Perspectives from the October 2017 Wildfires

CARLOS DIAZ, P.E.
SONOMA WATER

Alert Users Group Fall Workshop
Thursday, October 25th, 2018
Sacramento

sonomawater.org
Sonoma Water’s services

- Sonoma Water manages and maintains a water transmission system that provides naturally filtered Russian River water to more than 600,000 residents in portions of Sonoma and Marin counties.

- The agency also provides flood protection, sanitation, environmental resources and water-use efficiency services.
October 8, 2017
Wildfires’ Impacts

- 110,000 acres burned in Sonoma and Napa counties
- 5,500 homes destroyed in Sonoma Co., total of 6,600 structures
- 24 people killed
- $10 billion in insured losses
- $1.3 billion cleanup
Diablo winds pushed fires into urban areas

- Tubbs Fire started at 9:34 p.m. in Calistoga
- High winds up to 79 mph and dry conditions contributed to a rapid spread of the fire
- Fire travelled 11 miles in less than six hours
Sonoma Water response in the first 24 hours after the start of the fires

- Sonoma Water activates Emergency Operations Center (EOC)
- Sends staff to Sonoma County EOC
- Field staff dispatched to respond to fire-related emergencies
- Highest priority was loss of power and communications at water storage tanks and booster stations
Threats to Water, Wastewater facilities
Watershed Emergency Response Team (WERT)

- Timeline – 1-5 weeks after fire started
- Rapid assessment of post-fire geologic and hydrologic hazards to life and safety
  - Land slides, debris flows, flooding, erosion, road hazards, and other fire-related problems
- SCWA staff provided local support & expertise
- Recommendations for emergency protection measures
  - Storm patrols and road/drainage infrastructure monitoring
  - Weather radar on Sonoma Mtn
  - Early warning system for rain & stream flows
Sonoma Water Response & Actions

- Aimed at reducing secondary hazards
- Storm patrols and monitoring of our flood control channels & easements
- Public outreach & communication campaign
  - Road signs in moderate to high risk areas
  - Mailers to residences/businesses
- Accelerated placement of temporary X-band radar at Airport WWTP
- Early flood warning and monitoring network
  - Tubbs and Nuns burn scars
Flood Warning and Monitoring Network Timeline

- **Contract**
  - RFP process for FEMA reimbursement

- **Design**
  - Preferred gage locations developed with NWS
  - OneRain confirmed design

- **Integration**
  - 120s frame length shared with Napa
  - 20s blocked off for Sonoma

- **Installation**
  - Preplanning site visits
  - Predeployment of standpipes and conduits
  - Hardware followed

- **Completion**
  - System operational by Feb 28
System Completed in Two Months

- **JAN 17, 2018**
  - **Contract**
    - Quickly approving contract.
  - **Design**
    - Site placement, Radio Path Analysis, TDMA planning.
  - **Integration**
    - Working with Napa County. Leverage what is available.

- **FEB 28, 2018**
  - **Installation**
    - Feb 26: In just 3 days - 22 Gauge Stations fully operational.
  - **Completion**
    - Fully functional ALERT2 flood warning network by Feb 28.
Flood Warning and Monitoring Network

- 22 proposed locations
  - 10 Rain / Stage
  - 12 Rain Only
- Leverage existing USGS, CDEC, HADS, METAR sites
- Utilize Napa County’s Mt. St. Helena repeater
  - Critical to rapid deployment
- Base receive station at Water Agency office
- Expanded to include 4 soil moisture / soil temperature sites
System Rollout to Community

- Working with local EOC
  - Rain and stream level dashboards for both Tubbs and Nuns burn scars
- Working with Fire Chiefs and Redcom Dispatch
  - Customized dashboards
  - Both wet and dry weather dashboards
- Press releases have helped tremendously with public awareness of site
  - Over 30,000 public log-ins to website during April 2017 AR
USGS Watershed Response Study

- Collaboration with USGS, Sonoma Water, Pepperwood, Ag + Open Space, CA State Parks
- Objective to develop regionally relevant understanding of secondary impacts following fire
- Very different geology and vegetation than Southern CA

Pepperwood

C1 timeseries ($C1 = C1 \sqrt{t^2 + C2 \sqrt{t}}$)

Color = geology
- Franciscan complex mélange
- Serpentinite
- Quaternary sediments
- Silica carbonate rock
- Sonoma Volcanics

Shape = ecology
- evergreen forest
- broadleaf deciduous
- herbaceous
- shrubland/chaparral
Lake Sonoma Watershed Fire Camera Pilot Study

- High-def web cameras for early detection of wildfires
- Protect watershed for water supply for 600,000 residents
- Pilot project of eight cameras to be expanded to a regional network
- Provide early detection of wildfires throughout the North Bay area