North Bay Wildfires: Response & Recovery December 1, 2017





Cristina Grosso



Scott Dusterhoff



Meg Sedlak

Presentation Overview

- Overview of Wildfires [Scott]
- Water Quality Monitoring [Meg]
- Response & Recovery Project Tracking [Cristina]
- Sediment Monitoring [Scott]



Overview of Wildfires



The Stories...



How did Northern California fires become so devastating?



By Madison Park, CNN () Updated 8:49 PM ET, Wed October 11, 2017



Source: CNN

The Stories...

CNN

How did No become so



By Madison Park, CNN () Updated 8:49 PM ET, Wed



Source: CNN

San Francisco Chronicle

Wildfires caused at least \$3.3 billion in insured losses, new estimate shows

y Kothleen Pender | October 31, 2017 | Updated: October 31, 2017 6:05pm

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Photo: Michael Hacor, The Chronicle

The Stories...

CNN

How did No become so



By Madison Park, CNN (1) Updated 8:49 PM ET, Wed



San Francisco The Press Democrat

Wildfires caused a new estimate show





Coffey Park neighbor banged on near 100 doors as Santa Rosa fire approached



(1 of 4) Donny Riveras raced through his Coffey Park neighborhood banging on doors to awaken his neighbors on the night of the Tubbs Fire. (photo by John Burgess/The Press Democrat)

Photo: Michael Illacor, The Chronicle

General Wildfire Overview



Duration: October 8 - 31

Acres burned: ~200,000

Structures lost: ~6,950

Lives lost: 42

WERT Post-Fire Assessment

Burn Severity

Nuns Fire



~57,000 ac burned~20% at med to high severity



Burn Seventy Very Low Uniterated 34 9% Uniterate 17 9% High 1.5% BARC Field Verification - Points
 Distance Field Verification - Polygons
 Distance Fine Neuroscie (The CTAC as at 10(10)(7)
 California County Doundaries

Pield Site Locations



~53,000 ac burned ~25% at med to high severity



Source: Atlas Fire WERT Final Report

Atlas Fire

WERT Post-Fire Assessment

Debris Flow Hazard

Nuns Fire



Public Read "Likelihood of a debrie they in response to a design to hereon with a peak 10 misute reletal intensity of 24 mm

Source: Nuns Fire WERT Final Report

= 80-100%



Source: Atlas Fire WERT Final Report

WERT Post-Fire Assessment

Erosion Rates

Nuns Fire



~10-fold increase in predicted erosion rates



Post Fire ERMIT Diversion for Perimeter (Per GTAC as of 10/19/17) Environ Iterature) California County Doundaries = 0 - 10 = 11 - 20 = 21 - 30 = 31 - 40 Nuns Post Fire ERMiT Map Trainert Unterled FIRI Marked Focus Rates 50% proceeding of water darts First yew other the for

Source: Nuns Fire WERT Final Report





~22-fold increase in predicted erosion rates*



Source: Atlas Fire WERT Final Report

Post-Fire Response

Debris and Toxic Removal

- Toxic waste EPA
- Debris and soil testing -USACE

BMP Implementation

 Collaboration among FEMA, USACE, CalOES, RWQCBs, RCDs, and NGOs



Photo: John Burgess/The Press Democrat



Post-Fire Monitoring

Network of new and existing sites

- North Coast RWQCB
- SF Bay RWQCB
- USGS CSQA
- SCWA & LBL
- RMP-funded sampling



Photo: SFEI



Post-Fire Recovery Planning

Rebuild North Bay

- Non-profit
- Includes local development and business leaders
- Goal is to form a publicprivate partnership for rebuilding, and developing plans to make the region more resilient to wildfires

The Press Democrat

Former FEMA director James Lee Witt to lead local organization Rebuild North Bay



FLE - In this file photo taken april 5, 2014, former Federal Emergency Management Agency Director James Lee Witt speaks at a political fundralser in Hos Springs, Ark, IVP Photo/Danny Johnston, File)

NE PRESS DENO/RAT - Ormater 24, 2012

Post-Fire Recovery Planning

Sonoma County Watershed Collaborative

- Led by SCAOSD
- Includes state and local orgs
- Several Working Groups
 developing recommendations
- Reports to County Supervisors by early Dec.



Photo: SFEI



Water Quality Monitoring



Decline in Water Quality after Wildfires

SETAC PRESS

Environmental Toxicology and Chemistry, Vol. 31, No. 11, pp. 2625–2638, 2012 © 2012 SETAC Printed in the USA DOI: 10.1002/etc.1994

 Polycyclic Aromatic Hydrocarbons (PAHs)
 4 X higher from burn areas

STORMWATER CONTAMINANT LOADING FOLLOWING SOUTHERN CALIFORNIA WILDFIRES

ERIC D. STEIN, *† JEFFREY S. BROWN,† TERRI S. HOGUE,‡ MEGAN P. BURKE,‡ and ALICIA KINOSHITA‡ †Biology Department, Southern California Coastal Water Research Project, Costa Mesa, California, USA ‡Department of Civil and Environmental Engineering, University of California, Los Angeles, California, USA

(Submitted 1 April 2012; Returned for Revision 16 May 2012; Accepted 29 July 2012)



Preliminary Analytical Results for Ash and Burned Soils from the October 2007 Southern California Wildfires



Metals

- Copper, lead, zinc increase hundredfold
- Sediment, phosphorus and nitrate
 - $_{\circ}$ 4 X higher

RWQCB 2 Stormwater Monitoring

- 1 baseline (post-fire; pre-storm)
- 3 storms post-fire

General	Nutrients	Metals	PAHs	
Alkalinity	Ammonia	Aluminum ^{T,D}	Acenaphthene	
Hardness	Nitrate	Arsenic ^{T,D}	Acenaphthylene	
Sulfate	Total Nitrogen	Cadmium ^{T,D}	Anthracene	
Total Organic Carbon	Orthophosphate	Chromium ^{T,D}	Benzo (a) anthracene	
Total Dissolved Solids	Total Phosphorus	Copper ^{T,D}	Benzo (a) Pyrene	
Total Suspended Solids		Iron ^D	Benzo (b) flouranthene	
Dissolved Oxygen ^F		Lead ^{T,D}	Benzo (g,h,I,) Perylene	
рН ^ғ		Manganese ^D	Benzo (k) Fluoranthene	
Specific Conductance ^F		Mercury ^{T,D}	Chrysene	
Temperature ^F		Nickel ^{T,D}	Dibenzo (a,h) anthracene	
Turbidity ^F		Selenium ^{T,D}	Fluoranthene	
		Zinc ^{T,D}	Fluorene	
			Ideno(1,2,3-C,D)Pyrene	
			Naphthalene	
			Phenanthrene	
			Pyrene	







So what other contaminants might be present?

SFEI will add on Non-Targeted Analyses (NTA)

Non-targeted monitoring



Targeted Monitoring – Cu, Pb, Zn

Non-targeted monitoring

Non-targeted monitoring





High Confidence Match







Lower Confidence Match, Tentative Identifications

No Spectra

What might we see?

- PCBs
- PAHs
- Pesticides
- Flame retardants
- Perfluorinated compounds





What has been completed to date?

- Pre-fire (11/2): WB water quality parameters
- Post-fire storms (11/8 & 15)
 - Water quality parameters (both storms)
 - NTA (Nov. 15)
- 1 more event

Santa Rosa watershed (11/15)





Napa River (2016)

- Higher contaminant abundance during low tide
- Least contaminated site
- Pesticides, pharmaceuticals, natural products



Funding Status

- Bay RMP has approved:
 - Analysis of 1 storm for NTA -Napa and Sonoma (\$36K)
- Santa Rosa watershed (Region 1)
 - Seeking funding ~\$30K



Response & Recovery Project Tracking



Russian River Regional Monitoring Program Watershed Atlas

(Beta Version : Last Revision Date 11.30.2017)

The R3MP Watershed Atlas is being developed to support planning, tracking, and assessment of efforts to protect and restore aquatic resources in the Russian River Watershed. An initial focus of the Atlas is on recovery from the historic wildfires of October 2017. The Atlas will be further developed in the future to serve the broader objectives of the R3MP.

r3mp.ecoatlas.org

Russian River Regional Monitoring Program (R3MP) Watershed Atlas [Beta Version]

About R3MP

Layers

🕑 +Boundary Overlays

O +Monitoring Activity

O +Habitats

OAerial Imagery

OGrayscale

CRoads

Legends

Regional Wildfires (October 2017)

- Regional Wildfires (October 2017)



Russian River Regional Monitoring Program (R3MP) Watershed Atlas [Beta Version]

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Landslide Hazards Program

Post-fire Debris-flow Hazards

Nuns Fire (Napa and Sonoma Counties, CA)

Preliminary Hazard Assessment



NUNS FIRE

Watershed Emergency Response Team

Final Report



CA-LNU-010104

November 15, 2017





















ABOUT

Search

Calabazas Creek Open Space Preserve

Basic Information Files & Links Project Map Habitat Development Curves

Status	Completed	County	Sonoma
Project Type	Non-mitigation	Location	38.40857° N, -122.49504° W Map
Project Area (Acres)	1,285	Last Updated	4 October 2017

Project Identification ⁹

ID	Туре
909	JV - Record Number

Habitat Plan 🤨

Activity	Habitat	SubHabitat	Acres	Activity Status	Water Regime
Acquisition/Preservation/Protection	Upland	Unknown/Unspecified	1,285	Completed	

Project Description ⁰

Description

In 2004, the Sonoma County Agricultural Preservation and Open Space District (SCAPOSD) purchased the 1,285 acre Calabazas Creek Open Space Preserve in the southern Mayacama mountain range near the town of Glen Ellen, CA. Today, the property is managed to protect diverse habitats, ecosystems and cultural resources and, where appropriate, low-intensity public outdoor recreation opportunities will be provided. SCAPOSD recently completed a Resource Assessment and Preliminary Management Recommendations report, which summarizes all critical natural and cultural resources on the property, and includes a threats assessment as well as a prioritized list of management recommendations. Next, planning for a trail and related amenities will be completed in partnership with recreational entities and the Bay Area Ridge Trail Council. Projects on this property include road improvements to address sediment and erosion issues, removal of invasive species and revegetation with native species, and restoration of native habitats.





Sediment Monitoring Elements



Key Elements for Understanding Fire Impacts

Hillslope monitoring

Channel monitoring

Sediment gaging

Key Elements for Understanding Fire Impacts

Ground Surveys

Hillslope monitoring

Channel monitoring

Sediment gaging



Key Elements for Understanding Fire Impacts

Hillslope monitoring

Channel monitoring

Sediment gaging

t Volume -10,750,53 m Source: SEE # Volume: . 24 192.2 m

UAV (Drone) Surveys

Key Elements for Understanding Fire Impacts

Hillslope monitoring

Channel monitoring

Sediment gaging







Cristina Grosso



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