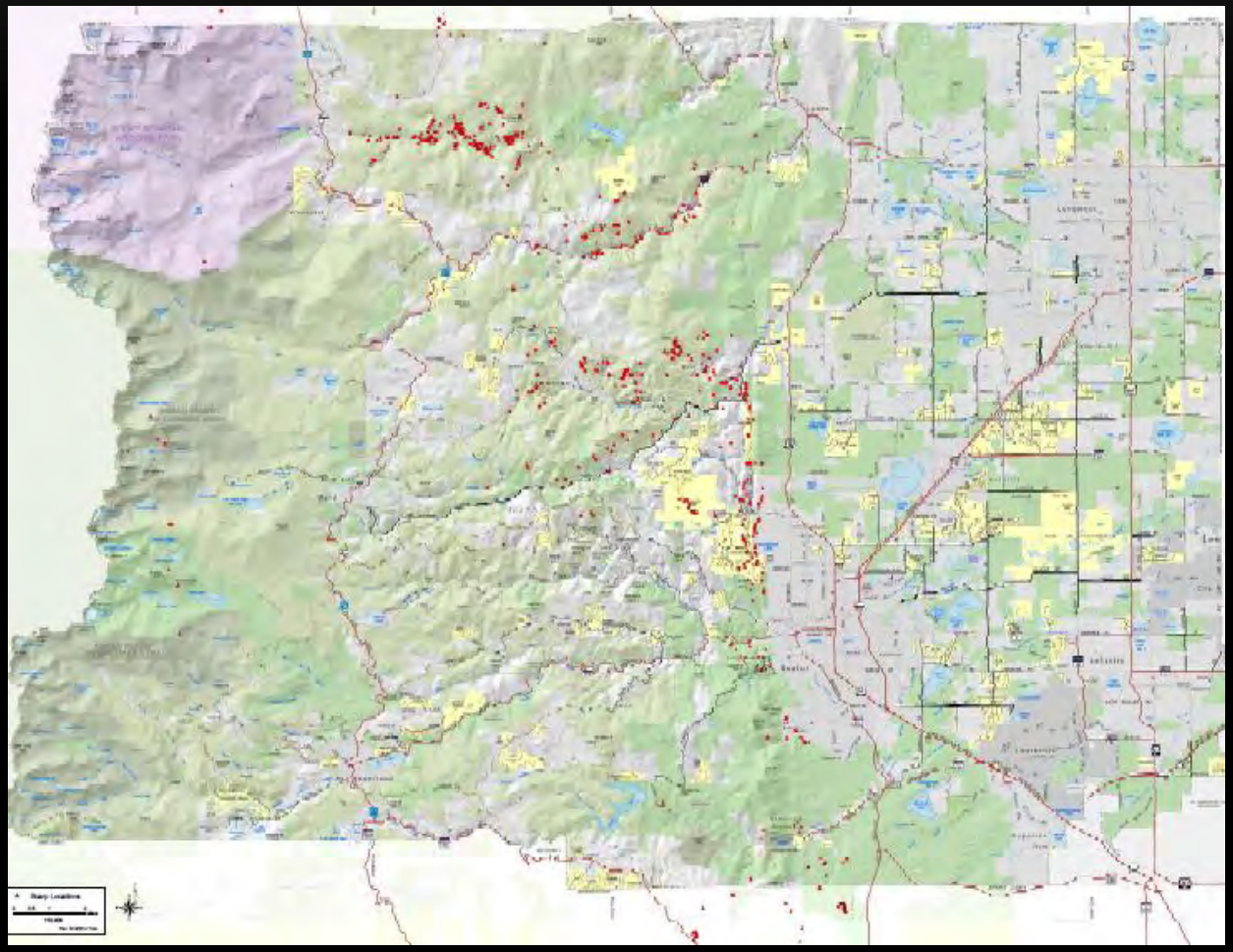
Debris flows impacted Jamestown

HERE IS WHERE WE BEGIN

- We know where the high risk areas are located.
- We know the conditions and contributing factors that cause problems.
- We have the relationship with the experts. (USGS)
- What we do not have is an early warning system.



USGS PROVIDED SCARP INFORMATION



AN ACTUAL CONVERSATION

- Do you guys have a protocol for warning residents? We would probably just as soon do it ourselves, but if you do, let us know and we'll work with you.
- Do you have a trust-worthy soil engineer you consult about this kind of thing?
- This place is a great educational opportunity. It shows what a landslide or soil slump looks like before it lets go, it illustrates the unusual and not-very-perceptible conditions – earth cracks, bends, sluggish flow – that you are advising county people to watch out for.
- Can we get a pair of Watch For Landslides yellow diamond signs?
- Hey Mike do you want to have a look? We have some availability Friday afternoon.

WHAT WILL MAKE A DIFFERENCE

- Planning an zoning
- Mitigation planning and projects
- Monitoring systems that can relay real-time information
  - Soil saturation
  - Ground movement
- Multiple public warning methods and messages.
- Strong community engagement
  - Partnering
  - Messaging
  - Correct action to save lives!