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## **Ferndale, California Earthquake Virtual Clearinghouse Call #2**

Thursday, December 22, 2022  
11:00 AM PT/2:00 PM ET

### **Agenda**

- Welcome & Announcements
- Updates and observations from teams/individuals in the field
- Updates from teams/individuals that will deploy
- Updates from teams/individuals that may deploy
- Updates from Clearinghouse & NEHRP
- Data and Data Products
- Updates from Others
- Open Discussion
- Next Steps

### **Notes**

#### **Welcome & Announcements**

- Call hosted and moderated by Maggie Ortiz-Millan, Director of Programs, Earthquake Engineering Research Institute, in EERI's role as Co-Chair of California Earthquake Clearinghouse
- Welcome from Cindy Pridmore, Chair of California Earthquake Clearinghouse Management Committee
- Welcome from Yvette LaDuke, CalOES
  - For field participants, refrain from engaging with emergency responders
  - Field data collection should not interfere with emergency response
  - Notify clearinghouse of when in field, and approximate locations
  - Be considerate of impact to local population
  - For groups looking for access to secure and sensitive sites, contact clearinghouse to help arrange this
  - [californiaeqclearinghouse@eeri.org](mailto:californiaeqclearinghouse@eeri.org)
- California Earthquake Clearinghouse is activated virtually
  - CGS, EERI, CalOES, USGS, California Seismic Safety Commission



Clearinghouse calls are hosted by the Earthquake Engineering Research Institute (EERI) on behalf of the California Earthquake Clearinghouse. To learn more about EERI, visit [eeri.org](http://eeri.org).

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- Virtual Clearinghouse Website:  
<https://learningfromearthquakes.org/2022-12-20-ferndale-ca/>
  - Share reports, resources, data ([maggie@eeri.org](mailto:maggie@eeri.org))
  - Information will be added as it becomes available
- Notes will be shared publicly on the clearinghouse website; if you want notes shared directly with you, please fill out the sign up form: <https://forms.gle/tpwW7oGcoDDacnps7>
- Please help us ensure accuracy by editing this notes file directly or sending a note in the chat
- A clearinghouse activation summary report will be prepared to capture clearinghouse activities
- Considering hosting a clearinghouse briefing webinar. More information to come in the new year.
- Feedback survey will be shared, please provide your feedback. It helps us to improve clearinghouse operations and continue to support this work.
- A clearinghouse exercise is being planned as part of the 2023 EERI Annual Meeting from April 11-14, 2023. To learn more about the meeting and exercise, visit <https://2023am.eeri-events.org/>.

**Updates from Teams/Individuals in the field**

- California Geological Survey, Tim Dawson
  - Tuesday: Eel River Valley focus with limited ground failure observations (slight cracking in river valley and fill). No evidence of liquefaction in river bottoms; a few locations of small rock fall or debris slides.
  - Wednesday, Petrolia
    - Bridge doesn't appear to be damaged
    - Pre-existing settlement around bridge - appeared to be older than earthquake
  - No one in field today
  - Field techs have been recovering and confirming strong motion records in the region from instrumented structures (bridge, 4-story hospital - 1.3g at roof) and ground station locations in Rio Dell. See report posted on the clearinghouse site: [https://learningfromearthquakes.org/2022-12-20-ferndale-ca/images/2022\\_12\\_20\\_Ferndale\\_CA/pdfs/CSMIP-Preliminary-Report-M6.4\\_Earthquake\\_of\\_20\\_Dec\\_2022\\_12-22-2022.pdf](https://learningfromearthquakes.org/2022-12-20-ferndale-ca/images/2022_12_20_Ferndale_CA/pdfs/CSMIP-Preliminary-Report-M6.4_Earthquake_of_20_Dec_2022_12-22-2022.pdf) This will be a rich data set for subsequent study.
  - KMZ of Field observations are also posted:
    - [https://learningfromearthquakes.org/2022-12-20-ferndale-ca/index.php?option=com\\_content&view=article&id=53](https://learningfromearthquakes.org/2022-12-20-ferndale-ca/index.php?option=com_content&view=article&id=53)



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- download file here:  
<https://www.arcgis.com/home/item.html?id=96abeb39106c416e86c5974e68b24f00>
- Team in field looking at instruments that did not communicate, some new records may be recovered manually
- Eel River Overpass recorded highest acceleration >2g, verification and quality control being performed on record, but no apparent problems with record
  - Will be a good case study for further analysis and research
  - Higher accelerations above base isolated system
- CalTrans, Chris Traina & Andrew Lozano
  - Caltrans has been working with CGS at Hamid Haddadi ; also did some flyovers to assess other bridges
  - Caltrans will try to confirm if pedestrian access to the roads
  - 3 bridges of concern
    - Eel river bridge on sr 211 (also called Ferndale Bridge—note from chat: called Fernbridge)
      - Pictures and videos shown on call #1
      - No status change, repairs and shoring being considered as appropriate, with continued observation. Contractors and maintenance team assessing and considering both temporary and permanent repairs.
      - Not a pedestrian bridge, access unclear
    - Painter Street Overpass in Rio Dell, 101
      - 2 span bridge
      - While High accelerations, displacements align with these values accounted for in the original design.
      - Shear keys at abutments engaged and cracked - verified larger forces
      - Structure at columns fine, no visible damage
      - Performed as expected; repairs expected
      - Accessible to pedestrians
    - Eel River bridge on 101
      - Base isolated
      - Readings above and below isolators
      - Fly over bridge took place
      - 6 inches of movement reported
      - Only visible damage at expansion joints, as expected
      - Usable; no safety concerns or traffic interruption



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- Will make repairs of expansion joint as needed in the future
- Roadway Closure Updates:
  - SR 211 bridge Open to one way traffic
  - Signals are no longer problematic with power restored
  - Changeable Message Signs are no longer problematic.
  - One road impacted by URM damage on roadway
  - Mission task to provide inspectors (7 + 1 coordinator) to assist with local building inspections
    - Once accepted, first team members will arrive on site tonight (12/22).
- California Office Department of Health Care Access and Information for Hospitals (HCAI), Chris Tokas and Hussain Bhatia
  - Not much change since Tuesday
  - Teams were out on wednesday for follow-up inspections; teams not deployed on Thursday
  - Facilities were posted green
  - Performed and operated as expected; movement observed in the seismic joints with very minor cosmetic repairs to gyp board
  - Normal power back to facilities, as of ~2pm yesterday.
  - Joint walk through with Degenkolb with Providence St Joseph
    - One building on campus is instrumented. Recordings are posted on the CSMIP website. See link on last notes. Constructed in 1979 (in accordance with the 1976 CBC) and instrumented in 1996
    - Free field instruments on site are not yet available but being
    - Links to the building and field stations:
    - [https://tab.hcai.ca.gov/t/OSHPD\\_PUBLIC/views/Factables\\_WEB/InstrumentedBuildings?Facility%20Number%20and%20Name=10184%20Providence%20St.%20Joseph%20Hospital&%3AisGuestRedirectFromVizportal=y&%3Aembed=y](https://tab.hcai.ca.gov/t/OSHPD_PUBLIC/views/Factables_WEB/InstrumentedBuildings?Facility%20Number%20and%20Name=10184%20Providence%20St.%20Joseph%20Hospital&%3AisGuestRedirectFromVizportal=y&%3Aembed=y)
  - No damage to compare with strong motion records
  - Staff took many photos documenting “no damage” , will distribute as needed
    - Glued tiles popped off, gyp board cracking, preexisting minor cracks,
  - Website shows live map with shaking intensity and locations of hospital facilities within HCAI jurisdiction
  - Will share report when complete for posting on clearinghouse website
- Degenkolb, Devon Lombard and Laura Rice
  - Observing with HCAI at request of hospital clients
  - All elevators were initially inspected and fully functional;



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- Recommended hospital to reinspected to check counterweights due to high accelerations in one building onsite. Duration of record was short.
- General observations in community
  - Power outage biggest impact
- Additional team out early next week looking at buildings for insurance clients, mostly homes, mainly in Eureka
- Bob McPherson
  - In field
- Kayla Erler, UCSD
  - Wednesday - Fortuna and Rio Dell
  - Rio Dell showing highest pga
  - Most damage near station with highest pga
  - Most common damage:
    - damage to additions or adjacent structures
    - cripple walls
    - Chimney damage
  - Fewer chimneys in Fortuna
  - Thursday
    - Looking at Eel River bridge (base isolated, LRB isolators)
- Lori Dengler
  - Interesting cracks in dunes in samoa peninsula, not liquefaction induced, that a repeat from past earthquakes as well
  - Primarily communicating with community members and media
    - What people are understanding and where confusion is
      - Strength vs magnitude, can improve communication in this area
      - Public confusion about severity of shaking based upon the lower magnitude
      - Media confusion about “the fault”—complexity of the seismological info and info about the location/impact of shaking
      - Aftershock probabilities/forecasts were interpreted to be certain to happen, worry about larger subsequent quake
      - Drop, Cover, Hold On: confusion about what to do while in bed
      - MyShake response - assumption that there will be time to move to another area to drop, cover, hold on
      - National media looking for better picture of situation, making assumptions about lack of instant assessment and blaming on rural location
  - Success - improved performance of bridges



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- Plan to write a public media opinion piece and would welcome input from other Clearinghouse Participants on topics worth emphasizing to the public
- Vladimir Calugaru, InfraTerra
  - In field two days (Tues and Wed)
  - Tuesday: Ferndale, Fortuna
  - Wed Focus: Eureka, Blue Lake, samoa, and rio dell.
  - Observations
    - Earth retaining walls (Bear River)
    - Masonry Veneer and facade damage (Bear River)
    - Ceiling panels (Bear River)
    - Cripple Walls (fortuna and elsewhere)
    - Concentration of single family home damage on Painter St in Rio Dell with structures sliding off foundations and foundation cracking; Red-tagged by local FD
    - Concentration of single family home damage on Eeloa St in Rio Dell, close to the river. Carport roofs collapsed
    - 2 church structures with damage in Rio Dell
    - Chimney failures and some partial roof collapses in Rio Dell
    - Mobile homes falling off supports, but many did not have this problem within the same complex thus likely had lateral bracing
    - Response from CGS to questions about Rio Dell:
- Question: Was the Rio Dell damage in that area in the bend of the river? Soft soil?
  - Directivity of seismic waves, due east of epicenter
  - River terrace features
  - Edge of Eel river basin
  - At boundary of wildcat and franciscan formation - could be focussing seismic waves at boundaries
- Question about building code/local enforcement in Rio Dell? Is it known if Rio Dell damage is most likely a function of stronger ground shaking or building code/enforcement/construction factors unique to Rio Dell that differ from elsewhere in the region?
  - Unknown
- Question: Post and pier foundations are very common in that area. Any engineers notice PNP foundations where the house didn't move/come off?
  - Degenkolb observed a temporary trailer on pier blocks that didn't move in Eureka
- MHP Structural Engineers - not present



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**Updates from teams/individuals that will deploy**

- Janiele Maffei, CEA, considering going into field in end of January
- Eduardo Miranda, likely heading into field tomorrow

**Updates from teams/individuals that may deploy**

- NIST, Steve McCabe, Jay Harris
  - Curious about cause of PG&E outage?
    - Media reports - power turned off to check for gas leaks in large parts of Eureka (Megan Stanton from PG&E questions this credibility)
    - Power restored in most of country; 1,000 customers remain without power now
    - Some areas still without power yesterday near college of the redwoods
    - Megan Stanton from PG&E:
      - Earthquake may have tripped safety systems that turned off power
      - Inspections need to be completed before restoring power
      - Cloud cover prevented aerial inspections
      - Time consuming to do inspections by foot, also affected by road closures
      - Wildfire systems (EPSS: [ENHANCED POWERLINE SAFETY SETTINGS](#)) were in place, but unclear if it those were triggered or contributed to the impacts
      - Microgrid for Humboldt as well
  - Question about water main impacts—What were primary contributors?
    - No response on call

**Updates from Clearinghouse and NEHRP partners**

- CalOES
  - State Operations Center (SOC) is still activated on a 24-hour schedule (2 12-hour shifts), but the Seismic Hazards Branch is only activated during the 0700-1900 hours shift.
  - Information from counties may come in tomorrow
- California Seismic Safety Commission
  - Not present; no update
- FEMA, Anne Rosinski
  - Continuing to monitor and using information from these calls to determine if any additional teams will be sent.



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- CalOES may do initial damage assessments in support of locally-led efforts, FEMA region 9 will coordinate for follow-up; county updates anticipated tomorrow.
- Considering Individual Assistance, if requested by CalOES
- USGS, Steve DeLong
  - Appreciating CGS field study efforts and dissemination via field maps app
  - Focus currently on Aftershock forecasts and geodetic response
  - Cloud cover has prevented some remote sensing imagery - contact Steve for access or information on this effort - This could include post event airborne lidar - we'd like to know of other interest in lidar collection
  - Jeff McGuire, installing equipment for fiber optic study to record aftershock records, line on cable from Arcata to Eureka
- NSF
  - Not present; no update
- NIST
  - See above

#### **Data and Data Products**

- Kate Thomas: KMZ is now posted with all CGS Data collected:  
[https://learningfromearthquakes.org/2022-12-20-ferndale-ca/index.php?option=com\\_content&view=article&id=53](https://learningfromearthquakes.org/2022-12-20-ferndale-ca/index.php?option=com_content&view=article&id=53)

#### **Updates from Others**

- PG&E, Megan Stanton
  - PG&E updates were posted here:  
<https://www.pgecurrents.com/articles/3622-pg-e-crews-respond-humboldt-county-earthquake>
- NASA-JPL, Eric Fielding
  - We are waiting for SAR imagery that will be acquired tomorrow by Sentinel-1.
  - ALOS-2 will image area on 12/25 and 12/26.
  - Interferograms from sentinel 1 may be available tomorrow
- RAPID Facility, Jeff Berman
  - Have 4 building monitoring kits - Nanometrics instruments available
- CA Department of Water Resources, Sherry Constancio
  - Division of Safety of Dams has been in contact and no damage reported so far
  - Office in Eureka
  - No plans to deploy
  - Division of flood management focused on flood control structures:





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- no concerns with levee systems other than minor sloughing and cracking
- Continue to observe due to current King tides today and tomorrow.
- Welcome additional eyes on the levees, can deploy levee inspectors as needed

**Open Discussion**

- Future calls? None planned for the rest of December; if the clearinghouse receives community responses with additional need for coordination and sharing, an additional briefing may be scheduled in January. Make sure you have signed up via this form: <https://forms.gle/UfxJ4Qs61s2BfVyU7> to be included on the contact list for emails.
- Suggestion to post data from virtual field trip on the triple junction on the clearinghouse website. This would be helpful information for those studying the region and understanding its geologic history and seismic structures. Lori Dengler can share.

**Feedback Survey**

- <https://www.surveymonkey.com/r/FJ8TJBK>

**Acknowledgements**

Clearinghouse calls are hosted by the Earthquake Engineering Research Institute (EERI) on behalf of the California Earthquake Clearinghouse. This is made possible by funding from FEMA under grant No.EMW-2022-CA-00004, the support of [EERI members](#), and [Learning from Earthquakes Endowment Fund Donors](#).



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