

Butte Fire

State Post Fire Watershed Emergency Response Team
Addendum I

Hazard Site Evaluation

October 2015



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DISCLAIMER

The scope of the review and the information contained in this report should not be construed to be either comprehensive or conclusive, or to address all possible impacts that might be ascribed to the fire effect. Post fire effects in each area are unique and subject to a variety of physical and climatic factors which cannot be accurately predicted. The information in this report was developed from cursory field examination by licensed resource professionals and should be viewed in conjunction with other relevant sources of information. Neither the State of California nor any Agency or Department participating as a member of the State Post Fire Watershed Emergency Response Team makes any warranty, express or implied, nor assume any legal liability for the information disclosed herein.

EXECUTIVE SUMMARY

The Phase I SPFWERT evaluated the entire burn area and identified 26 sites that were further evaluated by the Phase II team. In addition to these 26 sites, an additional site that raised significant concern to CA Department of Fish and Wildlife was evaluated and added to the Phase II review. During the survey, staff identified which emergency protective measures could be implemented to minimize impacts to life health and safety. The observations herein are not intended to be comprehensive and conclusive, but rather to serve as a preliminary tool to assist emergency responding agencies (for example CAL FIRE, Calaveras and Amador County Fire Departments, Calaveras and Amador County, CalTrans, Amador and Calaveras County Public Works, US Forest Service, CalOES, Natural Resource Conservation Service, utility companies, and other responsible agencies) in development of more detailed post-fire emergency response plans. This report does not provide emergency response plans. It is intended that the emergency responding agencies will use the information presented in this report as a preliminary guide to complete their own more detailed evaluations and develop detailed emergency response plans and emergency protective measures. It is intended for this document to help streamline or exempt the process of obtaining necessary permits for emergency recovery actions by local jurisdictions.

ACKNOWLEDGEMENTS

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SPECIALIST REPORTS and FINDINGS SUMMARY

Water Quality

The Central Valley Regional Water Quality Control Board (Water Board) staff conducted two primary missions. The first mission was to assist agencies to determine what Emergency Protective Measures (EPMs) or other measures could be implemented to protect water quality. The second mission was to provide initial determination of the applicability of Section 404/401 Clean Water Act permits for any work to protect the life safety risks created by the fire. In addition Water Board staff provided engineering guidance to the team regarding potential erosion impacts, hydrology changes, and information technology assistance.

Water Board staff reviewed 26 sites and found 5 potential sites which may require a 404/401 permit depending specific actions. Site 6 requires a 404/401 permit if culverts are replaced and/or if rip-rap is placed in creek channel. Site 10 requires 404/401 permit if culvert is replaced and/or if rip-rap is placed in creek channel. Site 12 does not require 404/401 permit if fill is removed by hand in the creek channel. Site 15 does not require 404/401 permit if temporary culvert is replaced with a bridge. Site 16 requires 404/401 permit for rip-rap placed in creek channel.

Emergency response work to mitigate potentially catastrophic water quality impacts in the aftermath of the Butte and Valley fires must commence immediately. Under applicable state law, when the Governor has declared a State of Emergency pursuant to the California Emergency Services Act (Gov. Code, § 8550, et seq.), emergency response work that is “necessary to protect life or property” or that is conducted to ensure that the services provided by public facilities are maintained, does not need a permit from the Central Valley Water Board (Wat. Code, § 13269 as of the date this letter is issued, the Governor has declared a State of Emergency for both the Valley and Butte fires, and those proclamations have not been lifted).

However, in order to clarify the responsibilities of those performing emergency response activities in upland areas, the Central Valley Water Board has issued General Waiver R5-2013-0026 (Conditional Waiver of Waste Discharge Requirements for Disaster-Related Wastes During a State of Emergency within the Central Valley Region) http://www.waterboards.ca.gov/rwqcb5/board_decisions/adopted_orders/waivers/r5-2013-0026_wav.pdf . The Central Valley Water Board expects that upland emergency response activities will be regulated under this conditional waiver.

Timber harvesting, fuels management, hazard tree removal, and post-fire salvage projects are the primary activities related to the Butte Fire recovery that may be enrolled in Order No. R5-2014-0144 - Waiver of Waste Discharge Requirements for Discharges Related to Timber Harvest Activities (Waiver). Information regarding the waiver can be found at http://www.waterboards.ca.gov/centralvalley/water_issues/timber_harvest/index.shtml. Emergency and exemption activities may be enrolled in either category 1 or 2 of the waiver. Category 1 is for minor timber harvest activities and category 2 is for Exempt or Emergency timber harvest activities that do not qualify for category 1. The two categories have different requirements and so the projects should be eligible through one or the other.

California Department of Fish and Wildlife (CDFW)

The Board of Forestry and the Fish and Game Commission adopted a joint policy in 1994 to help direct the response of our respective agencies to improve ecosystem protection activities as a result of large fire events in California. This policy directed the CDFW to participate in the development of a State Post Fire Watershed Emergency Response Team (SPFWERT) with the goal to protect lives and property downstream of burned areas and restore and rehabilitate affected sites for ecosystem protection in identified watersheds. The 70,868 acre Butte Fire was officially contained on October 1, 2015. On October 5, 2015 the CDFW was deployed to participate in a multiagency team effort involving State and Federal agencies (CAL FIRE, Department Water Resources, Office Emergency Services, California Geologic Survey, Regional Water Quality Control Board, Natural Resources Conservation Service, and the Department of Parks and Recreation). The team was tasked with identifying on-site and downstream threats to public health and safety, personal property and improvements to mitigate land sliding, debris torrents, flooding, road hazards, tree hazards and other fire induced problems.

The primary focus for the SPFWERT was to apply the technical expertise of the agencies involved to review 26 previously identified sites where potential threats to life and property could exist that had been determined to be focus areas for Calaveras County Public Works and private property owners. Due to the potential for catastrophic watershed damage due to the Butte Fire, immediate emergency repairs at these sites may be necessary. Recommendations for each of these sites were then described in further detail as Emergency Protective Measures (EPMs) and listed by site number as an appendix in this report. The intent of this rapid multiagency effort was to streamline the repair process by making work at these sites exempt from the standard permitting process if the EPMs listed for each site are implemented. Without such exempt status, local responsible parties would be required to obtain permits independently from each represented agency, causing timely and critical delays. The potential of predicted above normal rainfall due the strong El Nino event has played a large role in expediting this process as well. The protection of life, property, and ecosystem health will benefit from this collaborative effort.

The secondary focus for the team was to identify and review other sites not previously listed where restoration or rehabilitation actions would result in ecosystem protection. One new site (Fish and Wildlife Site 27) was documented where actions are needed to prevent further watershed damage. In addition, emergency response activities by PG&E, telecommunications, CalTrans, and or County contractors that could result in secondary pollution by hampering the hazardous waste clean-up efforts and increasing erosion were observed by CDFW throughout the burn area including felling hazard trees into watercourses and over access roads. At the time of this report period, dialogue between these parties was in progress and corrective actions were being implemented.

A review of sensitive wildlife and plant species occurrences was conducted throughout the burn and four sensitive species were affected by the fire. Three of these species are fire dependent plants which will benefit and are expected to flourish in the coming post-fire years. These sensitive plants are *Horkelia parryi*, *Chlorogalum grandiflorum*, and *Lathyrus sulphureus* var. *argillaceus*. One amphibian Species of Special Concern located in riparian areas within the burn perimeter is the foothill yellow-legged frog (*Rana boylei*). Detailed field evaluations were conducted at each site in addition to a review of the California Natural Diversity Data Base (CNDDDB). As a result of this work, it was determined that no adverse impacts to any of these sensitive species is likely to occur if the EPMs are followed as described in the following tables. No sensitive species were identified at any of the 26 primary sites or the secondary site where potential emergency watershed protective activities may occur.

Engineering

California Department of Water Resources provided engineering support for the evaluation of sites located during Phase I. Support was provided to the Phase II team in order to develop emergency protective measures for the 26 sites identified during the Phase I review.

The watersheds inside of the burn area are expected to see increased runoff volumes and corresponding increased erosion and debris in comparison to pre-fire conditions. The scope of the Phase II SPFWERT review is to evaluate potential hazards to the watershed at locations identified by the Phase I review. Remaining portions of the watersheds with burned landscapes will still be subject to increased hazards.

A drainage study of the watersheds may be helpful in identifying other areas of increased risk. Portions of the drainage network not sized for a 100-year flood event are subject to increased likelihood of failure and flooding.

Archeology

A Post-burn Emergency Archaeological review was performed on October 13-17 2015 on 26 fire impacted sites located within the boundaries of the Butte Fire for the California Office of Emergency Services. The purpose of this review was to do a physical survey of project area boundaries for the presence or lack of presence of cultural resources for emergency protective measures to alleviate life threatening hazards from winter floods exasperated by post-fire watershed conditions.

California State Department of Parks and Recreation Associate State Archaeologist Peter Hanchett was tasked to join an interagency team of resource specialists under CAL FIRE, as the lead agency, to assist in the field of archaeology of both prehistoric and historic cultural resources to provide expertise in identifying and making recommendations for rapid clearance of permitting and implementation of emergency protective measures.

Due to the compressed time frame of the projects emergency mandate, standard procedures of pre-field research and outreach contacts were kept in order to facilitate archaeological reviews on all 26 sites. However due to the recent Butte Fire, Information Center record searches, historical societies contact, and initial Native American consultation were already performed for the affected area by CAL FIRE, Associate State Archaeologist Gerrit Fenenga. Through email contacts, phone conversations, and ARC map overlays, this information was relayed and made available for use by the project archaeologist, to measure sensitivity of the 26 sites for cultural resources.

Field review was performed on October 14-15, by surface observations with excellent visibility due to recently exposed burned areas within the site areas. Evaluations on all 26 sites were performed and are included within this document. One additional historic architectural feature was found during the review and was mapped and recorded on October 16 to CAL FIRE archaeology survey report standards, two other sites are within

close proximity to a historic mining site on fenced private property. These were noted as to flag and avoid during the construction phase. Another project site had a mixed historic can scatter on its border and it was noted with a recommendation to leave in place without flagging to minimize attention.

Utilizing the CAL FIRE team leaders' directives, to maintain strict project focus on the immediate project impact areas, kept attention to found cultural resources manageable within the compressed time frame. However archeological resources both prehistoric and historic were located and not recorded due to the prescribed emergency protective measures not having any adverse effect on the resource or the resource being out of the impact area. These resources were noted and locational data passed on to CAL FIRE archaeologists for future review and recordation at a later date.

As noted, there are several known\recorded cultural resources that exist in the Butte Fire area beyond the 26 sites reviewed. It is therefore recommended that proponents for projects that involve ground disturbance should first contact an archaeologist who will check with the archaeological data base maintained by the Northeast Information System (CHRIS) office located at the California State University, Chico.

Future projects that involve ground disturbance should also contain a Native American contact element. The purpose of such contact is to allow Native Americans an opportunity to disclose the locations of archaeological and special cultural sites that may only be known by them. These groups should provide comment on any protection or mitigation measures proposed for any site that contains these resources.

Site Number	Street	GPS Location		Hazard	Possible Responsible Agency	Proposed Emergency Protective Measures
		Latitude	Longitude			
1	W. Murray Creek Rd.	38° 13.713' N	120° 34.482' W	Debris Flow & Flooding, Residence (burned)	Landowner	Perform drainage and flooding analysis. Obtain proper permits
2	Murray Dale Lane	38° 12.260' N	120° 38.578' W	Debris Flow & Flooding, 24-inch Culvert (CMP)	Landowner	K-rail or sandbags to divert flows away from home. Regrade slope to keep drainage away from home.
3	Salamander Gulch Road, north of W. Murray Ck Rd.	38° 14.167' N	120° 35.178' W	Debris Flow & Flooding, Camper trailer	Landowner	No Recommendations. Land owner is aware of issues and stated they will handle.
4	Murray Dale Lane	38° 12.244' N	120° 38.589' W	Debris Flow & Flooding, Residence	Landowner	See Site 2
5	Jesus Maria Road, east of Hawver Road	38° 17.035' N	120° 39.226' W	Flooding & Debris Flow, Jesus Maria Road	County	Clean culvert and monitor during storm event.
6	Hawver Road crossing of NF Calaveras River	38° 16.918' N	120° 40.198' W	Flooding & Debris Flow, 6 - 48-inch Culverts (CMP)	County	Monitor during a flood event and close road if necessary. Close road if flooding makes it impassable.
7	Highway 26	38° 19.060' N	120° 39.174' W	Debris Flow & Flooding, Residence	Landowner	Place sand bags to divert flows away from home. Remove vegetation. Place trash rack in front of culvert.
8	Highway 26	38° 19.069' N	120° 39.151' W	Flooding & Debris Flow, 18-inch Culvert	County	See Site 7
9	Cedar Springs Road	38° 15.783' N	120° 31.907' W	Flooding & Debris Flow, Residence (burned)	Landowner	Notify landowner of increased flooding risk.
10	Jesus Maria Road, north of Hawver Road	38° 17.190' N	120° 40.236' W	Debris Flow & Flooding, Culvert	County	Place rip-rap on downstream side of culvert. Clean debris from channel. Place trash rack above culvert.
11	Jesus Maria Road crossing NF Calaveras River	38° 17.240' N	120° 39.611' W	Flooding & Debris Flow, Roadway & Bridge	County	Remove vegetation in stream by hand. Maintain alders in stream. Monitor during flood event
12	Hawver Road, 100' south of Jesus Maria Road	38° 16.958' N	120° 40.188' W	Debris Flow & Flooding, 30-inch Flattened Culvert	County	Remove fill in drainage ditch. Monitor for flood and debris from Jesus Maria Road and block with k-rails.
13	Costa Road at Calaveritas Creek	38° 9.434' N	120° 36.763' W	Flooding & Debris Flow, Low water ford	County	Monitor during a flood event and close road if necessary.
14	Cave City Road at O'Neil Creek	38° 11.634' N	120° 30.222' W	Flooding & Debris Flow, Bridge	County	Place rip-rap behind the eroded wing wall to prevent further erosion. Monitor during a flood event and close road if necessary.
15	Jesus Maria Road	38° 17.073' N	120° 40.225' W	Debris Flow & Flooding, Bridge (Destroyed by Fire)	Landowner	Remove culvert and restore channel to pre-fire condition. Clear vegetation in the interim condition.
16	Jesus Maria Road, north of Hawver Road	38° 17.174' N	120° 40.231' W	Debris Flow & Flooding, 18-inch Culvert (CMP)	County	T-posts to serve as trash racks. Monitor during a flood event.
17	Whiskey Slide Road	38° 15.500' N	120° 34.690' W	Flooding & Debris Flow, Residence	Landowner	Likely not cost effective to protect house. Possible solution is to build levee protecting house.
18	Cedar Springs Road	38° 16.015' N	120° 31.066' W	Debris Flow & Flooding, Residence (burned)	Landowner	The Phase II watershed assessment team was unable to locate this site. If transitional housing is used, provide sand bags to homeowner for flood protection from small drainage.
19	Cave City Road	38° 12.197' N	120° 30.519' W	Debris Flow & Flooding, Outbuildings & Parking Lot	Landowner	Monitor during a flood event and close parking lot and trails if flooding occurs.
20	Old Emigrant Trail (west of Hangmans Tree Rd.)	38° 16.214' N	120° 31.291' W	Debris Flow & Flooding, 60-inch culvert (CMP)	Landowner	Culvert should be replaced. Rip-rap should be placed on downstream side of culvert. Dirt from the bank removed.

Site Number	Street	GPS Location		Hazard	Possible Responsible Agency	Proposed Emergency Protective Measures
		Latitude	Longitude			
21	Jesus Maria Road	38° 17.126' N	120° 38.756' W	Debris Flow & Flooding, 48-inch Culvert (CMP)	County	Install rows of t-posts upstream of culvert to serve as trash racks
22	Whiskey Slide Road crossing Wet Gulch	38° 16.466' N	120° 35.508' W	Flooding & Debris Flow, Box Culvert (11'W x 5'H)	County	Monitor during a flood event and close road if necessary.
23	Cedar Springs Road (no house # found)	38° 15.818' N	120° 31.455' W	Debris Flow & Flooding, Residence (burned)	Landowner	If transitional housing is placed here, then sand bags or a k-rail are recommended to divert debris flows away from housing.
24	Access from Cedar Springs Road	38° 15.885' N	120° 31.400' W	Flooding & Debris Flow, Marijuana Cultivation Site	Landowner	Monitor during rainfall events for flooding and debris flow.
25	Cave City Road at Martin Gulch (CA Caverns)	38° 12.105' N	120° 30.521' W	Flooding & Debris Flow, Bridge	County	Monitor during a flood event and close road if necessary.
26	Ponderosa Way at Calaveritas Crk	38° 10.187' N	120° 33.332' W	Flooding & Debris Flow, Residence	Landowner	Not accessible

Site Number 1**Description**

This home was burned in the fire. It is located on West Murray Creek Road and was built on top of an unnamed drainage that flows to Murray Creek. No street address could be located on the property but mailboxes at the top of the hill indicate this home is located along West Murray Creek Road.

Four 12" culverts were incorporated into the home's foundation to convey stream flows under the house from the unnamed drainage to Murray Creek. Upon inspection, the culverts were observed to have rusted through and were no longer functioning as designed. In addition, a large outbuilding (burned) and parking area is located next to Murray Creek and susceptible to flooding.

Moderate to high soil burn severity was observed in 90% to 100% of the unnamed drainage upstream of this site. Consequently, much higher (1 to 2 orders of magnitude) runoff and erosion rates are anticipated (compared to the pre-fire condition) and a debris flow may occur during a large storm.

Recommendation

Option 1. If the property is scheduled for commercial clearing and removal by Cal Recycle, the foundation covering the natural intermittent stream course shall be completely removed leaving an open watercourse leading into W. Murray Creek.

Option 2. If the property is left abandoned and no further clearing, removal, or rebuilding is scheduled, then no further action is needed.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 2 & 4Description

House is at the bottom of a hillside, directly below the drainage (approximately 5 acres that was almost entirely burnt). Spoke with owner and tenant. Tenant said that the neighbors are working on getting the 30" culvert opened to allow flow to cross the road providing access to their properties. Outlet of the pipe is buried and will not allow flows. If pipe is re-opened on the downstream end, the flows will discharge down the slope and immediately into the back side of the house. If the pipe is not opened up, debris will build behind the road fill and could potentially lead to overtopping of the road. If this happens, the flows may go down the road or over the slope toward the house.

Recommendation

K-rail and or Sandbags (3 or 4 high) from behind the house along the west end of the house to divert flows past the house. Sandbags 3 high will need to be put across the slope between the house and the road to divert flows to the northwest corner of the house. An additional measure would be to re-grade the road to create an in-slope ditch and also place K-rails on the out-slope side of the road to keep overtopping flows from continuing toward the house.

The site evaluation and recommendation was prepared by the Natural Resources Conservation Service (NRCS). The SPFWERT did not conduct a field visit. Collaboration with NRCS determined that their proposed recommendations do not require additional measures from the SPFWERT.

Site Number 3Description

Travel Trailer on south bank of drainage. Trailer in jeopardy of flooding. Son of owner said that they spoke with CAL FIRE during the week of October 12th and received suggestions to put water bars on the road and to move the trailer to higher ground.

Recommendation

No further recommendations were made because the owner's son said he knew what they needed to do.

The site evaluation and recommendation was prepared by the Natural Resources Conservation Service (NRCS). The SPFWERT did not conduct a field visit. Collaboration with NRCS determined that their proposed recommendations do not require additional measures from the SPFWERT.

Site Number 5Description

Jesus Maria Creek runs adjacent to Jesus Maria Road and a culvert provides drainage into Jesus Maria Creek from an upstream channel. The canyon narrows at this point, creating the potential for higher flood velocities through this section of Jesus Maria Creek. The upstream end of the culvert is not visible and is assumed to be plugged.

Recommendation

The upstream end of the culvert should be located and cleaned out to restore drainage from the channel. During high intensity rainfall events the site should be monitored for debris flow and flooding.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 6Description

Six 48" CMP Culverts are located at the Hawver Road crossing of the North Fork of the Calaveras River. In the event of a high intensity rainfall event the crossing could become inundated with flood flows. Hawver Road would become unpassable.

Recommendation

During a high intensity storm event river levels should be monitored. If the river level rises to a level that compromises the ability to safely cross the road, the road should be blocked and closed until levels recede. A stage recorder can be installed to aid in monitoring river levels.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 7Description

House is at the bottom of a hillside, adjacent to the drainage. Owner/Tenant were not home. Some concern over flows reaching the home because of increase flows including debris. Inlet to culvert under Highway 26 cleaned and lined with rock riprap. No trash rack or debris catcher in place.

Recommendation

Place sandbags 3 high behind the house starting at the northwest corner extending south 100 feet and west 75 feet to divert flows around the house. The drainage ditch at the toe of the slope, north of the house, should have all debris removed and vegetation cut to 3 or 4 inches high. The culvert along Highway 26 should have a trash rack or similar measures to keep debris from plugging the culvert.

The site evaluation and recommendation was prepared by the Natural Resources Conservation Service (NRCS). The SPFWERT did not conduct a field visit. Collaboration with NRCS determined that their proposed recommendations do not require additional measures from the SPFWERT.

Site Number 8



Description

See Site 7

Recommendation

See Site 7

Site Number 9Description

This site is a burned home located on Cedar Springs Road. The burned home, adjacent pool and yard are located next to Jesus Maria Creek and are susceptible to flooding during high flows. The yard is approximately 6' and the house foundation 15' above the channel invert, respectively.

Recommendation

Notification to landowner of increased flood risk due to increased flood flows.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 10**Description**

A 36" CMP culvert provides drainage underneath Jesus Maria Road for the intermittent water course. The headwall surrounding the upstream end of the culvert is an archeological site. On the downstream end of the culvert scour is present along the bottom and right bank of the water course. Debris is present in the water course upstream of the culvert and the potential for debris to enter the culvert exists.

Recommendation

Rip-rap should be placed along the downstream side of the channel to prevent further scour. Debris should be cleaned from the channel and t-posts placed in front of the culvert to serve as trash racks.

Requirements from:

Fish and Wildlife: A California Department of Fish and Wildlife survey conducted at this site found no sensitive species in the planned work site. However Red Hills Soaproot is a sensitive plant found in close proximity to road. Aquatic resources found downstream of the recommended work would see a net benefit if project is completed. If feasible, this project should be completed before the area receives 0.5" of rain.

No equipment maintenance shall be done within or near the stream channel where petroleum products or other pollutants from equipment may enter these areas

under any flow. Operator shall take all necessary steps to contain sediment and reduce stream turbidity.

All straw and mulches if used should be seed free and should not contain species on the California Invasive Plant Council list (see site at <http://www.cal-ipc.org>).

Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site may include 404/401 permits If a culvert is replaced or if rip rap is placed in the channel.

Site Number 11Description

Jesus Maria Road crosses the North Fork of the Calaveras River via a bridge span. Upstream and downstream of Jesus Maria Road, debris and vegetation can be found in the river bed. In the event of a large storm event the North Fork of the Calaveras River may experience increased runoff and debris flow causing flooding and damage to the bridge crossing.

Recommendation

Vegetation and debris should be removed 30 feet upstream and 60 downstream of the bridge. If vegetation is removed a hand 404/401 permits are not required. Alders in the river should be maintained. Monitor the roadway for flooding.

Requirements from:

Fish and Wildlife: A California Department of Fish and Wildlife survey conducted at this site found no sensitive species in the planned work site. An occurrence of foothill yellow-legged frog (*Rana boylei*) was detected in CNDDDB approximately 1 mile downstream of this site. If feasible, this project should be completed before the area receives 0.5" of rain and when the channel is dry to protect against potential negative impacts to possible foothill yellow-legged frog.

Several Alders outside the normal stream channel were flagged with ribbon and marked as "No Cut" to prevent riparian impacts.

All other vegetation recommended for removal 30' upstream and 60' downstream from bridge will be removed using hand equipment and cut near ground level. Root structure of cut vegetation will remain intact to minimize soil movement.

Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 12Description

On Hawver Road approximately 100' south of Jesus Maria Road a 30" culvert crosses Hawver road. Upstream of the culvert the drainage ditch was filled for fire suppression efforts. In the event of a high intensity storm event flood waters and debris could flow from Jesus Maria Road down Hawver road.

Recommendation

Fill placed in the drainage ditch should be removed to restore drainage to pre-fire conditions. If water and debris flow from Jesus Maria Road onto Hawver Road, K-rails or sandbags should be placed to prevent flow down Hawver Road.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Does not require 404/401 permit if fill is removed by hand in the creek channel.

Site Number 13Description

This site is a low water crossing on Costa Road through Calaveritas Creek. The crossing is unimproved, consisting of tire-compacted creek bed material where vehicles cross the creek. A sign indicating flood hazard is posted next to the crossing.

Recommendation

In the event of a high intensity rainfall event the road should be monitored for flooding. Should the road become unpassable due to flooding, the road should be blocked off and closed for traffic.

Requirements from:

Fish and Wildlife: A California Department of Fish and Wildlife survey conducted at this site found no sensitive species in the planned work site. However, a nearby occurrence of foothill yellow-legged frog (*Rana boylei*) was detected in CNDDB. If feasible, this project should be completed before the area receives 0.5" of rain and when the channel is dry to protect against potential impacts to this frog.

Weed free bales and straw waddles should be placed along the portion of the road which prohibits sediment laden runoff from entering the waterway.

Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 14Description

This site is a bridge crossing located on Cave City Road where it crosses O'Neill Creek. The bridge opening is approximately 24' wide by 12' high. Fill behind the wing wall on the right side of the bridge (looking downstream) has been eroded, leaving the wing wall vulnerable to further erosion. This may result in the bridge being flanked or failure of the abutment and bridge collapse. A local resident reported that this had occurred in the past and the County came and fixed the road. A driveway opposite this location had a low spot that had been flooded in the past. The landowner was present at the time of inspection and informed of the additional flood hazard on his driveway.

Recommendation

Rip-Rap or other suitable fill should be placed behind the wing wall to prevent further erosion and potential failure of the wing wall. During a high intensity storm event river levels should be monitored. If the river level rises to a level that compromises the ability to safely cross the road, the road should be blocked and closed until levels recede.

Requirements from:

Fish and Wildlife: A California Department of Fish and Wildlife survey conducted at this site found no sensitive species in the planned work site. Aquatic resources found downstream of the recommended work would see a net benefit. If feasible, this project should be completed before the area receives 0.5" of rain.

No equipment maintenance shall be done within or near the stream channel where petroleum products or other pollutants from equipment may enter these areas under any flow. Operator shall take all necessary steps to contain sediment and reduce stream turbidity.

Construction activities should avoid impacts to any existing stands of unburned native resources in a burned area (e.g. shrubs). Such habitat should be adequately marked. All straw and mulches if used should be weed free and should not contain species on the California Invasive Plant Council list (see site at <http://www.cal-ipc.org>). Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 15**Description**

A timber bridge crossing the intermittent water course provided access to a residence along Jesus Maria Road. The bridge was burned during the fire as well as the residence. A culvert was placed in the former bridge location and covered on top with fill. Vegetation and debris fill the creek upstream and downstream of the culvert.

Recommendation

Remove the culvert and restore the creek to pre-fire conditions by placing a bridge across the creek for access to the property. In the interim debris and vegetation should be removed 30 feet upstream of the culvert and 60 feet downstream.

Requirements from:

Fish and Wildlife: Recommending the removal of gravel fill placed around culvert placed in the intermittent watercourse and placed in an area where it cannot re-enter watercourse.

No equipment maintenance shall be done within or near the stream channel where petroleum products or other pollutants from equipment may enter these areas under any flow. Operator shall take all necessary steps to contain sediment and reduce stream turbidity.

All straw and mulches if used should be weed free and should not contain species on the California Invasive Plant Council list (see site at <http://www.cal-ipc.org>). Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.

Water Quality: Does not require 404/401 permit if temporary culvert is replaced with a bridge.

Site Number 16Description

Downstream of Site Number 10, 2 culverts enter into the intermittent water course. An 18" CMP provides drainage for an upstream channel underneath Jesus Maria Road and into the water course. A second smaller culvert is present on the downstream side, however the upstream end of the culvert could not be located and is assumed to be plugged and not in operable condition.

Recommendation

Installation of t-post placed along the upstream end of the culvert to serve as trash racks. Monitor the site during high intensity rainfall events.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Requires 404/401 permit for rip-rap placed in creek channel

Site Number 17Description

Two homes on this property. Newer home sits up on a raised hillside pad. The older of two houses is likely in the flood plain and could be damaged during flood flows on this drainage. Spoke with owner who said the older house is not inhabited and that it had nominal value. Calaveras County Roads Department indicated that flood flows (over the last 30 years) have been high enough to go under the raised portions of the home. Also, some woody debris from previous flooding was also observed in the stream, at the upstream approach to the road bridge. County Roads Department will keep an eye on it, and try to send crews out to remove what is already there.

Recommendation

Solution to prevent damage to this home would be expensive. Based on the value of the structure, the benefit/cost ratio is like to be less than 1. One possible solution would be to build a levee around the edge of the house starting on the upstream end and continuing between the house and the stream. The County has not stated whether or not they would be interested in sponsoring a project here. They did express a concern with house being dislodged and moving downstream. He also had a concern with whether or not there is asbestos in the house's construction.

The site evaluation and recommendation was prepared by the Natural Resources Conservation Service (NRCS). The SPFWERT did not conduct a field visit. Collaboration with NRCS determined that their proposed recommendations do not require additional measures from the SPFWERT.

Site Number 18

No photo available

Description

This burned home is located on Cedar Springs Road. The house is adjacent to Jesus Maria Creek and subject to flooding during high flows. The house foundation is approximately 10' above the creek invert and the basement (a garage) is about 3' above the creek invert. A small drainage runs along the edge of the property and may also cause local flooding at the home. The slope of the small drainage area is moderate. Consequently, a debris flow is unlikely to occur during a large storm event.

Recommendation

The Phase II watershed team was unable to locate this site. Recommendations will defer to the Phase I team. If transitional housing is used, provide sand bags to homeowner for flood protection from small drainage.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 19Description

The watershed upstream of California Caverns is large and has high burn intensity. Floodplain downstream of confluence of McKinney Creek and Martin Gulch is wide and should attenuate debris flows. The main building is up on a terrace and should not be at risk. Outbuildings and the lower parking lot are in or adjacent to the floodplain and may experience "Zone X" type inundation during high runoff events.

Recommendation

Monitor the site during high intensity rainfall events. In the event of flooding the parking lot and/or trail to cave entrance should be closed.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 20Description

This is a 60" culvert crossing located on Old Emigrant Trail west of Hangman's Tree Road. The culvert exhibits a deep scour hole at the culvert outlet that is eroding into the adjacent road fill. The culvert is partially crushed underneath the road and will not operate at full capacity. On the right bank downstream of the culvert a pile of dirt likely removed from the channel rests on the bank.

Recommendation

The culvert should be replaced with a 60" culvert to restore drainage capacity. The scour hole on the downstream side should be filled with rip-rap to prevent further scour. The pile of dirt on the right bank should be removed to prevent it from flowing into the channel.

Requirements from:

Fish and Wildlife: A California Department of Fish and Wildlife survey conducted at this site found no sensitive species within, or in close proximity to the planned work site. However, nearby occurrences of *Lathyrus sulphureus* var. *argillaceus*, *Chlorogalum grandiflorum*, *Horkelia parryi*, and *Rana boylii*, (Species of Special Concern) were detected in CNDDDB in the area. If feasible, this project should be completed before the area receives 0.5" of rain and when the channel is dry to protect against potential impacts this frog.

Cement and concrete shall not be poured within 150 feet of a stream if precipitation is predicted within 24-hours. The Operator shall monitor the 7-day forecast. Cement shall not be poured in or near a flowing stream, to reduce the potential for significant adverse impacts to the stream, water, or biota.

No equipment maintenance shall be done within or near the stream channel where petroleum products or other pollutants from equipment may enter these areas under any flow. Operator shall take all necessary steps to contain sediment and reduce stream turbidity. Construction activities should avoid impacts to any existing stands of unburned native resources in a burned area (e.g. shrubs). Such habitat should be adequately marked.

All straw and mulches if used should be weed free and should not contain species on the California Invasive Plant Council list (see site at <http://www.cal-ipc.org>). Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 21Description

A 48" CMP culvert provides drainage underneath Jesus Maria Road into Jesus Maria Creek. During a high intensity rainfall event debris may collect and flow into the culvert.

Recommendation

Install t-posts upstream of the culvert to serve a trash rack.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 22**Description**

The site contains an 11'x5' box culvert, located at Whiskey Slide Road crossing Wet Gulch. The site has a moderate risk of flooding and debris flow.

Recommendation

During a high intensity storm event water levels should be monitored. If the water level rises to a level that compromises the ability to safely cross the road, the road should be blocked and closed until levels recede.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 23Description

This site is a burned home located at the base of an unnamed drainage and susceptible to a debris flow and flooding. The burned home is located on Cedar Springs Road off South Railroad Flat Road. Moderate soil burn severity is observed in more than 50% of the unnamed drainage upstream of the site. Consequently, much higher (1 to 2 orders of magnitude) runoff and erosion rates are anticipated (compared to the pre-fire condition).

Recommendation

If transitional housing is placed at or near the home site, sand bags or k-rails should be placed to divert debris flow and flooding around the home site.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 24

Photo Unavailable

Description

This site is located on Cedar Springs Road. The site is down a road leading to a new bridge that crosses Jesus Maria Creek. This site is located in the floodplain and subject to flooding during high flows. This flood hazard existed prior to the fire but may be exacerbated by additional runoff and sediment loads from burned areas upstream.

Recommendation

The site should be monitored during rainfall events for debris flow and flooding.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 25Description

A small bridge is located at this site where Cave City Road crosses Martin Gulch. The bridge opening is approximately 14' wide by 6' high. The road slopes down to the bridge from both directions. The bridge is located about 200' downstream of a 25' high sediment retention dam near California Caverns.

Recommendation

During a high intensity storm event water levels should be monitored. If the water level rises to a level that compromises the ability to safely cross the road, the road should be blocked and closed until levels recede.

Requirements from:

Fish and Wildlife: Recommended Emergency Protective Measures (EPMs) for this site are exempt from the jurisdiction of CDFW, no further evaluation or approvals are required.

Water Quality: Recommended Emergency Protective Measures (EMPs) for this site are exempt from 404/401 permits.

Site Number 26

No access to site due to private property concerns by the landowner, inability to contact landowner and 'No Trespassing' signs. No review conducted as of 10/14/2015.

Fish and Wildlife Site Number 27**Description**

This site is not identified as a life safety hazard. This site is located in Salamander Gulch below Site 3. It is located at (38 14.263 N 120 35.315 W). It contains heavy equipment and associated hydraulic fluids burnt in the fire as well and a residential site which are all in close proximity to the Salamander Gulch. This site is also an open surface mine without adequate erosion control mechanisms in place. Due to slope gradient, soils, road alignment, and potential for hazardous materials located at this site, it makes site 27 a threat to downstream natural resources.

Habitat type is sierra mixed conifer with and understory of chaparral all of which was moderately burned. The area shows evidence of heavy water flows and failed culvert which is completely buried. See below photo:



Recommendation

Replace failed culvert within Salamander Gulch. Protect the watershed from mobilizing hazardous materials in the watershed. Remove heavy equipment and vehicles from the site to minimize the risk of hazardous materials entering the downstream waterway. Stabilize active mine erosion sites. Contact local CDFW Wildlife Officer or OSPR Officer and notify of site conditions.

Sensitive Natural Resources (Aquatic, Terrestrial, and Botanical)

A California Department of Fish and Wildlife survey conducted at this site found no sensitive species in the planned work site. Aquatic resources found downstream of the recommended work would see a net benefit if project is completed. If feasible, this project should be completed before the area received 0.5" of rain.

Emergency Protective Measures for Site 27

Water bar road leading up to burned home site and heavy equipment landing.

Remove and replace with properly sized culvert using CAL FIRE Culvert Calculator tool or other recognized method.

Circle excavator with straw waddles and remove vehicles from center of watershed.

Place weed free bails and straw waddles along the portion of the road which parallels Salamander Gulch which prohibits sediment laden runoff from entering the waterway. Erosion control netting is advised on slopes greater than 40% where vegetation has been removed along cleared road.

No equipment maintenance shall be done within or near the stream channel where petroleum products or other pollutants from equipment may enter these areas under any flow. Operator shall take all necessary steps to contain sediment and reduce stream turbidity.

Construction activities should avoid impacts to any existing stands of unburned native resources in a burned area (e.g. shrubs). Such habitat should be adequately marked. All straw and mulches if used should be weed free and should not contain species on the California Invasive Plant Council list (see site at <http://www.cal-ipc.org>). Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.

Appendix A











