



# 2023 JANUARY WINTER STORMS & FLOOD AFTER ACTION REPORT

Sonoma County Operational Area and the County of  
Sonoma Department of Emergency Management

March 2023

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## Incident Summary

### Weather

Shortly after the 2023 New Year, National Weather Service informed Sonoma County of an incoming series of atmospheric rivers forecast to place the Russian River above flood stage. Between January 1 and 19, these storms delivered between 5 and 20 inches in different parts of the Operational Area.

The Russian River was predicted to flood significantly throughout the incident. Based on the forecast issued in the afternoon of January 4, the river was expected to crest above the flood stage early morning on January 6. A second wave was forecast to crest around 39 ft the following Sunday. Neither of these predictions materialized, though forecasts continued to show the Russian River going above the 32ft flood stage several times over the following days. The final forecast for a river crest above flood stage came Saturday, January 14. The river instead crested at 29.4 ft.

### Activation

Partial activation of the Emergency Operations Center (EOC) began Wednesday, January 4 and it remained active until Friday, January 20.

Operations facilitated the towing of trailers and RVs to higher ground, preventing them from being inundated by the rising water, and ran free shuttles for residents from west Sonoma County to the shelter at the fairgrounds. The county also created sandbag stations, helping residents fortify their homes and businesses against flooding. To assist residents without power, the county opened community support centers in Guerneville, Occidental, Bodega Bay,

and Ft. Ross, handing out blankets, water, and food, while also providing a place to connect to the internet and recharge their phones.

By late afternoon on January 4<sup>th</sup>, an Evacuation Warning was issued via SoCo Alert and Sheriff's Nixle to the areas that would be affected by initial flooding and the anticipated 39-foot flood on Sunday. In the event of an evacuation order, the EOC developed plans to use the Wireless Emergency Alert system, Emergency Alert System, and NOAA Weather Radio, along with High/low sirens.

The flood response contained several concepts new to Sonoma County. These included a hotline and towing service that provided towing or fuel to move a residential vehicle outside of potential flood zones. The Recovery Operations Center was activated during the response phase and began planning for recovery operations, including for the new Recovery Support Center concept.

For more detailed information, please see:

Appendix 1: Incident Timeline

Appendix 2: Weather Data

Appendix 3: Flood graph

Appendix 4: Improvement plan

## After Actions

Some after action items were collected during the incident on a board in the EOC. Shortly following the event, hot washes were conducted with recovery, feeding, Public

Information and care and shelter. More comprehensive after actions were held with the planning, logistics, and operations section during the week of March 6. Below are the most salient after-action items, divided by section and sub divided by branch.

## Broad takeaways

Several opportunities for improvement were common to multiple sections of the EOC.

1. Messaging the availability and content of services better to the community
  - a. Shelters
  - b. CRCs
2. Need digital tracking and intake process
  - a. Shelters
  - b. CRCs

## Management Section

### General

1. OA Coordination calls should be run by Plans
2. AFN Coordinator should hold an AFN committee meeting during a response for coordination
3. Manage by objectives; clearly articulate priority objectives during stand up, all hands, shift change – write stand up agenda for EOC
4. Operations created concepts of operations independent of plans; created duplication of efforts as plans did the same
5. EOC wound down too early in the response; better to have more EOC support for recovery

### EOC

1. EOC keyboards not ergonomic
2. EOC stations lack docking stations for county laptops
3. Email access for EOC position emails needed for remote workers
4. Name emails by position not numerical
5. Remove MADF and Court designated smoking area away from EOC front door
6. EOC vests with pockets

### Equity

1. Equity's new role in the EOC needs to be better defined to avoid duplication of efforts during activation.
2. Equity acting as incident commander at CRCs; clarify role as advisory.

## WebEOC

1. System timeouts interrupt work, such as IAP; default on plans
2. Need better way to add staff to IAP
3. Add board to keep track of current supplies equipment; what is available in DEM/RSS warehouses
4. Ability to have multiple 213s open in Web EOC; ability to save draft 213s
5. Personnel/HR unit viewers in WebEOC boards populate incorrectly
6. Add remote work as a 214 option
7. Redundant questions within EAP system
8. Update 213 form in Web EOC to prompt more, better broken out details for requests
9. Improved search capabilities; more granular searches (Not specific to 213s)
10. Need to be able to add up to 10 attachments to each 213

## Training

1. Submission of 213s and workflow of requests
  - a. Too many items on single requests
  - b. 213s lacked detail
  - c. Other sections asked logs to fill their 213s for them

## Public Information

### General

- External applications needed for PIO such as photoshop are not loaded onto PIO computers

### Communications

1. Print media still needed with outages
2. Consider other avenues to communicate; churches, schools, etc.
3. Interpretation vs. translation training would be helpful

### Structure

1. Need clearer delineation between EOC and regular PIO duties and functions
2. 211 representatives should be activated in the EOC at any level
3. Need onsite translators in the EOC

## Operations

### General

1. Support for obtaining sandbags should be made available to those with access and functional needs
2. Proactively include DOCs when active in operations planning
3. Remote branch chiefs (i.e. law and fire) should be shared more widely; held at ops chief level

## Care and Shelter

1. Intake forms should be digital
2. Position binder should be pared back for usability and updated
3. Better notification to community of available shelter services
4. Deconflict management of shelters & policy decisions with ARC; maintain final authority in HSD
  - a. Org chart clarifying HSD, DHS, ARC, and DEMA authority and roles
5. Rough transition in feeding from just in time to contract; better to use contract throughout

## Additional Missions

1. On site contacts often missing, inaccurate, or not shared widely
2. Add a trailer towing consideration to the flood annex
3. Charge centers underutilized, sent resources before determining need
  - a. Possibly under communicated to the community; better to have local champion i.e. fire district

## Finance

1. Clarify funding streams for unique operations such as RV support

## Logistics

### General

1. Dedicated EOC Cal Cards
2. Assigning staff commensurate with skill levels – managerial staff tasked as runners
3. Logs section should do shift handover briefing of what is pending by priority
4. Resource requesting pathways went outside of normal channels, leading to duplication of requests

### Staffing

1. Staffing list needs regular updating during incident
2. Staff assigned without clear supervisor or assignment details
3. Supervisory and managerial staff assigned basic runner roles
4. Need better communication when volunteers are used to fill DSW roles
5. List needed of staff with Class A driving licenses to task to move resources
6. Staffing requests should be complete with contacts, duties, dates.
7. Consider staff reserves for recovery; double dipping into existing EOC staff can lead to burn out

### Supply

1. 213s must be approved by section Chief or Deputy or EOC Coordinator before submitting to logistics
2. Assign responsibility for demobilization earlier in response

3. Assigned resources need to include contact name and information

### Demobilization

1. Consider GPS trackers for deployed equipment such as generators
2. Keep EOC open at lower level for longer than the incident to maintain structure for closing out resources, paying bills, etc.
3. Better integrate field operations in chain of responsibility for close out and demobilization
4. Always activate demobilization unit leader to planning section, may be remote at beginning

### Plans

#### General

1. Plans were written for operations without operations' knowledge; better to include from start
2. Better to have a recovery plan written prior to an event
3. IAP developed late

#### Documentation

1. IAP should be printed and made available to chiefs and deputy chiefs
2. Need partial IAP pre-done for first shift
3. IAP was written as a "box checking exercise"; wasn't used to guide response
  - a. Captured goals, but not objectives for next operational period
  - b. Captured previous day's work, more of a summary of activities than a plan

#### Situation & Status Reporting

1. Better use of screens to display dashboards, objectives, battle rhythm
2. Hybrid calls preferable to either entirely virtual or entirely EOC
3. Print Sit Stat Reports and distribute

#### Meetings and Battle Rhythm

1. Plans should run planning and tactics meetings
2. Battle rhythm should be enforced

#### Cross-section support

1. Plan should be developed early by EOC for evacuation of individuals served by West County Community Services.
2. Better to have planning person from DHS DOC embedded in EOC.

### Recovery

#### General

1. Recovery should begin under plans, activated from day 1
  - a. Update Plans Chief binder

2. Recovery siloed from other sections
3. PIO brought in late; need to be embedded more closely in the recovery planning process
4. A preapproved Emergency Financial Assistance Fund would allow for more rapid and responsive dispersions to community

### Community Support Centers

1. Write CRC concept of operations
2. Better communication to community about location, services available (Put in PIO section)
3. Overstaffed in some locations; understaffed in others. Not all services equal across sites
4. Staffing for sites was done partially without logistics being informed; led to duplications
5. Need digital tracking and intake
6. Need better definition of roles and authority structure between county staff, COAD volunteers, etc.
7. Relied on census data; richer data sets needed for more equitable service
8. Asked too many questions asked during intake; took 30+minutes for a single intake
  - a. Form needed a triage function
  - b. Not intuitive enough for just-in-time training
  - c. Too many demographics questions; made some people nervous; some worried they would not receive services based on answers
9. Availability of gift cards at some sites and not others led to inequitable resources
10. Better Environmental Health information distributed at sites
11. Require on-site IT support throughout operation
12. Security balance – must be meaningful to the operation yet subtle enough not to discourage center use

### Incident Command Post (ICP)

The Graton ICP was not activated for the incident. However, the process of setting the ICP up and placing staff on standby generated several after action items.

### IT and Communications

1. There was some confusion with acquiring the base radios from T-COMM.
2. Some radios were already at Graton. Need to update setup instructions to include this.
3. Need to verify if there is county network at Graton.
4. Some of the logins utilized for the five laptops overlapped with EOC logins.

### Mutual Aid Equipment & Resources

1. There was confusion over who should make the request for High Water Vehicles between Fire and Law. Ultimately, because this is a National Guard resource, that request should go through the Law Branch.

### ICP Logistics

1. Set up another folder in the EOC incident folders for the Graton ICP.
2. County staff needed for Graton should be requested as soon as possible.
  - This will likely be a Logistics Deputy Chief and Logistics Runner.
  - Also potentially a PIO and Finance Deputy as well
3. A process for how Graton Logistics position(s) will utilize WebEOC and the 213 board in coordination with the EOC Logistics team needs to be documented.

# Appendices

## Appendix 1: Incident Timeline

### Tuesday, January 3rd, 2023

- Afternoon forecast from California Nevada River Forecast Center (CNRFC) indicated the Russian River would crest late Thursday at approximately 35 feet.
- Received authorization to partially activate Emergency Operations Center (EOC) starting Wednesday, January 4<sup>th</sup>, 2023
- Activated second Staff Duty Officer (SDO)
- Sonoma County Director of Emergency Services proclaims a local emergency

### Wednesday, January 4th, 2023

- EOC Activated at 0800 – Partial (Level 2)
- Auxiliary Communication Service (ACS) activated
- River Forecast Center (RFC) Forecast shows potential for flooding Thursday night at midnight and again for Sunday into Sunday
- National Weather Service (NWS) update on High Wind Warning, High Surf Warning and Coastal Flood Advisory
  - Next storm Saturday could produce another 6 inches of rain
- Operational Area conference call in the afternoon
- Setup of the Graton Incident Command Post for activation on Jan 5<sup>th</sup>.
- Shelter setup operations at Fairgrounds in Santa Rosa
- Sonoma Co Sheriff's issues evacuation warning for zones bordering lower Russian River from Healdsburg to Jenner
  - Zones under Evacuation Warning: SON-1E2, SON-1F4, SON-1F3, SON-1G1, SON-1G2, SON-2K1, SON-2K2, SON-2K3, SON-4A1, SON-4B1, SON-1J1, SON-1J2, SON-1J3, SON-1H1, and SON-1H2
- Multiple outages reported across the Operational Area, as of 1315 hrs 4 Jan: 961 customers
- Multiple school district closures for Thursday, Jan 5: Fort Ross Elementary District, Gravenstein Union School District, Guerneville School District, Harmony Union School District, Horicon School District, Kashia School District, Monte Rio Union School District, Montgomery School District, Twin Hills Union School District, West Side Union Elementary District, West Sonoma County Union High School District, Credo High School, Pathways Charter (open for distance learning), REACH Charter

### Thursday, January 5th, 2023

- Brief of the situation at 1502 hours
  - Latest NWS forecast shows the Russian River at Healdsburg peaking on Monday night at 20ft and peaking at Guerneville Tuesday morning at 36ft. Guerneville still anticipated to reach flood level beginning on Sunday evening.

- Friday Evening/Saturday Storm: Lower Elevations: up to 3.25", Higher Elevations: up to 6.5"
- Sunday through Tuesday Storm: Lower Elevations: up to 4", Higher Elevations: up to 8" with wind gusts up to 60mph, easing Wednesday with an additional predicted 2" before resuming a "normal" but consistent rainy pattern.
- NWS is monitoring the potential for a third round of storms Jan. 12-13
- Power outages continue across the Operational Area.
- OA Coordination Call to be conducted Friday morning at 1000 Hrs.
- Graton ICP on standby. Mission request for high water vehicles made to Cal OES Law.

### **Friday, January 6th, 2023**

- Brief of the situation at 1058 hours
  - Latest NWS forecast shows the Russian River at Healdsburg peaking on Monday night at 21ft and peaking at Guerneville Tuesday morning at 39ft. Guerneville still anticipated to reach flood level beginning on Sunday evening.
  - NWS Flood Watch issued from early Saturday morning through Tuesday afternoon.
  - NWS High Surf Warning issued for Jan 6th from 9AM to 9PM.
- A hotline has been established to assist residents in the lower Russian River that need to tow their trailers/RVs out of the evacuation warning zones.
- Temporary parking and public health resources have been established for residents in RVs at Forestville Youth Park, currently supporting 29 RVs and their passengers.
- OA Coordination Call to be conducted Saturday morning at 1000 Hrs.
- Graton ICP on standby, preparation for a Sunday morning activation.

### **Saturday, January 7th, 2023**

- Brief of the situation at 1234 hours
  - Latest NWS forecast shows the Russian River at Healdsburg peaking on Tuesday Morning at 20ft and peaking at Guerneville Tuesday morning at 38ft (images attached). Guerneville still anticipated to reach flood level beginning on Sunday evening.
  - NWS Flood Watch issued from early Saturday morning through Tuesday afternoon.
  - NWS Wind Advisory issued for Sonoma County from Saturday morning through Sunday afternoon.
- A Community Support Center has been established at the Fort Ross Visitor Center to provide charging stations, internet support, and minimal public health resources. The center will operate from 8 AM to 5 PM.
- OA Coordination Call to be conducted Sunday morning at 1000 Hrs.
- Graton ICP on standby. Two high water vehicles prepositioned at Santa Rosa Armory.

### **Sunday, January 8th, 2023**

- Brief of the situation at 1138 hours
  - Latest NWS forecast shows the Russian River at Healdsburg peaking on Monday evening at 19ft and peaking at Guerneville Tuesday morning at 34.5ft. Guerneville still

anticipated to reach flood level beginning on Monday evening. NWS has issued a High Wind Warning from 8PM this evening to 8AM Monday morning.

- NWS High Wind Warning issued for Sunday evening 8PM to Monday morning 8AM.
- Next OA Coordination Call will be Monday, Jan 9th at 10:00AM (standing OA Coordination Call)
- Graton ICP activation put on standby through Wednesday, Jan 11th

### **Monday, January 9th, 2023**

- Brief of the situation at 1114 hours
  - Latest NWS forecast shows the Russian River at Healdsburg peaking on Monday afternoon at 18ft and peaking at Guerneville Tuesday morning at 33.1ft (images attached). Guerneville still anticipated to reach flood level beginning on Monday evening. Evacuation Warning remains in place.
  - Flood Advisory remains in effect until 245PM Monday Afternoon
  - Flood Watch in effect through Tuesday afternoon as rainfall continues
- Presidential Declaration approved for the California flooding event, which includes Sonoma County, for Emergency Protective Measures (Category B)
- Evacuation Warning remains in effect for Russian River between Healdsburg and Jenner
- Over 3,800 customers are currently without power across the OA
- OA Coordination Calls to continue at 1030AM beginning Tuesday

### **Tuesday, January 10th, 2023**

- Brief of the situation at 1233 hours
  - Russian River at Guerneville peaked Tuesday morning at 31.8ft.
  - The Evacuation Warning for the Russian River has been lifted.
  - Scattered thunderstorms remain possible into Tuesday afternoon. Continued rain and wind expected through this week.
  - Flood Watch in effect through Tuesday afternoon as rainfall continues
  - Over 4,600 customers are currently without power across the OA
  - Sonoma County, City of Cloverdale, Town of Windsor, City of Petaluma, and Sonoma County Fire District have proclaimed local emergencies

### **Wednesday, January 11th, 2023**

- Brief of the situation at 1204 hours
  - Russian River at Guerneville anticipated to reach flood stage Thursday afternoon (32.7ft) and again Sunday morning (32.5ft). No major impacts anticipated at this foot level
  - Evacuation shelters at County Fairgrounds scheduled to close Thursday, Jan 12th at 1200Hrs and shelter will remain on standby through the weekend.
  - Another storm system is anticipated this weekend, bringing moderate rainfall and gusty winds.
  - Flood Watch in effect through Thursday morning
  - Wind Advisory in effect from Thursday morning until Thursday evening (7PM)

- High Surf Advisory in effect from 1PM Thursday to 10AM Saturday
- Flood Warning issued for Russian River at Johnsons Beach near Guerneville from Thursday morning
- Sonoma County Board of Supervisors ratified the County's Proclamation of Local Emergency on 1/10
- Over 2,000 customers are currently without power across the OA
- Update at 1258 hours: The County evacuation shelters will now remain open until 1200Hrs on Friday, Jan 13. This is subject to change dependent on river forecasting.

### **Thursday, January 12th, 2023**

- Brief of the situation at 1221 hours
  - Another rain system set to arrive Friday and goes through the weekend.
  - Russian River at Guerneville continues to forecast flood stage Sunday morning (32.0ft). No major impacts anticipated at this foot level
  - Evacuation shelters at County Fairgrounds scheduled to close FRIDAY, Jan 13th at 1200Hrs and shelter will remain on standby through the weekend.
  - Flood Warning issued through Midnight Friday (tonight)
  - Flood Watch in effect starting Saturday, January 14 at 4AM through Monday, January 16 at 4PM
  - Russian River expected to crest at Guerneville at the flood level of 32 feet Sunday at 9AM. No major impacts anticipated at this foot level
  - As off 1130, showing 1,300 customers without power
    - Anticipate large majority to be restored by tonight and remainder by tomorrow
  - Evacuation Shelters at County Fairgrounds scheduled to close on Friday 1/13 at 12PM
  - Hotline operations continue to assist residents in the lower Russian River with towing of their trailers/RVs out of the potential flooded zones.
  - Community Support Centers continue to operate and provide resources and services. Hours 9AM-430PM
- Graton ICP demobilization

### **Friday, January 13th, 2023**

- Brief of the situation at 1214 hours
  - Rain systems will continue into the weekend.
  - 2 storms incoming over the weekend: One on Saturday and another Sunday afternoon through Monday.
  - Flood Watch in effect starting Saturday, January 14 at 4AM through Monday, January 16 at 4PM
  - Sonoma Coast under High Surf Warning through Saturday morning
  - Russian River expected to crest at Guerneville at the 34 foot flood level Sunday at 12PM. Some minor impacts with added height but nothing major anticipated at this foot level.
  - As off 1130, showing 1,300 customers without power after large outage this morning from Sea Ranch
  - Evacuation Shelters closing at 12PM
  - Hotline operations continue to assist residents in the lower Russian River with towing of their trailers/RVs out of the potential flooded zones.

### **Saturday, January 14th, 2023**

- Brief of the situation at 1217 hours
  - Rain systems will continue throughout the weekend.
  - County EOC will remain activated over the weekend with light crew during dayshift – Duty Officer overnight.
  - Next system Sunday brings chance of showers in the morning with steady rain in the afternoon going into the late evening.
  - Flood Watch currently in effect through Monday, January 16 at 4PM
  - Coastal Flood Advisory until January 16 at 9AM
  - Russian River at Guerneville forecast dropped to 32-foot flood level for Sunday at 12PM. No major flooding impacts anticipated at this foot level.
  - PG&E handling new outages from this morning throughout Op Area
    - As off 1145, showing 2,180 customers without power.
  - Recovery Support Centers to be open in Guerneville (Sunday) and Healdsburg (Monday)
  -

### **Sunday, January 15th, 2023**

- Brief of the situation at 1150 hours
  - Rain systems will continue throughout the weekend.
  - County EOC will remain activated over the weekend with light crew during dayshift – Duty Officer overnight.
  - Next system Sunday brings scattered to showers in the morning with increasing rain in the afternoon going into the late evening.
  - Flood Watch currently in effect through Monday, January 16 at 4PM
  - Coastal Flood Advisory until January 16 at 9AM
  - Russian River at Guerneville forecast dropped to 29.6-foot flood level for Sunday at 1000. No major flooding impacts anticipated at this foot level.
  - Mark West Creek continues to be at moderate flood stage but is dropping.
  - PG&E handling new outages from this morning throughout Op Area
    - As of 1145, showing 401 customers without power.
    - PG&E reports that many of these are individual meter problems rather than area problems.
  - Recovery Support Centers open in Guerneville (Sunday) and Healdsburg (Monday).

### **Monday, January 16th, 2023**

- Brief of the situation at 1220 hours
  - Rain systems will continue through the weekend.
  - County EOC will remain activate through the holiday with light crew during dayshift – Duty Officer overnight.
  - Moderate rains predicted for Wednesday but not anticipated to be a threat
  - Russian River at Guerneville currently at 26-foot flood level and dropping. No further rise is forecasted.
  - Mark West Creek continues to be at moderate flood stage but is dropping.

- PG&E handling new outages from this morning throughout Op Area
  - As of 1145, showing 433 customers without power.
- Recovery Support Centers currently open in Guerneville and Healdsburg.
- OA coordination calls returning to regular schedule. Next OA Call will be at 1000 on Tuesday.
- Supporting Recovery Support Centers with logistics.
- EOC is coordinating towing of evacuee mobile homes.

### **Tuesday, January 17th, 2023**

- Brief of the situation at 1245 hours:
  - Rain has abated.
  - Russian River at Guerneville is at 20.2 feet and dropping.
  - County EOC is in recovery mode and transitioning to virtual mode with light crew during dayshift – Duty Officer overnight.
  - Light rains predicted for Wednesday with an average of .25-.5 inches but not anticipated to have a significant impact. A cold wave is moving in so we can anticipate low- to mid-30s temperatures overnight.
  - Russian River at Guerneville currently at 20-foot flood level and dropping. No further rise is forecasted.
  - PG&E outages reduced to 112, mostly planned or small-scale outages.

### **Wednesday, January 18th, 2023**

- Last day of Recovery Support Centers
- Hotline to assist with Recovery Resources to be setup

### **Thursday, January 19th, 2023**

- Recovery Hotline operations continue

### **Friday, January 20th, 2023**

- Last day of Recovery Hotline operations
- EOC formally deactivated at 1700 hours
  - County remains under a proclamation of local emergency - remaining tasks and efforts will revert to regular department processes and channels.
  - DEM will continue to coordinate several on-going efforts including support for the Emergency Assistance Fund project, materials recovery, coordination with CalOES/FEMA and after-action reviews/reporting.

**RSC Snapshot:**

<b>LOCATION</b>	<b>Sunday 1/15</b>	<b>Monday 1/16</b>	<b>Tuesday 1/17</b>	<b>Wednesday 1/18</b>	<b>Thursday 1/19</b>	<b>Friday 1/20</b>	<b>Total RSC</b>
<b>Guerneville</b>	104	117	103	99	N/A	N/A	423
<b>Healdsburg</b>	N/A	215	299	136	N/A	N/A	650
<b>Hotline</b>	N/A	N/A	N/A	7	10	20	37

## Appendix 2: Weather Data

Station	Date	Daily Max Temp (°F)	Daily Min Temp (°F)	Daily Max Wind (mph)	Daily Rain (In)
Cloverdale-East	1/3/2023	47	31.9	14	0.01
Cloverdale-East	1/4/2023	55	40.7	31	3.17
Cloverdale-East	1/5/2023	54.8	40.5	20.4	0.88
Cloverdale-East	1/6/2023	52.2	44.5	13.2	0.34
Cloverdale-East	1/7/2023	50.8	46.6	26.8	2.64
Cloverdale-East	1/8/2023	57.3	46.3	28.3	0.75
Cloverdale-East	1/9/2023	64.1	40.9	27.4	1.55
Cloverdale-East	1/10/2023	54	42.4	26.1	1.53
Cloverdale-East	1/11/2023	55.1	45.2	20.3	1.31
Cloverdale-East	1/12/2023	64.3	52	22.2	0.07
Cloverdale-East	1/13/2023	56.2	49.6	19	1.79
Cloverdale-East	1/14/2023	54.4	43.8	27	1.75
Cloverdale-East	1/15/2023	50.8	43.1	15.7	0.59
Cloverdale-East	1/16/2023	53.5	36.3	17.6	0.01
Cloverdale-East	1/17/2023	57.1	35.1	16.6	0
Guerneville Rd East	1/3/2023	50.3	40.4		
Guerneville Rd East	1/4/2023	57.3	40.3		
Guerneville Rd East	1/5/2023	57	43		
Guerneville Rd East	1/6/2023	56.1	45.9		
Guerneville Rd East	1/7/2023	54.5	48		
Guerneville Rd East	1/8/2023	61.3	47.6		
Guerneville Rd East	1/9/2023	61.5	42.2		

Station	Date	Daily Max Temp (°F)	Daily Min Temp (°F)	Daily Max Wind (mph)	Daily Rain (In)
Guerneville Rd East	1/10/2023	56.6	45.6		
Guerneville Rd East	1/11/2023	56.5	49		
Guerneville Rd East	1/12/2023	64.4	52.4		
Guerneville Rd East	1/13/2023	58.2	51.4		
Guerneville Rd East	1/14/2023	57	44.4		
Guerneville Rd East	1/15/2023	52.7	44.4		
Guerneville Rd East	1/16/2023	56.1	36.5		
Guerneville Rd East	1/17/2023	58.5	31		
HWY 128/Chalk Hill Rd	1/3/2023	50.3	36.2	16.2	0
HWY 128/Chalk Hill Rd	1/4/2023	56.9	46	28.2	1.99
HWY 128/Chalk Hill Rd	1/5/2023	56.4	41.8	19.1	0.67
HWY 128/Chalk Hill Rd	1/6/2023	54.3	47.6	15.2	0.27
HWY 128/Chalk Hill Rd	1/7/2023	53.5	48	25.2	1.82
HWY 128/Chalk Hill Rd	1/8/2023	60.4	44.7	27.8	0.66
HWY 128/Chalk Hill Rd	1/9/2023	62.3	43.7	19	1.98
HWY 128/Chalk Hill Rd	1/10/2023	54.6	44.4	23.1	2.08
HWY 128/Chalk Hill Rd	1/11/2023	53.8	46.6	18.2	1.1
HWY 128/Chalk Hill Rd	1/12/2023	66.6	51.6	16.3	0
HWY 128/Chalk Hill Rd	1/13/2023	56.9	50.4	14.3	1.61
HWY 128/Chalk Hill Rd	1/14/2023	57.6	43.9	19.3	1.56
HWY 128/Chalk Hill Rd	1/15/2023	52.4	43.3	13.1	0.56
HWY 128/Chalk Hill Rd	1/16/2023	54.4	37.2	17	0
HWY 128/Chalk Hill Rd	1/17/2023	60.9	31.5	9.1	0

Station	Date	Daily Max Temp (°F)	Daily Min Temp (°F)	Daily Max Wind (mph)	Daily Rain (In)
NW Santa Rosa	1/3/2023	49.8	40.5	9.6	0.01
NW Santa Rosa	1/4/2023	57	40.1	26.5	1.81
NW Santa Rosa	1/5/2023	57.1	42.6	20.3	0.42
NW Santa Rosa	1/6/2023	55.6	45.4	16.4	0.13
NW Santa Rosa	1/7/2023	53.5	47.7	23	1.43
NW Santa Rosa	1/8/2023	60	46.9	23.7	0.49
NW Santa Rosa	1/9/2023	60	42.3	21.5	1.89
NW Santa Rosa	1/10/2023	55.7	45.2	25.6	0.45
NW Santa Rosa	1/11/2023	56.4	49	16.5	1.38
NW Santa Rosa	1/12/2023	64.2	51.9	14.7	0.02
NW Santa Rosa	1/13/2023	58.3	51.5	15.7	0.92
NW Santa Rosa	1/14/2023	56.6	44.6	22.4	1.62
NW Santa Rosa	1/15/2023	52.5	44.7	10	0.42
NW Santa Rosa	1/16/2023	55.6	36.7	10.5	0.03
NW Santa Rosa	1/17/2023	57.2	30.6	7	0
Occidental	1/3/2023	46.1	39.7		0
Occidental	1/4/2023	55.4	43.1		1.68
Occidental	1/5/2023	53.7	45.1		0.88
Occidental	1/6/2023	52.4	47.6		0.28
Occidental	1/7/2023	51.9	46.8		2.23
Occidental	1/8/2023	57.4	46.6		0.53
Occidental	1/9/2023	60	48.1		1.46
Occidental	1/10/2023	53.4	46.2		0.77

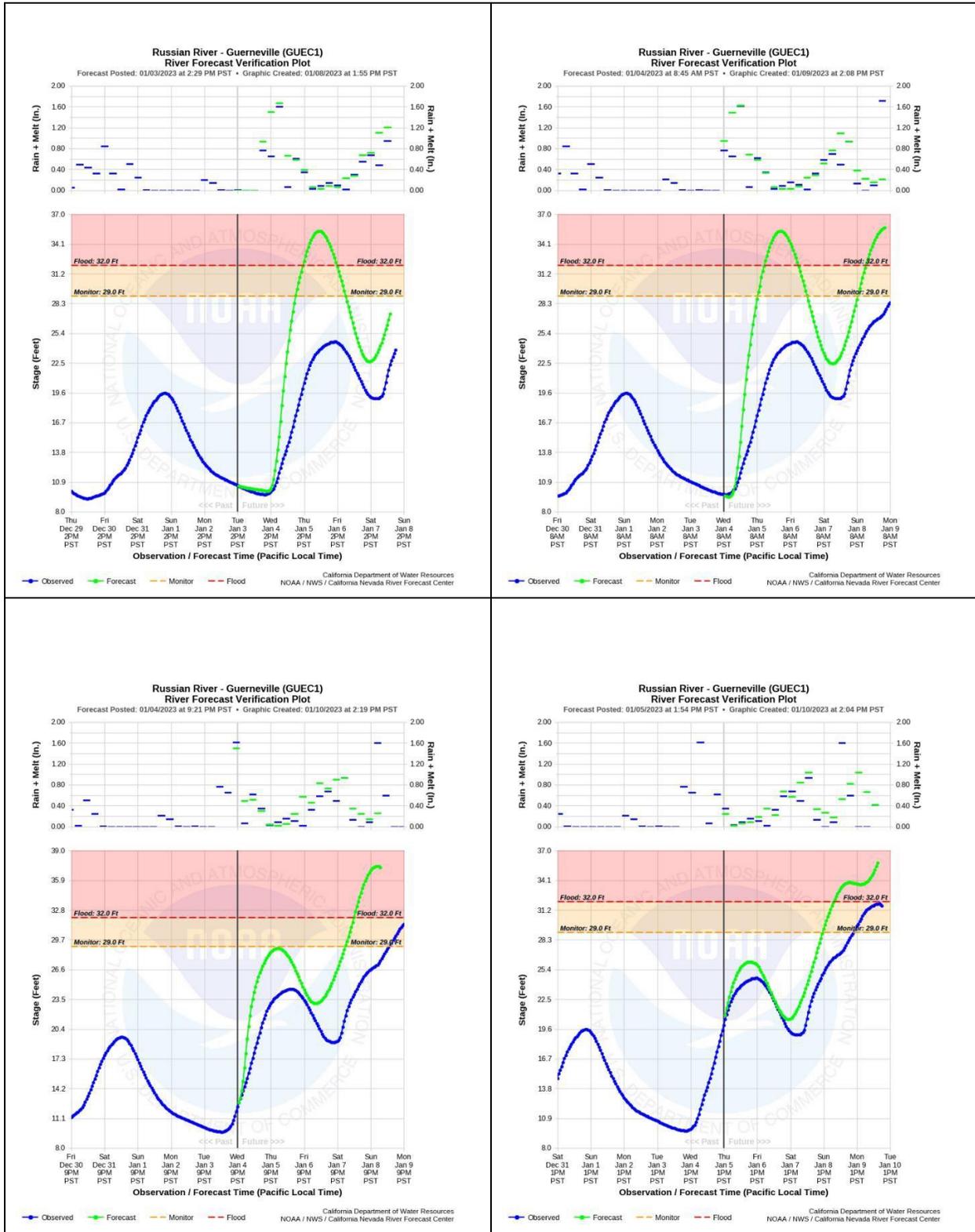
Station	Date	Daily Max Temp (°F)	Daily Min Temp (°F)	Daily Max Wind (mph)	Daily Rain (In)
Occidental	1/11/2023	54.3	46.9		1.97
Occidental	1/12/2023	62	53.5		0.01
Occidental	1/13/2023	55	49.9		1.05
Occidental	1/14/2023	54.2	43.9		1.29
Occidental	1/15/2023	50.2	43.1		0.59
Occidental	1/16/2023	54.4	42.2		0.04
Occidental	1/17/2023	56.1	37.9		0
Petaluma	1/3/2023	49.5	43.3	8.7	0.01
Petaluma	1/4/2023	56.8	46.1	16.2	1.43
Petaluma	1/5/2023	57.2	44.1	19.9	0.55
Petaluma	1/6/2023	58.4	48.4	7.1	0.09
Petaluma	1/7/2023	52.4	48.7	15.4	0.84
Petaluma	1/8/2023	61.4	45.2	28.2	0.65
Petaluma	1/9/2023	62.8	47	12.9	1.35
Petaluma	1/10/2023	56.6	47.5	23.2	0.6
Petaluma	1/11/2023	56.7	48.1	12.4	0.54
Petaluma	1/12/2023	64.8	52.1	8.6	0
Petaluma	1/13/2023	59.9	51.1	13.7	0.5
Petaluma	1/14/2023	58.2	45.2	21.4	1.13
Petaluma	1/15/2023	54.5	44.2	10.4	0.79
Petaluma	1/16/2023	57.2	40.8	20.3	0.1
Petaluma	1/17/2023	59.9	32.5	10.7	0
Rohnert Park-West	1/3/2023	49.4	37.7	13.8	0

Station	Date	Daily Max Temp (°F)	Daily Min Temp (°F)	Daily Max Wind (mph)	Daily Rain (In)
Rohnert Park-West	1/4/2023	57.6	43.3	32.9	2.13
Rohnert Park-West	1/5/2023	57.4	45.3	23.8	0.91
Rohnert Park-West	1/6/2023	55.6	48.7	16.4	0.18
Rohnert Park-West	1/7/2023	54.1	49.5	32.8	1.66
Rohnert Park-West	1/8/2023	59.9	47.1	21.4	0.52
Rohnert Park-West	1/9/2023	59.5	43.7	24.4	1.77
Rohnert Park-West	1/10/2023	55.3	48.6	28.2	0.68
Rohnert Park-West	1/11/2023	56.6	48.8	19.8	0.77
Rohnert Park-West	1/12/2023	63.3	51.4	13.9	0
Rohnert Park-West	1/13/2023	58.7	51.4	19.9	0.69
Rohnert Park-West	1/14/2023	57.2	45.1	27.1	1.25
Rohnert Park-West	1/15/2023	52.5	44.2	13.4	0.65
Rohnert Park-West	1/16/2023	54.6	37	18.3	0.06
Rohnert Park-West	1/17/2023	56.7	31.8	8.4	0
Seaview/Fort Ross	1/3/2023	45.9	37.1	20.4	0.02
Seaview/Fort Ross	1/4/2023	50.8	42.6	42.2	4.29
Seaview/Fort Ross	1/5/2023	49.8	43.5	22.6	0.83
Seaview/Fort Ross	1/6/2023	49.5	44.8	24.2	0.81
Seaview/Fort Ross	1/7/2023	48.6	44	35.6	4.94
Seaview/Fort Ross	1/8/2023	52.2	44.9	34.2	0.62
Seaview/Fort Ross	1/9/2023	54.5	45.2	32.9	1.59
Seaview/Fort Ross	1/10/2023	48.3	43	27.1	0.66
Seaview/Fort Ross	1/11/2023	51.6	44.5	29	1.77

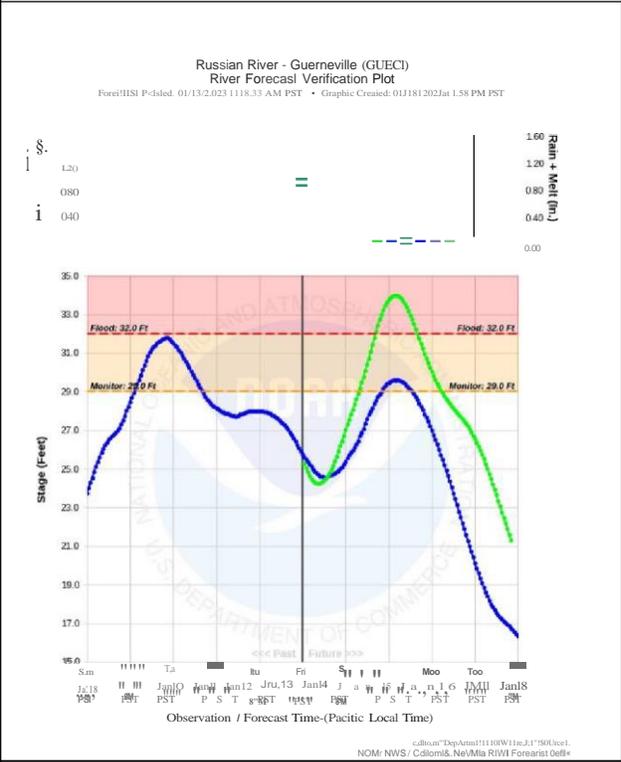
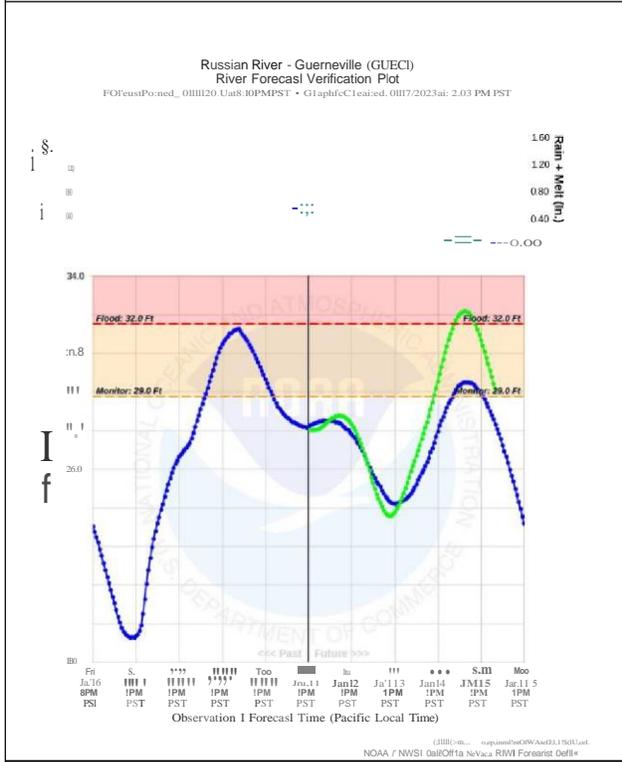
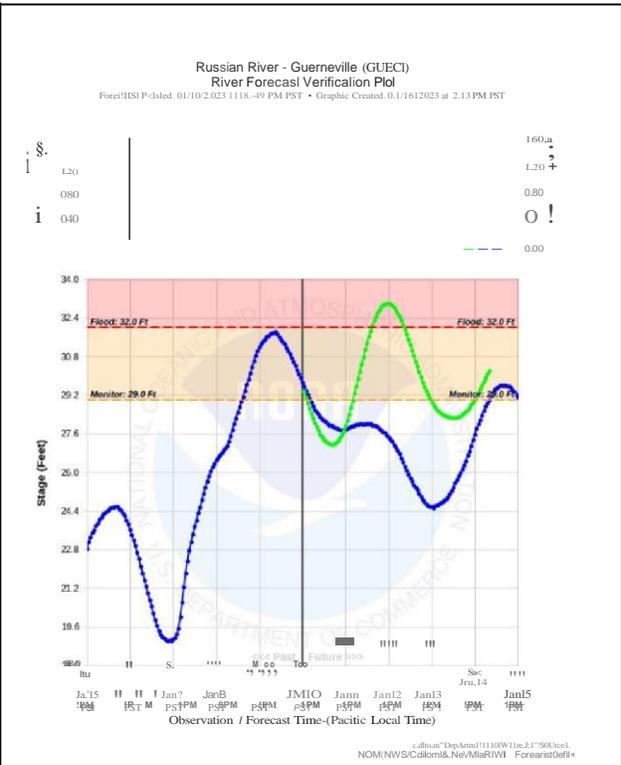
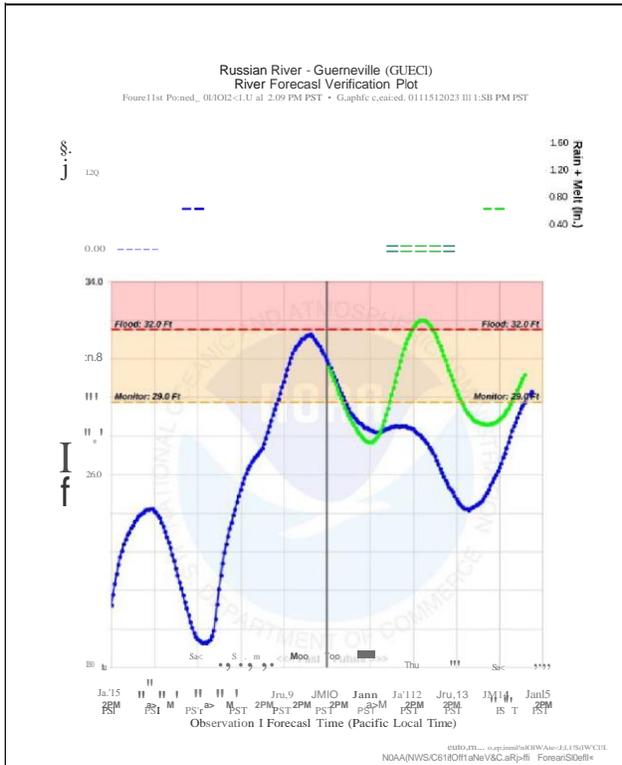
Station	Date	Daily Max Temp (°F)	Daily Min Temp (°F)	Daily Max Wind (mph)	Daily Rain (In)
Seaview/Fort Ross	1/12/2023	56.4	47	28.8	0.34
Seaview/Fort Ross	1/13/2023	51.2	46.6	28.4	2.41
Seaview/Fort Ross	1/14/2023	50.5	40.4	26.1	2.09
Seaview/Fort Ross	1/15/2023	47.6	39.6	12.4	0.65
Seaview/Fort Ross	1/16/2023	47.2	38.6	14.9	0.01
Seaview/Fort Ross	1/17/2023	51.6	36.7	12	0
Sonoma-West	1/3/2023	49.3	41.1	9.9	0
Sonoma-West	1/8/2023	60.7	45.3	11.4	0.3
Sonoma-West	1/9/2023	60.9	42.1	21.4	2.22
Sonoma-West	1/10/2023	54.5	47.2	24.4	0.77
Sonoma-West	1/12/2023	65.6	49.9	5.5	0
Sonoma-West	1/13/2023	57.3	50.8	15.8	0.96
Sonoma-West	1/16/2023	58.3	37.9	26.6	0.8
Sonoma-West	1/17/2023	59.7	31.5	10.6	0

Sourced: Sonoma County Weather – Western Weather Group

# Appendix 3: Flood graphs

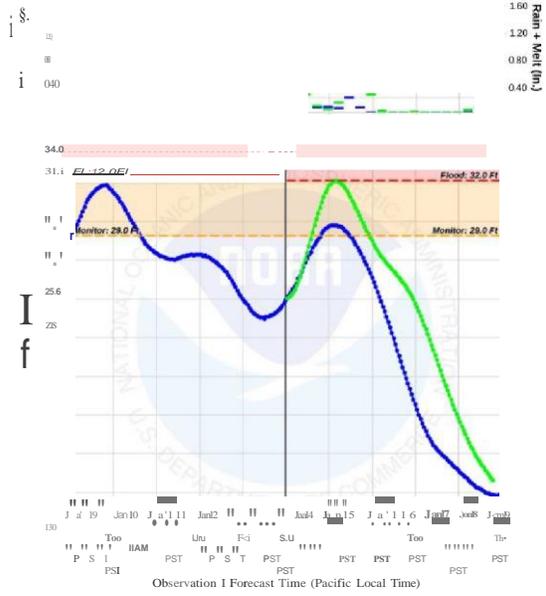






Russian River Guerneville (GUEC)  
River Forecast Verification Plot

POreCIS1 P0Std\_0111412.02:3 till 9:29 AM PST • GriphlCCreelod\_01/1912023 till2:01 PM PST



## Appendix 4: Improvement plan

Items highlighted in **green** have been identified by the Department of Emergency Management as priority after action items.

Corrective Action/ Recommendation	Person Responsible	Contact Information	Completion Target
<b>MANAGEMENT</b>			
Write agendas for all regular EOC meetings to enforce management by objectives	DEM		
Email access for EOC position emails needed for remote workers	DEM/ISD		
<b>WEB EOC</b>			
Update 213 form in Web EOC to prompt more, better broken out details for requests; require 213s be approved by Section Chief or Deputy before advancing to Logistics for fulfilment	DEM		
Add board to track current supply equipment deployed – location, date of mobilization, point of contact	DEM with Juvare		
Add WebEOC board of what is available in DEM & RSS warehouses	DEM with Juvare		
Add ability to have multiple 213s open in Web EOC; add ability to save draft 213s	DEM		
Add remote work as a 214 option	DEM/ISD		

Set system timeouts to default log out after a longer interval of time	DEM with Juvare		
Add ability to include up to 10 attachments to individual 213s.	DEM with Juvare		
<b>PUBLIC INFORMATION</b>			
Host interpretation vs. translation training	DEM		
<b>OPERATIONS</b>			
Intake forms and process for all disaster services should be digital	DEM		
Pare down position binders for usability	DEM		
Develop communications plan for community, better informing of availability of disaster services	CAO - PIO		
Add towing consideration to flood annex	DEM		
<b>LOGISTICS</b>			
Obtain Dedicated EOC Cal Cards	DEM/Finance		
Compile list of staff with Class A driving licenses	HR		
Acquire GPS trackers for equipment deployed to field	DEM/Fleet		
<b>PLANS</b>			
Complete partial IAP for first shift	DEM		

Create policy of printed IAP and Sit Stat distribution	DEM		
<b>RECOVERY</b>			
Write Recovery Support Center Concept of Operations	DEM		
Create preapproved Emergency Financial Assistance Fund to allow for more rapid and responsive dispersion	CAO/DEM		



## Background

The Sonoma Operational Area experienced significant rainfall over a two-week period from the 1<sup>st</sup>-14<sup>th</sup> of January resulting in the Russian River and tributaries rising significantly. The California-Nevada River Forecast Center (CNRFC) made multiple predictions for flooding over the two-week period, but most notably predicted that the river would crest at close to 40 feet at the Guerneville Bridge on the 6<sup>th</sup> of January. Because of this prediction the decision was made to issue and evacuation warning on the 4<sup>th</sup> of January at 1700. The intention at the time of the issued alert was to follow it up with an evacuation order the next day.

Subsequent predictions by the CNRFC, however, significantly downgraded the flood threat and the evacuation order was postponed and eventually cancelled. There were no more formal alerts or warnings issued for this incident.

## Scope

This document will provide a summary of the January 4th alert specific to Sonoma County. The intent is to provide insight on how the SoCoAlert system worked for dissemination of this alert. This will not discuss the Sheriff's attendant Nixie.

## Summary

As stated previously, the sole So-Co Alert was sent at 1700 on 4 January 2023.

The So-Co Alert sent 7,655 emails. It attempted to call 21,695 phone numbers, reaching 13,390. 3,726 SMS text messages, along with TOD, Mobile App, and RSS link to the SoCoEmergency website were also sent.

The system Call Success Report provides a breakdown between data types to further explain the effectiveness of the system and message. The figure below provides a look at the Client Data (provided by the County) and CodeREO Data (provided by online/telephone registration).



Figure 2- Call Success Report

The Client Dataset accounted for 8996 of the phone numbers contacted while the CodeRED dataset was 1196. There was an 89.6% success rate of message delivery to the phone contacts of the Client Data, but only a 19.3% success rate for those on the CodeRED dataset. This result further supports that the Client Data includes more valid and current information over those registered directly via the CodeRed portal or by calling in to get registered.

## Lessons Learned

The execution of this Warning and the subsequent planned but unexecuted Order mostly followed established protocols and guidelines. However, there were two observations which need to be addressed prior to the next flood alerting incident.

Observation 1: Alerted Area too large.

Discussion: With the implementation of the County's evacuation zone system following the Kincade Fire the accepted protocol is to alert entire zones. While this works admirably for wildfires that may swiftly expand and present a significant threat, the comparatively minimal impact of flooding makes the use of the large zones less than optimal.

For comparison, the 4 January alert attempted to contact over 18,000 households. The use of a pre-established shapefile for the 40' inundation level would have attempted to reach only approximately 5,500. While this number is too small to reach all residents affected directly and indirectly, the use of the entire zones runs the risk of over alerting in the long term.

Recommendation: The implementation of a separate flood zone is impractical. However, an analysis of the regularly flooded areas can provide an anticipated footprint for the inundated areas as well as those streets that will be cut off and made into "islands" during a flood incident. These footprints can be superimposed on the existing evacuation map and socialized with the public to provide both granularity and limiting the alerting areas.

Observation 2: Unclear Alerting Language.

Discussion: While the technical aspects of the alert went off flawlessly and were well nested with the Sheriff Nixle launches, public feedback from a variety of sources showed that the text of the message was sufficiently ambiguous to cause some confusion among some residents. Specifically, the message read:

This is an evacuation warning from the Sonoma County Operational Area Emergency Operations Center for all residents living near the Russian River floodway and its tributaries from Healdsburg to Jenner.

The current forecast predicts the river will crest at 33 feet Thursday night into the early hours on Friday, January 6. The river is predicted to go back below flood stage Friday afternoon.

However, the Russian River will flood again at 40 feet Sunday night into Monday.

For your safety, prepare to leave the areas below the 40 foot flood level in the Russian River area. Be sure to take essential items, such as medicines with you.

If you live above the 40 foot level, your access may be reduced or eliminated.

For additional information, call 2-1-1 or visit [www.socopsa.org](http://www.socopsa.org)

While this message is factually accurate, it lacked a key point of context that the flooding at 40' represented a single location along the Russian River (the Guemerville Bridge) which is routinely used as a benchmark for flooding in the Lower Russian River. However, without the context some residents believed that the river was going to rise to 40' at their location, which was not factual.

There are tools that residents can use to determine if they are in the predicted inundation area on [socoemergency.org](http://socoemergency.org), but it is difficult to convey the information pertaining to the tools in the limited space of the Alert and Warning message

Recommendations:

1. Create a message template to better convey the message and how to seek relevant information regarding flood and inundation.
2. Ensure that the [www.socopsa.org](http://www.socopsa.org) map is easily accessible to lay persons and that residents can determine if their residence is in an inundation zone.
3. Ensure that 211 is able and willing to provide the service of assisting residents in determining their flood inundation risk.

The point of contact for this memorandum is the undersigned at 707-565-6057 or by email: [sam.wallis@sonoma-county.org](mailto:sam.wallis@sonoma-county.org)

Samuel R. Wallis  
Community Alert & Warning Manager  
Sonoma County Department of Emergency Management

## Appendix 6: Public Information Statistics

- County Emergency website: [www.SoCoEmergency.org](http://www.SoCoEmergency.org) from Jan 4 – 18, 2023
  - 146,227 pages views (timeframe dates)
  - 82,810 visitors & 63,754 unique visitors
- Community Information

<b><u>Platform</u></b>	<b><u>Number of Posts</u></b>	<b><u>Impressions</u></b>	<b><u>Engagements</u></b>	<b><u>Top Post</u></b>
<b>Facebook</b>	58	476,449	33,056	Pi crews repairing bridge after storm washed old bridge out
<b>Twitter</b>	16	64,855	1,054	Evacuation warning for Russian River area
<b>Instagram</b>	20	11,945	693	Pi crews repairing bridge after storm washed old bridge out
<b>NextDoor</b>	3	95,410	67	Sonoma County update including storm forecast, recovery support centers, and more

- 2-1-1
  - 328 calls
  - Top 5 categories of calls
    - General disaster status information (flood levels, weather conditions)
    - Recovery Resource Center (financial assistance)
    - Overnight/Evacuation Shelter Information
    - Check address in evacuation map
    - Road Closures
- Media related from Jan 4 – 18
  - 25 media calls
  - 7 press releases issued