2014 NAPA EARTHQUAKE Emergency Response and Mutual Aid

Water Utility Earthquake Resilience Symposium

Phil Brun
City of Napa Utilities Director
It wasn’t the BIG ONE for Napa, but it was big enough to tell a story about
City of Napa and Water Utility Overview

Population – 80,000

City Employees – 460
Water Employees – 65

Water Pipelines – 370 miles
Water Services – 25,000
3 Treatment Plants – 43 MGD
12 Storage Tanks – 30 MG
9 Pump Stations
The Event

August 24, 2014 @ 3:20 a.m.  6.0 magnitude - largest quake in the Bay Area since 1989

Epicenter 5 miles S/SW of the City of Napa, 7 miles below grade

Surface fractures indicate underlying faults (USGS)
- 8 miles of surface rupture
- 18 inches of surface slip
The Event

<table>
<thead>
<tr>
<th>PERCEIVED SHAKING</th>
<th>Not felt</th>
<th>Weak</th>
<th>Light</th>
<th>Moderate</th>
<th>Strong</th>
<th>Very strong</th>
<th>Severe</th>
<th>Violent</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>POTENTIAL DAMAGE</td>
<td>none</td>
<td>none</td>
<td>none</td>
<td>Very light</td>
<td>Light</td>
<td>Moderate</td>
<td>Mod./Heavy</td>
<td>Heavy</td>
<td>Very Heavy</td>
</tr>
<tr>
<td>PEAK ACC.(%g)</td>
<td>&lt;0.05</td>
<td>0.3</td>
<td>2.8</td>
<td>6.2</td>
<td>12</td>
<td>22</td>
<td>40</td>
<td>75</td>
<td>&gt;139</td>
</tr>
<tr>
<td>PEAK VEL.(cm/s)</td>
<td>&lt;0.02</td>
<td>0.1</td>
<td>1.4</td>
<td>4.7</td>
<td>9.6</td>
<td>20</td>
<td>41</td>
<td>86</td>
<td>&gt;178</td>
</tr>
<tr>
<td>INSTRUMENTAL INTENSITY</td>
<td>I</td>
<td>II–III</td>
<td>IV</td>
<td>V</td>
<td>VI</td>
<td>VII</td>
<td>VIII</td>
<td>IX</td>
<td>X+</td>
</tr>
</tbody>
</table>

Scale based upon Worden et al. (2012)
The Event

- 246 patients treated at local Hospitals
- 18 admitted, 4 in critical condition
- 1 fatality
BUILDING DAMAGE

Napa Valley Register photo

Napa Valley Register photo

Napa Valley Register photo
BUILDING DAMAGE

14 County Buildings Damaged
400+ Employees Relocated
HOMES and CITIZENS

Napa Valley Register photo

Napa Valley Register photo
HOMES and CITIZENS
HOMES and CITIZENS
BUILDING DAMAGE ASSESSMENT

- “Windshield” survey of 20,000+ structures
- 5,900 structures physically inspected
- 60+ Building Inspectors for 3-4 weeks
- 170 RED tags
- 1,700 YELLOW tags
- 23 Buildings Demolished
WINEMAKER – “DON’T WORRY, WE CAN MAKE MORE.”
STREETS

Napa Valley Register photo

Napa Valley Register photo

Napa Valley Register photo
Instant SKATE PARK!
Storm Drain

Above Ground

Below Ground

Offset joint, slight

NAPA CRESTVIEW WAY side street
DI 17 -> DI 18
RCP round 15

21' 11"

NAPA CRESTVIEW WAY side street
DI 17 -> DI 18
RCP round 15

9' 84"
DEBRIS

7,400 Tons

Lots of TV’s

Wood and Concrete
WATER

- 120+ leaks in first week
- Response was resource intensive
- Quickly became focal point for City
Water needs when system is compromised
- 241 leaks (120 in first few days)
- No damage to Treatment Plants, Pump Stations or Dams
- No immediate damage to Transmission Lines (4 leaks occurred in weeks after event)
- Only 1 of 12 Storage Tanks Damaged
- Approx. 1,500 services impacted (only 6% of system) in first week
WATER RESPONSE

DAY 1 – Sunday (System Assessment)

- Opened DOC
- Employees Report to Work
- Confirm dams and treatment plants are ok
- No transmission line damage
- 60 distribution leaks by early AM
- Ramp up treatment plants – FEED the leaks to maintain positive system pressure
WATER RESPONSE

DAY 1 – Sunday (We need Help)

- Called in 4 contractors (3 have on-call emergency contracts with City)
- CalWARN offered resources approximately 1-hour after quake (Note: Involvement in AWWA makes a difference)
- Requested five (5) Type III Water Distribution System Damage Assessment and Repair Teams
- CalWARN Teams scheduled to arrive at 11AM on Monday – less than 24 hours later!
WATER RESPONSE

DAY 1 – Sunday (Logistics)

☐ Order fuel tanks for Corp Yard
☐ Established 12-hr shifts for staff
☐ Stockpile backfill material
☐ Opened potable water stations
☐ Prepare leak packets – maps, USA tag
☐ Hotels, shuttle cars, gas cards, food for CalWARN crews and other mutual aid
DAY 1 – Sunday (Boil Water Notice)

If you lost water service completely for any period of time after today’s earthquake, the City of Napa advises you to use one of these three options:

- use bottled water for drinking and cooking
- boil tap water for one full minute before use for drinking or cooking
- use water for drinking and cooking from one of the water stations set up by the City, on Pearl Street one block west of Main, or at the Las Flores Center on Linda Vista Avenue

All tap water remains safe for bathing and other household uses. If you water appears cloudy but you did not lose service, let the tap run until the sediment clears.

Once all the broken water lines are repaired and City water has been restored and tested, the City will rescind this advisory notice.

Your water service has been restored and tested following a water main break caused by the South Napa Earthquake.

Your City water is safe to use for all purposes.
WATER RESPONSE

DAY 2 – Monday

- 90 leaks confirmed
- Ordered repair materials
- Delays from 811 – Call Before You Dig
- CalWARN Crews Arrive
DAY 2—Monday (We establish the “Dance”)

**WATER RESPONSE**

- **CalWARN Crews**
  - Excavate and Fix Leaks

- **Napa Crews**
  - Coordinate, Sample, Valves, Parts

- **Mutual Aid**
  - Flushing, Traffic Control, Prep Work

- **Contractors**
  - Backfill
WATER RESPONSE

DAY 2 – Monday (The Paperwork)
WATER RESPONSE

DAY 2 – Monday (Feed the Crews)
WATER RESPONSE

DAY 3 – Tuesday

- 120+ leaks confirmed
- Need more crews – Request to CalWARN
- Documenting repairs
WATER RESPONSE

DAY 4-6 – Wednesday-Friday (The most Productive Days)

- 2 additional CalWARN crews arrive
- The “Dance” Continues
- Crews have a goal to be done by Friday
- Total cost = $900,000
City of Napa – 2014 Earthquake Emergency Response Crews

City of Napa

Mutual Aid
American Canyon
Napa
Napa County
Napa Sanitation
North Calista
St. Helena
Yountville

CalWARN
Muir
CCHP
CHSW
Fairfield

Contractors
Atlas Pile
US Electric
Bob
Northern Pacific
Commercial Power Sweeps
The Hattie Co.
W. Daley Trucking

120 Water Leaks Repaired in 5 Days!
WATER RESPONSE – LESSONS LEARNED

- Join WA/OR>ID WARN Now – you can’t do it alone
- Be ready to take care of Mutual Aid
- Pre-build potable water stations
- Develop a tracking and recording system for leaks now
- Assign water “inspectors” to geographic areas to provide accurate info on leaks
- More admin staff resources - record keeping, check in/out, logistics and cost estimating
WATER RESPONSE – LESSONS LEARNED

- Assign leak crews to do what they do best
- Crews need to document each REPAIR with photo, parts, labor, time
- Call Before You Dig/Underground Service Alert needs to be managed and prioritized
- Customers were understanding
RECOVERY – FUN WITH FEMA

- You need LOTS of DOCUMENTATION
- Significant staff time required
- Establish clear lines of communication between your team and FEMA
- FEMA does not “know” underground facilities
- Recognize that FEMA has rules to follow and you won’t like some of them
- Have a clear idea of what you need to fix and how you want to approach projects – Be organized
- Work together – they have $ you need
PREPARING FOR THE NEXT ONE

- Food, Water
- Fuel
- Hotels
- Repair Materials
- Backfill and Spoils
- Mutual Aid – Do you have it? Are you ready for it?
- How will you assess damage and estimate costs?
- How will you document the Event – photos, forms?
- Training – Do employees know what to do?
- How will you inform the Public? Mapping/GIS?
- How will you staff the “Dance”?
Thank You

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