GAVIN NEWSOM, *Governor*
WADE CROWFOOT, *Secretary for Natural Resources*

April 9, 2019

Chief Porter, Director
Department of Forestry and Fire Protection
1416 9th Street, Suite1505
Sacramento, CA 95814

Re: Highway 44 Fuels Reduction – Shaded Fuel Break Project

Dear Chief Porter,

On March 22, 2019, Governor Newsom proclaimed a state of emergency involving forest conditions near vulnerable communities. The proclamation suspends State environmental statutes, rules, regulations, and requirements to the extent necessary to complete priority fuel management projects started this calendar year, upon the request of the Secretary for the California Environmental Protection Agency or Natural Resources Agency, as appropriate. In considering whether to suspend any requirements, the Secretaries must determine that the proposed activities are eligible to be conducted under this suspension and will take protection of the environment into account while ensuring timely implementation.

CAL FIRE has requested suspension of Division 13 (commencing with section 21000) of the Public Resources Code and regulations adopted pursuant to that Division, commonly known as the California Environmental Quality Act, for the Highway 44 Fuels Reduction – Shaded Fuel Break Project, which is one of the thirty-five priority projects identified in the Community Wildfire Prevention and Mitigation Report (February 22, 2019).

Project Description

The Highway 44 Fuels Reduction – Shaded Fuel Break Project would create a landscape-level shaded fuel break along Highway 44, within CALTRANS deeded ownership or right-of-way and on private property. The project will vary in width but will be 400 feet wide where CALTRANS owns 200 feet from centerline. The western part of the project will include the removal of brush and the limbing of trees up to 16 feet above ground. The central and east side of the project will include the removal and chipping of understory trees (less than 10 inches in diameter) and the thinning of overstory trees. This is a cooperative project with CALTRANS that will provide a safer community for residents along Highway 44. Additional benefits of the project include

providing for safe evacuation routes for the community during a wildland fire, increased visibility of roadside hazards like livestock and wildlife, and increased sun exposure during the winter months, making roads less likely to be icy.

Immediate implementation of this project is necessary to protect vulnerable communities, including Shingletown, Viola, Inwood. CAL FIRE has incorporated protection of the environment into the design of this project. While specific measures may vary, standard protective measures typically include those described in CAL FIRE's "Protective Practices for CAL FIRE's 35 Emergency Fuels Reduction Projects" (April 2019).

In addition, CAL FIRE has contacted local offices of the Department of Fish and Wildlife and Regional Water Quality Control Board to invite staff to visit the site and provide input on project design.

Suspension

Because the Highway 44 Fuels Reduction – Shaded Fuel Break Project is necessary to protect vulnerable communities and because CAL FIRE has incorporated environmental protection into project design, I find that this project is eligible under the Governor's Proclamation. Therefore, Division 13 (commencing with section 21000) of the Public Resources Code and regulations adopted pursuant to that Division are hereby suspended for that project. This suspension may be revised or further conditioned as necessary to protect public health and the environment. Suspension of additional regulatory requirements may be considered as project implementation proceeds. This suspension does not alter any requirements imposed by federal law.

Sincerely,

Wade Crowfoot
Secretary for Natural Resources

HWY 44 Fuels Reduction – Shaded Fuel Break Project
Shingletown, Shasta County, CAL FIRE Shasta-Trinity Unit

In response to Governor Newsom's Executive Order N-05-19 issued on January 9, 2019, CAL FIRE released a report, called the Community Wildfire Prevention and Mitigation Report. This report delivered recommendations to reduce public safety hazards associated with catastrophic wildfire and specifically prioritized 35 projects that will protect 200 of California's most wildfire-vulnerable communities.

The Highway 44 Shaded Fuel Break project is critical to protecting the communities of Shingletown, Viola and Inwood. The project will run along California State HWY 44 from Dersch Road to the Lassen National Forest Boundary. The HWY 44 Fuels Reduction project is approximately 1,112 Acres including 250 acres of manual treatment (use of hand crews) and 156 acres of mastication (use of heavy equipment) and 700 acres of combined commercial timber harvest, biomass & mastication

Note: The 700 acres of combined commercial timber harvest, biomass & mastication are included for disclosure of the overall project but not subject to the CEQA suspension being requested. All commercial timber harvest activities will be conducted and permitted in compliance with the California Forest Practice Act and Rules.

1. **Laws requested to be suspended:**

   Per directive 4 in the Emergency Proclamation issued March 22, the Department of Forestry and Fire Protection (CAL FIRE) requests suspension of the California Environmental Quality Act (CEQA), Division 13 (commencing with section 21000) of the Public Resources Code and regulations adopted pursuant to that Division for this priority fuels reduction project.

2. **Project description:**

   This project would create a landscape-level shaded fuel break along HWY 44, within CALTRANS deeded ownership or right-of-way and on private property. The project will vary in width, based upon right-of-way widths and the willingness of landowners to cooperate, but will be 400 feet wide where CALTRANS owns 200 feet from centerline. The western part of the project will include the removal of brush and the limbing of trees up to 16 feet above ground. The central and east side of the project will include the removal and

chipping of understory trees (less than 10 inches in diameter) and the thinning of overstory trees. This is a cooperative project with CALTRANS that will provide a safer community for residents along HWY 44 and make stopping a wildfire possible for firefighters. Additional benefits of the project include providing for safe evacuation routes for the community during a wildland fire, increased visibility of roadside hazards like livestock and wildlife, and increased sun exposure during the winter months, making roads less likely to be icy.

To diminish the risk and/or rate of fire spread across the fuel break, specific treatments will be utilized based upon the suitability of the material being treated (e.g., mowing, prescribed grazing, pruning, vegetation removal, chipping, prescribed burning, and masticating). Treatments focus on removing dead, diseased, dying, decadent, or dense trees and chaparral species. When healthy small trees and chaparral species are removed, the focus is on spacing that will help prevent fire spread from canopy to canopy. Large diameter trees and chaparral plants with unique structural features and located on the outer edges of the fuel break may be retained to support and promote wildlife species and habitat. Generally, all downed dead trees and shrubs are removed if they are solid (not rotten) and are not yet embedded into the ground. Downed trees and chaparral that are embedded into soil and which cannot be removed without soil disturbance are left in place. Chipping and masticating of dead material is often used as an alternative to removal. When possible, fuel breaks are blended into the surrounding environment. This is accomplished by feathering the edges of the fuel break into the adjacent untreated areas for aesthetic purposes. Soils, site factors, and timing of application must be suitable for any ground-based equipment utilized for creating a fuel break to avoid excessive compaction, rutting, or damage to the soil surface layer.

This project includes 700 acres of timber harvest and biomass (not included in the waiver) with mastication of understory vegetation, 250 acres of hand cutting with chipping or pile burning, and 156 acres of mastication. All acreages are approximate.

3. **Project location:** Shingletown, Shasta County, CAL FIRE Shasta-Trinity Unit. See attached map.

4. **Treatment methods and equipment that will be used:**

The western part of the project will include the removal of brush and the limbing of trees up to 16 feet above ground. The central and east side of the project will include the removal and chipping of understory trees (less than 10 inches in diameter) and the thinning of overstory trees. This project includes 700 acres of timber harvest and biomass (not included in the waiver), with mastication of understory vegetation, 250 acres of hand cutting with chipping or pile burning, and 156 acres of mastication. The project will employ a variety of treatment methods including hand crews and heavy equipment. Treatment type by location will vary based on slope and terrain. Operations will be conducted to prevent erosion and sedimentation to watercourses, per the Best Management Practices established for the 35 fuel reduction projects.

5. **Communities protected:**

This fuel break not only allows CAL FIRE to better defend the communities of Shingletown, Viola, Inwood from catastrophic wildfire, it also creates a safer escape route for these communities in the event of an overwhelming wildfire.

6. **Considerations for ecological and cultural resources:**

Project activities are designed to avoid significant effects and avoid taking special status species that are listed as rare, threatened, or endangered under Federal law; or rare, threatened, endangered, candidate, or fully protected under State law; or as a sensitive species by the California Board of Forestry and Fire Protection. A California Natural Diversity Database search has been completed and appropriate field review conducted to detect species prior to project disturbance. If listed-protected species are found within the project boundary a CAL FIRE or DFW Biologist will be consulted for appropriate protection measures. In addition, a current archeological records check has been completed. CAL FIRE or designee is contacting landowners within the project area who might have already conducted an archeological records-check for past fuel break activities on their land to limit costly redundant records searches. An archeological field review will be conducted by qualified personnel. In addition, a Registered Professional Foresters or designee will be onsite sufficiently during operations to evaluate the presence of cultural resources and ensure cultural resource protection through avoidance.

7. **Best Management Practices used in this project.**

To ensure environmental protection when designing and constructing fuels reduction projects, CAL FIRE utilizes the standard protection practice of identifying and avoiding sensitive resources. A comprehensive list of required Best Management Practices (BMPs) has been developed by CAL FIRE through cooperation with the California Department of Fish and Wildlife and State Water Resource Control Boards. These BMPs will be used use to provide natural resource protection when implementing all 35 priority fuels reduction projects (See attached CAL FIRE Best Management Practices).

Additional BMPs may be developed for specific projects by the local CDFW office and Regional Water Quality Control Board and implemented by CAL FIRE.

8. **California Natural Diversity Database(CNDDB) search**

A CNDDB search has been completed and results have been analyzed and avoidance measures have been implemented in project design. Results of CNDDB query are on file at the local CAL FIRE Unit.

Initial project scoping indicates the potential presence of the following species in or around the project region: Northern clarkia (Clarkia borealis ssp. arida), Ahart's paronychia (Paronychia ahartii), Butte County fritillary (Fritillaria eastwoodiae), Southern long-toed salamander (Ambystoma macrodactylum), Sierra Nevada red fox (Vulpes Vulpes necator) (State Listed as Threatened), Central Valley chinook salmon – spring run (Oncorhynchus tshawytscha) (State and Federally listed as Threatened). Project design will focus on avoiding riparian habitats and the North Fork Battle Creek floodplain to avoid or reduce impacts to listed salmonids.

Should any species be located within the project area during field review, Best Management Practices will be developed and implemented through coordination with local California Department of Fish and Wildlife staff.

9. **California Office of Historic Preservation, California Historic Information Centers (CHRIS) archeological database search:**

The California Office of Historic Preservation, California Historic Information Centers (CHRIS) archeological database has been searched for sensitive cultural resources in the project area. A CAL FIRE Archeologist will be consulted as necessary to help ensure cultural resource protection. To date,

CAL FIRE Senior Archeologist Stephanie Valesquez is in contact with BLM to ensure cultural resource protection on BLM managed lands within the project area.

10. Outreach to the Regional Water Quality Control Board (RWQCB).

Notification letters have been submitted to the pertinent local RWQCB staff and are on file at the local CAL FIRE Unit.

11. Outreach to the California Department of Fish and Wildlife (CDFW).

Notification letters have been submitted to the pertinent local CDFW staff and are on file at the local CAL FIRE Unit.

12. Verbal outreach communication status with other agencies.

Initial outreach was provided to both RWQCB and CDFW local staff via phone call to explain the project. Communication, consultation, and site visits will be ongoing throughout the project.

13. Outreach to local government:

1. Shasta County Public works – Pat Minturn
2. Shasta County Resource Management – Kevin Westlake
3. BLM – Jeremey Straight
4. CAL TRANS – Thomas March
5. WSRCD – Chester Anderson
6. Shingletown Fire Safe Council – Tom Twist
7. CDFW - Bob Hawkins and John Galos
8. WQ – Matt Boone
9. AFF - Chance Joyce
10. Reaching out to PG&E and Frontier Communications

Local outreach for the project has been continual and ongoing. CAL FIRE's Fire Planning process coordinates local fuel reduction priorities with community protection to ensure projects are designed and implemented cooperatively. This allows for a sharing of resources to facilitate an informed, educated and efficient implementation of priority projects.

14. Identify the lead contact person for the project, and contact information.

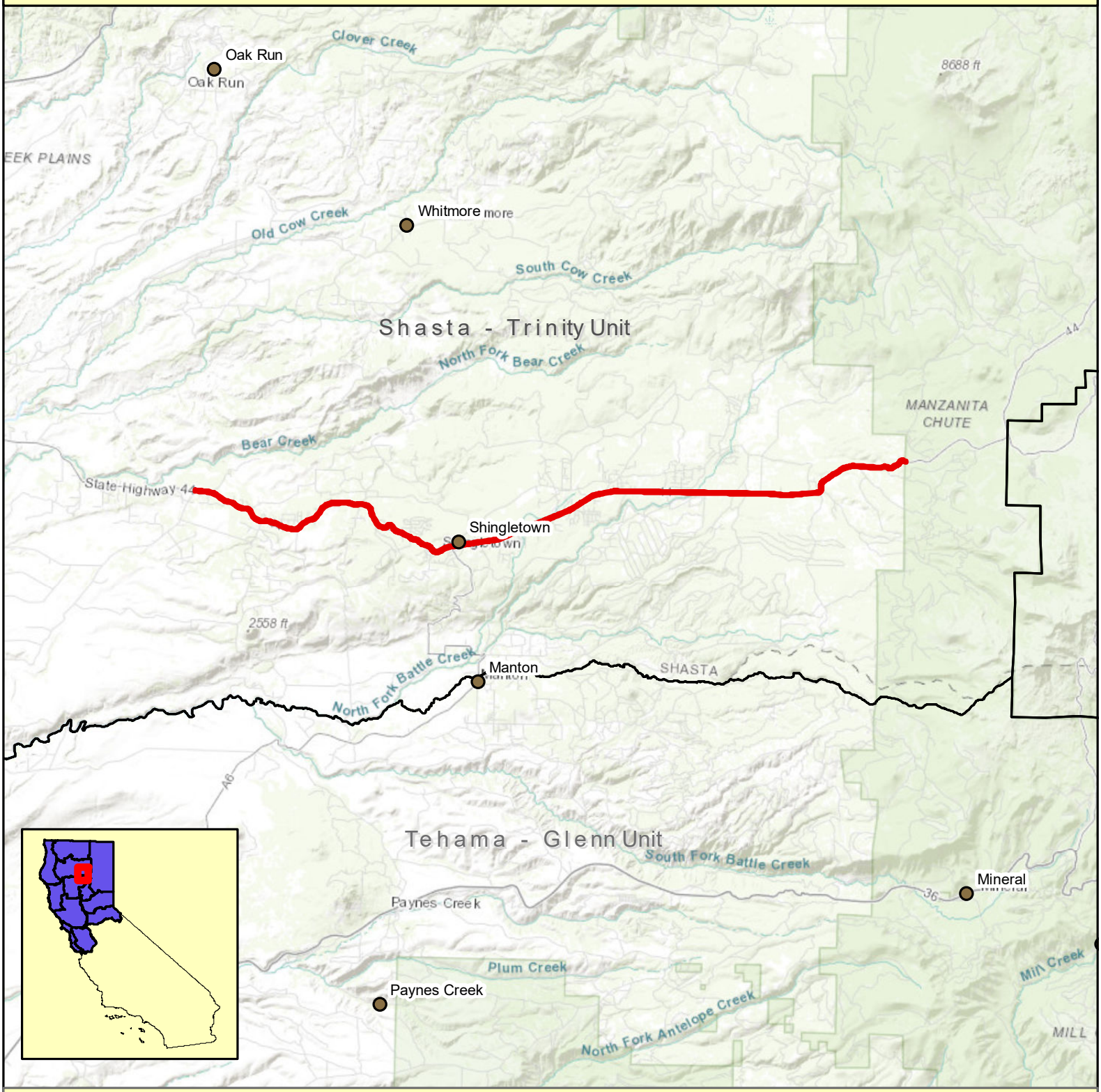
Media Contact person:	Cheryl Buliavac, 530-225-2424 875 Cypress ave., Redding, CA 96001
Public inquiry	530-225-2418

15. **Estimated Start Date:** Project is ready to begin immediately following CEQA clearance.

Highway 44 Fuel Break

Shasta - Trinity Unit

Shaded Fuel Break, Tree Removal, Chipping



0 2 4 8 Miles

0 2 4 8 Kilometers

Highway 44 Fuel Break

CAL FIRE Units

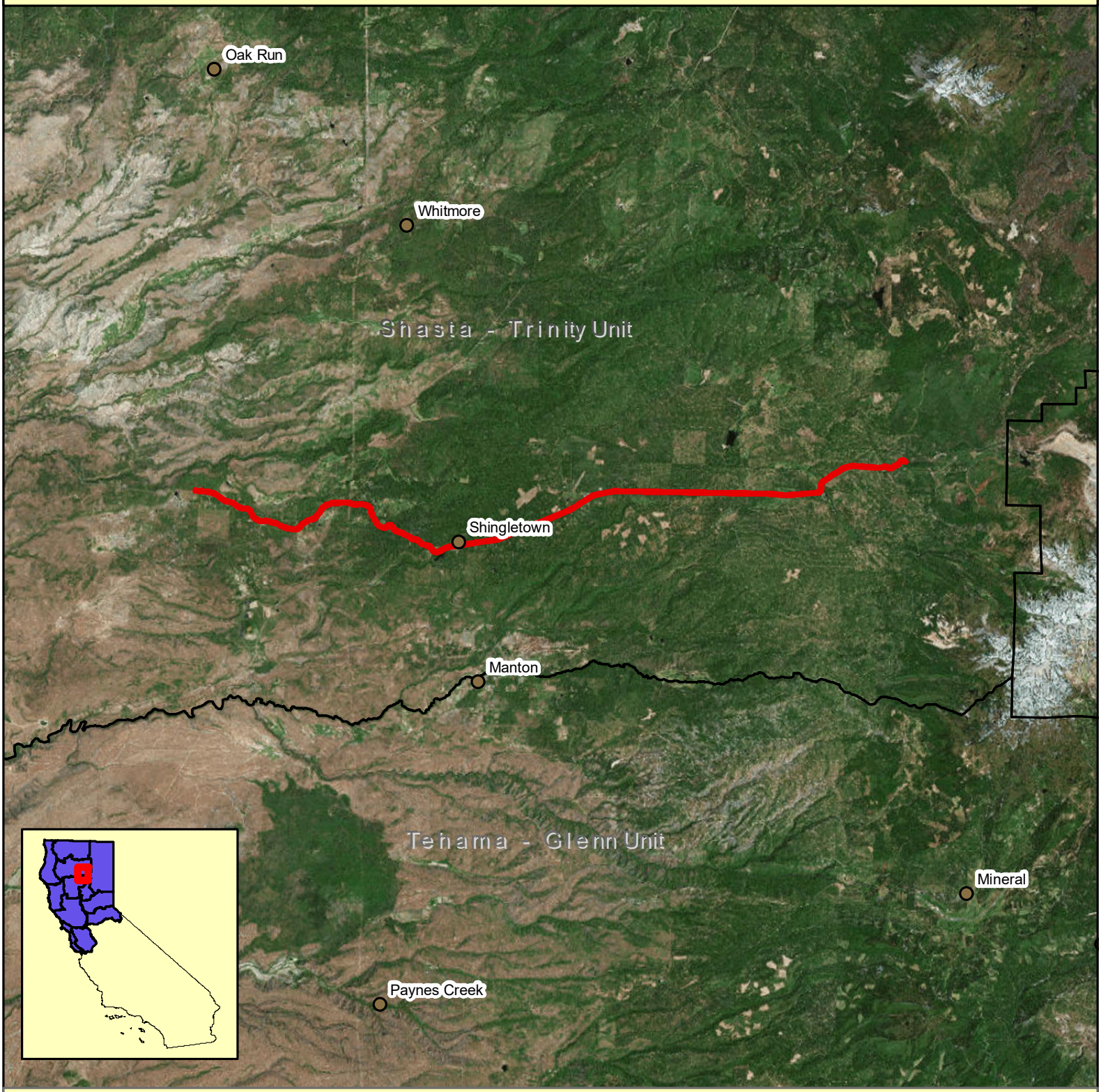
Communities at Risk

N

Highway 44 Fuel Break

Shasta - Trinity Unit

Shaded Fuel Break, Tree Removal, Chipping



0 2 4 8 Miles

0 2 4 8 Kilometers

Highway 44 Fuel Break

CAL FIRE Units

Communities at Risk

N

Protective Practices for CAL FIRE's 35 Emergency Fuels Reduction Projects

April 5, 2019

Summary:

To fulfill Governor Newsom's Executive Order N-05-19 issued on January 9, 2019, CAL FIRE released a report, called the Community Wildfire Prevention and Mitigation Report. This report delivered recommendations to reduce public safety hazards associated with catastrophic wildfire and specifically prioritized 35 projects that will protect 200 of California's most wildfire-vulnerable communities. To enable immediate implementation of these 35 priority public safety projects, Governor Newsom proclaimed a State of Emergency on March 22, 2019. In response to this proclamation, CAL FIRE has requested suspension of the California Environmental Quality Act [CEQA] for the 35 emergency projects.

For each of these 35 projects, CAL FIRE will provide a packet of information containing the following:

- Identification of specific laws to be suspended for each project
- Complete project description including:
  - Brief narrative describing the project and desired accomplishments
  - Project location-map of the area showing areas of treatment
  - Communities to be protected by the project
  - Special considerations regarding ecological or cultural resources
- Description of the Best Management Practices
- Status of California Natural Diversity Database search
- Status of the California Office of Historic Preservation, California Historic Information Centers (CHRIS) archeological database search
- Status of outreach letter transmitted to the Regional Water Quality Control Board (RWQCB)
- Status of outreach letter transmitted to the California Department of Fish and Wildlife (CDFW)
- Verbal outreach communication status with other agencies
- Record of outreach to local governments (could be list of local leaders who have/will receive briefing on the project). Entities to consider could include County, City, Fire Safe Councils, Resource Conservation Districts, local stakeholders and interest groups
- The lead contact person for the project, and contact information

- An estimated start date for the project

Project packet information will be posted on CAL FIRE's website. Additionally, to ensure communication for project activities, CAL FIRE field staff have verbally communicated project objectives with local and regional CDFW and RWQCB staff. Written notification has also been provided. Continual coordination will occur through CAL FIRE's Fire planning process with local stakeholders and cooperators. This process combines local fuel reduction priorities with desired community protection to ensure projects are designed and implemented cooperatively. The fire plan process helps ensure a sharing of resources to facilitate an informed, educated and efficient implementation of priority projects.

Projects implemented under this CEQA suspension will be light touch vegetation removal focused on reducing the vertical and horizontal continuity of fuels. Generally, this means the non-commercial removal of smaller trees in the understory to eliminate ladder fuels, and thinning forests to a density where a crown fire is less likely to occur. A few projects may involve commercial timber harvest and will comply with the California Forest Practice Act and Rules prior to timber operations. Other activities beyond vegetation treatment such as new road construction and watercourse crossing will require site specific CEQA compliance through consultation with pertinent agencies.

In implementing the 35 emergency projects, CAL FIRE and its contractors will utilize CAL FIRE's established protection practices to protect natural and cultural resources while fulfilling the intent of the Executive Order, in addition to Best Management Practices (BMPs) identified by the California Department of Fish and Wildlife (CDFW) and the State Water Resources Control Board and the nine Regional Water Quality Control Boards (Water Boards). Additional BMPs may be implemented on a project-by-project basis as necessary.

Table of Contents of Protective Measures

General Best Management Practices 4
Cultural Resource Measures 5
Biological Resource Measures 5
Riparian and Water Quality Measures 6
Erosion Control and Bank Stabilization 8
Chemical Treatment Measures 9
Invasive Species Control Measures 9
Fuel Break Design, Construction and Prescribed Fire 9
Fuel Break Design Standards 10
Fuel Break Construction 10
Prescribed Fire Practices and Protection Measures 11
Chaparral 13
Implementation Monitoring 15
Appendix. Additional Best Management Practices That May be Applicable 18
1. General Best Management Practice Recommendations 18
Upland Habitat Protection 18
Aquatic Habitat Protection 19
2. Erosion Control 20
Construction of Roads and Crossings 21
Pollution 25
Invasive Species 26
3. Activity-Specific Best Management Practice Recommendations 26
Herbicide 26
Mechanical Removal 26
Manual Thinning 27
Inspections 27
Maintenance 27

General Best Management Practices

CAL FIRE has a suite of comprehensive natural resource and environmental protection programs. CAL FIRE employs various resource professionals including Registered Professional Foresters, Environmental Scientists, Archeologists, Hydrologists, Soil Scientists, Fire Scientists, and various other experts in natural resource protection. CAL FIRE uses the totality of its resource professionals to ensure environmental protection for any project it undertakes, including fuel breaks. To ensure environmental protection when designing and constructing fuel breaks, CAL FIRE utilizes the standard protection practice of identifying and avoiding sensitive resources. There is a great deal of flexibility in fuel break design and adjusting a fuel break location is often all that is needed to avoid sensitive resources.

The following represent standard Best Management Practices that will be implemented for the 35 projects identified in the report and as directed in the Emergency Proclamation.

1. Project Notifications: For each of the 35 projects, CAL FIRE will send letters of notification to the Department of Fish and Wildlife, the relevant Regional Water Quality Control Board, and Native American Tribes. These letters will advise the recipients of the project location, scope and timing, and request that they contact the CAL FIRE Unit implementing the project with any concerns regarding natural and cultural resource protection.

2. CAL FIRE, the local Regional Water Quality Control Board (RWQCB) and the local California Department of Fish and Wildlife (CDFW) will exchange and maintain a current list of contacts and back up contacts for each project area. CAL FIRE should ensure all staff, contractors and sub-contractors have the CDFW and RWQCB contact information and coordination expectations.

3. A Registered Professional Forester (RPF) or their designee will be sufficiently available onsite during project implementation to assist with cultural resource surveys, identification and protection. All resources identified for protection will be flagged, painted or marked prior to operations. The standard practice of resource identification and avoidance will be adhered to for resource protection.

4. Resource Identification – Project Planning: All protected resources should be flagged, painted, or otherwise marked prior to the start of operations by someone knowledgeable of the resources at risk, their location, and the applicable protection measures to be applied. This work should be performed by a RPF, or their designee.

Cultural Resource Measures

5. Known Cultural Resources Sites: CAL FIRE will avoid damaging known archaeological or historical sites. Information on these sites may be available from the Information Centers of the California Historical Resources Information System within the California Department of Parks and Recreation. CAL FIRE queries this system during project scoping and will also have a RPF or their designee onsite sufficiently during operations to evaluate the presence of cultural resources and ensure cultural resource protection through avoidance.

6. Prior to the start of operations, if any cultural resource sites have been identified within the activity area, identified cultural resource sites will be appropriately marked and locations communicated to operating contractors to ensure protection and avoidance. Confidentiality of cultural resources sites must be maintained with a minimal disclosure of site locations.

Biological Resource Measures

7. Known sites of rare, threatened, or endangered plants or animals should not be disturbed, threatened, or damaged during the construction of a fuel break. Information on some of these sites may be available from the CDFW Natural Diversity Database. CAL FIRE queries this database during project scoping. A RPF or their designee will be sufficiently present onsite during operations to evaluate the presence of biological resources and ensure biological resource protection through avoidance.

8. If any wildlife is encountered during project activities, said wildlife will be allowed to leave the area unharmed and if any listed wildlife is encountered and cannot leave the project site on its own, CAL FIRE

should contact CDFW immediately consult regarding species relocation protocol.

Riparian and Water Quality Measures

9. Tractor or heavy equipment operations shall not be conducted on slopes greater than 50%.

10. Tractor road construction is often not required during fuel break implementation. If necessary, tractor roads shall not be constructed on slopes greater than 40%.

11. New road construction or reconstruction is often not required during fuel break implementation. If necessary, new road construction or reconstruction should not be beyond 600 feet. Any road construction should be kept to a minimum and the appropriate agencies may be notified prior to any new road construction.

12. Tractor or heavy equipment operations should not be conducted on known slides or unstable areas.

13. Heavy equipment operations should not be conducted within the standard width of a Watercourse and Lake Protection Zone (WLPZ; see Table 1), except for maintenance of roads and drainage facilities or structures.

14. Fuel Break activities should not involve watercourse crossings. If watercourse crossings are required, necessary agencies will be notified prior to construction. Crossings will be designed to meet the 100-year flood flow and associated debris standards in the Act and Rules.

Table 1: The WLPZ means a strip of land, along both sides of a watercourse or around the circumference of a lake or spring, where additional practices should be undertaken for protection of the quality and beneficial uses of water, fish, and riparian wildlife habitat, other forest resources, and for controlling erosion. The following table may be used to identify the standard width of a WLPZ:

Procedures for Determining Watercourse and Lake Protection Zone Widths				
Water Class Characteristics or Key Indicator Beneficial Use	Class I 1) Domestic supplies, including springs, on site and/or within 100 feet downstream of the operations area and/or 2) Fish always or seasonally present onsite, includes habitat to sustain fish migration and spawning.	Class II 1) Fish always or seasonally present offsite within 1000 feet downstream and/or 2) Aquatic habitat for non-fish aquatic species. 3) Excludes Class III waters that are tributary to Class I waters.	Class III No aquatic life present, watercourse showing evidence of being capable of sediment transport to Class I and II waters under normal high-water flow conditions after completion of tree operations.	Class IV Man-made watercourses, usually downstream, established domestic, agricultural, hydroelectric supply or other beneficial use.
Protection Width	150 feet	100 feet	25 feet < 30% slope, 50 Feet >30% slope	25 feet < 30% slope, 50 Feet >30% slope

15. Fuel break construction within the standard width of a WLPZ should be designed to avoid impacts to riparian and aquatic function. Class I protection zones involving anadromous salmonid habitat and/or where waterbodies are Clean Water Act section 303(d) listed (impaired) for temperature/sediment should comply with the standard Act and Rules WLPZ protections. Dead or dying trees within a WLPZ should be marked by, or under the supervision of, a RPF prior to tree removal operations. Removal of vegetation within a WLPZ should be limited to situations where it is necessary to create and maintain fuel break function and effectiveness. A CAL FIRE RPF or their designee will determine the necessity for removal of vegetation from within a WLPZ and practices to reduce impacts to biological resources.

16. Shade-producing canopy within WLPZ should be retained where waterbodies are 303(d) listed for temperature.

17. Disturbance and/or creation of bare areas will be avoided or designed to avoid sediment discharge to waterbodies.

18. Avoid removing vegetation from a stream or stockpiling it in the stream bed or on its bank.

19. Avoid removing living native vegetation from the channel, bed, or banks of a stream.

20. If water drafting becomes necessary, drafting sites should be planned to avoid adverse effects to special status aquatic species and associated habitat, in-stream flows, and depletion of pool habitat. Relevant agencies will be notified prior to any water drafting.

21. De-watering streams or other aquatic features should be avoided. No work shall occur within a flowing stream. If there is an unavoidable need, agencies will be consulted prior to any de-watering activities to develop site specific protection measures.

22. During fuel break operations, fuel and hazardous materials will be kept at a sufficient distance from watercourses to provide protection from accidental leaks or spills.

23. Should operations extend into the winter period, as defined by the Act and Rules, limitations on operations related to using saturated roads, stabilizing erodible soils, and installing erosion control measures will be followed.

24. Equipment maintenance will occur outside the WLPZ (according to prescribed protection widths; Table 1).

25. Should pile burning occur, it will not be conducted within 25' of a WLPZ.

Erosion Control and Bank Stabilization

26. Avoid placing spoil on the stream side slope where it could enter the stream, or over vegetation.

27. Locate permanent spoil storage sites away from a stream/lake, to avoid spoil washing back into a stream/lake, and away from where it should cover aquatic or riparian vegetation, intact upland vegetation, and areas documented with sensitive species.

Chemical Treatment Measures

28. Herbicide will be used sparingly. Should herbicides be used, they will be applied by a licensed applicator in accordance with all applicable state, federal, and local regulations.
29. Herbicide mixing sites should only be located in areas devoid of vegetation, and where there is no potential of a spill reaching a vegetated area or a stream.

Invasive Species Control Measures

30. Fuel break activities will be conducted to avoid introducing or spreading any invasive pests (plant or animal).

Fuel Break Design, Construction and Prescribed Fire

Fuel Break Practices and Protective Measures

A fuel break is generally wide strip of land on which vegetation has been modified so that a fire burning into it can be more readily controlled. Fuel breaks are not designed to stop fire spread, especially during periods of strong winds when fire brands can be blown across these linear features. However, fuel breaks do provide opportunities for firefighting success under less extreme fire weather conditions by providing areas of lower fireline intensities, improved firefighter access, and enhanced fireline production rates. The concept of a fuel break is that fire intensity is reduced by reducing fuel loading. In addition to reducing fire intensity, fuel breaks increase fireline construction rates, reduce the fire-retardant coverage levels required to effectively coat vegetation, and provide for points of access and travel for ground-based firefighters. The lighter fuels, often grasses, associated with fuel breaks, also provide opportunities for indirect fireline construction through backfire or burn-out operations to consume fuel ahead of the spread of the fire.

CAL FIRE commonly designs and constructs fuel breaks in a variety of vegetation types throughout the State. There are multiple objectives that a fuel break can achieve including creating strategic control points to allow firefighters to safely engage a wildfire, improving opportunities to control wildfire in the initial attack phase, and improving opportunity to control a wildfire prior to it reaching homes

or other assets at risk. In addition, certain fuel breaks can act as part of a community fuel break system to protect the community, wildlife, and other watershed values. Fuel breaks can also be used to improve ingress and egress routes along existing roads and driveways, allowing for safe civilian evacuations and emergency responder access. Despite considerable variability in fuel types there are common design, construction, and environmental protection standards that CAL FIRE may use for all fuel breaks.

Fuel Break Design Standards

31. Fuel Break Description: The purpose for protection should be identified and a brief explanation of what is being protected, why it is being protected, and where the protection is specifically needed should be included.

32. Fuel Break Width and Length: The fuel break width and length should be sufficient to reduce fire spread and intensity. Width on level ground will vary based on fuel types; i.e., short widths are generally required in grasses (approx. 150 feet) and longer widths are required on forested sites (approx. 300 feet). Variation in width is largely determined by vegetation type, slope, access, and other site-specific needs and objectives. Fuel break length will generally be designed to match the length of the ignition source to the extent feasible, such as along a road or highway.

33. Fuel Break Connectivity: Fuel breaks are designed to connect with natural or artificial fire barriers such as large rock outcrops, wet meadows, roads, or areas with low fuel loads or flammability. When possible, fuel breaks favor locations that are linked to road systems to facilitate firefighting access.

Fuel Break Construction

34. Standard Fuel Treatments: To diminish the risk and/or rate of fire spread across the fuel break, specific techniques are used suitable to the material being treated (e.g., mowing, prescribed grazing, pruning, vegetation removal, chipping, prescribed burning, and masticating). Treatments focus on dead, diseased, and dying trees before any healthy trees are removed. When healthy trees are removed, the focus is on smaller diameter trees and trees that will help prevent fire from spreading from

the forest floor into the tree canopy. Large diameter trees may be removed to achieve desired spacing between trees. Large diameter trees with unique structural features that do not pose a safety hazard are often retained to support and promote wildlife species and habitat.

35. Dead Vegetation: Generally, all downed dead trees and shrubs are removed if they are solid (not rotten) and are not yet embedded into the ground. Downed trees that are embedded into soil and which cannot be removed without soil disturbance are left in place.

36. Fuel Break Aesthetics: When possible, fuel breaks are blended into the surrounding environment. This is accomplished by feathering the edges of the fuel break into the adjacent areas for aesthetic purposes.

37. Equipment Use: Soils, site factors, and timing of application should be suitable for any ground-based equipment utilized for creating a fuel break to avoid excessive compaction, rutting, or damage to the soil surface layer. Equipment is used on the contour where feasible. For safety purposes and to protect site resources, treatment methods involving equipment are generally not applied on slopes exceeding 50 percent

38. Maintenance: Future regrowth of natural or planted vegetation is often controlled by pruning, mowing, or other techniques to maintain the specified reduced fuel load. Maintenance activities are generally less costly and time consuming than initial treatment activities.

Prescribed Fire Practices and Protection Measures

CAL FIRE uses a variety of standard practices and protections measure to develop and implement prescribed fire projects. The following represent commonly used prescribed fire practices and protection measures:

39. Burn Plan Development: A burn plan is developed that includes a fire behavior model output of First Order Fire Effects Model and BEHAVE or other fire behavior modeling simulation that predicts fire behavior, calculates consumption of fuels, tree mortality, predicted emissions, GHG emissions, and soil heating. The results of the analysis are included with the burn plan. The burn plan is created with input from the appropriate local CAL FIRE Unit personnel.

40. Burn Prescription: The prescribed fire burn prescription is designed to initiate a surface fire of sufficient intensity that will only consume surface and ladder fuels while protecting soil resources from direct soil heating impacts.

41. Ignition will occur outside of the WLPZ (according to prescribed protection widths; Table 1).

42. Where feasible, utilize existing roads, trails, and natural fuel breaks for fire lines.

43. Air Quality: Prescribed fire should comply with all local, state, and federal air quality regulations and ordinances. The local Air Pollution Control District or Air Quality Management District will be contacted to determine local requirements.

44. Standard Public Notifications: Approximately two weeks prior to the commencement of prescribed burning operations, the project coordinator will: 1) post signs along the closest major road way to the area describing the activity, timing, and requesting for smoke sensitive persons in the area to contact the project coordinator; 2) publish a public interest notification in a local newspapers or other widely distributed media source describing the activity, timing, and requesting for smoke sensitive persons in the area to contact the local CAL FIRE Unit; and 3) develop a list of smoke sensitive persons in the area and contact them prior to burning.

45. Burn Plan Communications: Prior to the start of operations, CAL FIRE personnel should meet with the project coordinator onsite to discuss resource protection measures. Additionally, the project coordinator should specify the resource protection measures and details of the burn plan in the incident action plan and should attend the pre-operation briefing to provide further information.

Chaparral

The historical fire regime of chaparral ecosystems of California is significantly different from other vegetative ecosystems in either northern California or southern California. Generally, the ecosystems do not receive the same amount of precipitation or cold months as in other areas of the state.

46. Standard Fuel Treatments: To diminish the risk and/or rate of fire spread across the fuel break, specific techniques are used suitable to the material being treated (e.g., mowing, prescribed grazing, pruning, vegetation removal, chipping, prescribed burning, and masticating). Treatments focus on removing dead, diseased, dying, decadent, or dense trees and chaparral species. When healthy small trees and chaparral species are removed, the focus is on spacing that will help prevent fire from spreading from canopy to canopy. Removal also benefits by increasing growing capacity with an increase in available nutrients, water, and sunlight. Healthier remaining vegetation allows an increased resistance to insect, pathogen and disease outbreaks. Large diameter trees and chaparral plants with unique structural features and located on the outer edges of the fuel break will be retained to support and promote wildlife species and habitat.

47. Vegetation Treatment: Generally, all downed dead trees and shrubs are removed if they are solid (not rotten) and are not yet embedded into the ground. Downed trees and chaparral that are embedded into soil and which cannot be removed without soil disturbance are left in place. Chipping and masticating of dead material is often used as an alternative to removal. Attention will be given to decreasing horizontal continuity of residual vegetation. By chipping and masticating vegetation, root systems are left in place which helps maintain slope stability and mimics the historic fire regime of the area. Chaparral typically burns in stand-replacing fire events, which remove the above-ground vegetation; however, the below-ground material is generally intact, allowing for sprouting and recolonization of the stand immediately following the fire (perturbance) event.

48. Fuel Break Edges: When possible, chaparral fuel breaks are blended into the surrounding environment. This is accomplished by feathering the edges of the fuel break into the adjacent protected areas for aesthetic purposes. The edges of the fuel break will be treated to prepare the fuels outside the fuel break for future use.

49. Chaparral Over Story Canopy Retention: Fuel breaks in the chaparral will retain sparse canopy that varies by width of the fuel break. Larger width fuel breaks will generally have more unique or large chaparral specimens retained in the outer edges. Below is a general guide for canopy retention in chaparral fuel breaks. Distances are from the centerline of the fuel break. The retained canopies will be estimated in the field.

    a. 0-150 feet: retain 0% or more of over story canopy
    b. 150-250 feet: retain 5% or more of distributed over story canopy
       Greater than 250 feet: retain 10% or more of distributed over story canopy

50. Equipment Use: Soils, site factors, and timing of application should be suitable for any ground-based equipment utilized for creating a fuel break to avoid excessive compaction, rutting, or damage to the soil surface layer. Equipment is used on the contour where feasible. For safety purposes and to protect site resources, treatment methods involving equipment are generally not applied on slopes exceeding 50 percent.

51. Maintenance: Future regrowth of natural or planted vegetation is often controlled by pruning, removal, mowing, or other techniques to maintain the specified reduced fuel load.

52. Be designed to prevent vegetation type conversion, specifically in sensitive habitats such as chaparral and coastal sage-scrub.

53. Tractor or heavy equipment operations should not be conducted on slopes greater than 50%.

54. Tractor or heavy equipment operations should not be conducted on known slides or unstable areas.

55. Fuel break construction within the standard width of a WLPZ is designed to avoid impacts to riparian and aquatic function. Dead or dying trees within a WLPZ should be marked by, or under the supervision of, a Registered Professional Forester prior to tree removal operations. Removal of vegetation within a WLPZ should be limited to situations where it is necessary to create and maintain fuel break function and effectiveness. A RPF or their designee will determine the necessity for removal of vegetation from within a WLPZ.

Implementation Monitoring

Maintenance

CAL FIRE will continue to work with local stakeholders and cooperators through the normal Fire Planning process to ensure maintenance of fuels breaks. This will involve a combination of local planning and prioritization, identification of funding options and project level development, coordination and implementation.

Maintenance that involves chemical treatments will require consultation with a licensed pesticide control advisor (PCA). No chemical treatments should occur within the WLPZ.

Monitoring

CAL FIRE will ensure implementation monitoring occurs to determine whether the required BMPs were applied to the project as specified and planned. Implementation monitoring tracks whether a given practice was successfully applied from project planning through completion. Its purpose is to ensure that proposed work was successfully completed as designed.

The monitoring checklist below will be used to document field-related BMP implementation as follows:

E (Exceeds BMP standards)
A (Acceptable)
D (Departure from BMP standards)
N/A (Not Applicable)

Main implementation monitoring categories for the checklist will include water quality- related BMPs, wildlife-related BMPs, cultural resource-related BMPs, and vegetation/slash treatment-related BMPs:

Observer(s):	Project #	Date:
Implementation Ratings: E (exceeds BMP standards), A (acceptable), D (departure from BMP standards), N/A (not applicable)		
BMP Description	**Rating**	**Comments**
Water Quality-Related		
No tractor use on slopes >50%		
Tractor roads not constructed on slopes >40%		
New road construction or reconstruction ≤ 600 ft.		
No tractor use not on unstable areas or known slides		
Heavy equipment use limited to areas outside of FPR WLPZs		
where possible, and designed to avoid riparian impacts		
Fire breaks, roads, skid trails capable of generating runoff		
and discharging to watercourse drained with waterbars		
During dry conditions, native surface roads wetted/treated for dust		
WLPZ vegetation removal limited to areas necessary to create		
or maintain fuel break function and effectiveness		
Heavy equipment use on slope contours where feasible		
Wildlife-Related		
Known sites of rare, threatened, or endangered plants or animals		
not disturbed, threatened, or damaged during construction		
Non-disturbance buffers established around nests discovered		
during surveys conducted, if vegetation to be removed Feb 1-Aug 31		
Living vegetation removal from channel, bed, or banks avoided		
Water drafting limited to sites approved by agencies		
No de-watering of watercourse channels during construction work		
Equipment fueling and hazardous material use done outside of WLPZs		
Cultural Resources-Related		
Fuel break construction and other heavy equipment use avoids		
disturbance of significant archaeological or historical sites		
Fuel/Slash Treatment-Related		
Slash treatment designed to reduce fire hazard and potential		
insect attack in fuel break areas		

Appendix. Additional Best Management Practices That May be Applicable

This section serves as a source of additional environmental protection actions that CAL FIRE may take to protect sensitive resources. This section may be used by CAL FIRE when resources not identified through the pre-defined environmental compliance process are encountered in the field, or additional protection is desired. The purpose is to provide examples to the public and a guide to the field of potential best management practices that may be implemented during the project in consultation with other agencies. These BMPs are in addition to those developed in the document. They were developed in consultation with regional staff at the Department of Fish and Wildlife and the Regional Water Quality Control Boards.

This library is organized into three sections: General Best Management Practice Recommendations, contains BMPs that may apply to projects and habitat types depending on the actual project description; Erosion Control; Best Management Practice Recommendations by Activity Type are tailored to each project activity type that may occur across all 35 projects, independent of habitat type. Field review of the specific project sites by CAL FIRE Registered Professional Foresters and staff resource professionals will determine the need for additional best management practices. The following list is not intended to be all inclusive and additional site specific BMPs may be developed or omitted on a project by project basis as necessary.

1. General Best Management Practice Recommendations

<u>Upland Habitat Protection</u>

To avoid impacts to nesting birds and/or raptors:

Remove all temporary flagging, fencing, trash, debris, and/or barriers from the project site upon completion of project activities.

- Habitat elements (nest trees, downed logs and woody debris, cavities and tree hollows, snags, large dead branches, etc.) that provide valuable habitat may be identified and retained where no immediate risk to infrastructure exists.

Aquatic Habitat Protection

- Avoid removing vegetation from the stream or stockpiling it in the stream bed or on its bank. The sites selected on which to push this material out of the stream should be selected based upon least damaging impacts to resources including sensitive uplands resources. Retain downed woody debris on upland slopes to hold soils.

- Avoid removing living native vegetation from the channel, bed, or banks of the stream.

- If water drafting becomes a necessary component of the proposed subsequent activity, drafting sites should be planned to avoid adverse effects to special status aquatic species and associated habitat, in-stream flows, and depletion of pool habitat. Fit pump intakes placed in stream/lake water with (1/8) inch or smaller mesh screens for January 1, through March 30, and (1/4) inch or small mesh screens thereafter.

- De-watering streams or other aquatic features have the potential for significant impacts to sensitive biological resources that may result in persistent impacts to threatened and endangered species and should not be conducted unless deemed necessary for project implementation. This decision may be made in consultation with CDFW and the relevant RWQCB. Both agencies will provide timely site-specific recommendations and possible alternatives during these consultations.

- When work in a flowing stream is unavoidable, divert the entire stream flow around the work area by a barrier, temporary culvert, new channel, or other means. Begin construction of the barrier and/or the new channel in the downstream area and continue in an upstream direction and divert the flow only when construction of the diversion is completed. Channel bank or barrier construction should be adequate to prevent seepage into or from the work area. Construct diversion berms of onsite alluvium of low silt content, inflatable dams, sand bags, or other similar materials. Avoid making channel banks or barriers of earth or other substances subject to erosion unless first enclosed by sheet piling, rock rip-rap, or other protective material. Remove the enclosure and the supportive material when the work is completed; normally proceed from downstream in an upstream direction.

- Divert flows in a manner that prevents pollution and/or siltation and provides flows to downstream reaches. Provide flows to downstream during all times that the natural flow would have supported aquatic life. Ensure flows are of sufficient quality and quantity, and of appropriate temperature to support fish and other aquatic life both above and below the diversion. Restore

normal flows to the affected stream immediately upon completion of work at that location.

- Contain sediment and reduce stream turbidity when the work area(s) are rewatered. Install an appropriate sediment control device downstream of the work area to filter sediment. Recommended materials include silt fence, straw bales, or other appropriate devices to prevent sediment runoff during rewatering activities. Keep silt control in place only until the water running through the work area is clear of sediment.

- Recommend no direct ignition within the WLPZ or ELZs. However, it is acceptable for a fire to enter or back into a WLPZ's or ELZ's.

- Shade-producing canopy should be retained where waterbodies are 303(d) listed for temperature. CAL FIRE should notice the appropriate Regional Water Board prior to operations.

- Disturbance and/or creation of bare areas should be designed to avoid sediment discharge to waterbodies.

- Recommend seeking advice from the relevant RWQCB prior to operations for project activities with potential to impact waterbodies that are 303(d) listed as impaired due to sediment.

- Water drafting locations associated with surface waters should be designed to prevent overflow from transporting sediment to the waterbody.

- Water drafting locations should be designed to prevent petroleum products from entering the waterbody.

- All in-stream work, including armoring of banks using unanchored wood structures should be completed in accordance with techniques in the California Salmonid Stream Habitat Restoration Manual. The most current version of the manual is available at: https://www.wildlife.ca.gov/Grants/FRGP/Guidance. The placement and construction of such in-stream structures to persist when subjected to large flood events.

2. Erosion Control

- No high ground pressure vehicles should be driven through project areas when soils are wet and saturated to avoid compaction and/or damage to soil structure. Indicators of saturated soil conditions may include, but are not

limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing material during timber operations, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials.

- Recommend not using heavy equipment on slopes exceeding 65 percent or on slopes greater than 50 percent where the erosion hazard rating is high or extreme.

- Angular, energy dissipating rock slope protection that is properly sized to withstand wash out during peak flows should be installed where appropriate. Only clean material such as rock riprap that is free of trash, debris and deleterious material is to be used as bank stabilization. Asphalt is not an acceptable material.

- Where applicable CDFW recommends the use of bioengineering techniques in the development of stabilization features. The channel should not be narrowed as a result of bank repairs, and features that modify the natural stream gradient (as measured on a longitudinal profile) should not be installed in the channel.

- Non-erodible materials, such as coconut fiber matting, should be used for bank stabilization. Monofilament erosion control materials can trap and kill wildlife.

- Recommend avoid discharging silty/turbid water from dewatering or other activities into the stream. Discharged water should be settled, filtered, or otherwise treated prior to release.

- Recommend avoid placing spoil on the stream side slope where it could enter the stream, or over vegetation.

- Locate permanent spoil storage sites away from a stream/lake, to avoid spoil washing back into a stream/lake, and away from where it should cover aquatic or riparian vegetation, intact upland vegetation, and areas documented with sensitive species.

<u>Construction of Roads and Crossings</u>

- The following crossings type options are recommended:

Use	Presence of fish or water	Type options
Permanent	Fish Bearing	bridge, plate arch, CMP, rocked ford
	Wet during operations	CMP, vented ford
	Dry during operations	rocked ford
Seasonal	Fish Bearing	bridge, plate arch, CMP, rocked ford
	Wet during operations	bridge, CMP, Vented ford
	Dry during operations	rocked ford
Temporary	Fish Bearing	bridge, CMP with rock fill, Spittler, rocked ford
	Wet during operations	bridge, CMP with rock fill, Spittler
	Dry during operations	rocked ford, Spittler
Tractor/Skid	Fish Bearing	bridge, CMP with rock fill, Spittler
	Wet during operations	Bridge, CMP with rock fill, Spittler, Humboldt
	Dry during operations	rocked ford, Spittler, Humboldt, dipped
Seep/wet area	-	French drain, burrito, rocked ford, CMP

Definitions:
CMP = Corrugated metal pipe.
Plate arch = Half metal pipe with concrete footings and natural channel inside.
Vented ford = "Vented ford", Armored ford with CMP to carry low flows. Entire ford is built to carry 100-year flows over top.
Spittler = Log fill crossing topped with straw layer and native soil for running surface; may include CMP for flow.
Humboldt = Log fill with native soil for running surface.
Dipped = Native dirt fill, use then dip/blade out fill when done.
Burrito = Rock fill surrounded by filter fabric under road base, burrito shape.
Corduroy = Single layer of logs on ground, can have filter fabric layer under logs.
French drain = Perforated pipe surrounded by rock and filter fabric.

- Where new roads are installed, construction should not exceed 600' in length per project. Operational standards provided in the Act and Rules for Forest Fire Prevention Exemption road construction (Title 14 CCR 1038.3) will apply.

- Recommend avoiding work in perennial watercourses during rain events and high flows to protect salmonids and special-status amphibians. Follow the Act

and Rules (or similar design standard, e.g., Pacific Watershed Associates) for rural road sediment control. Recommend avoid work in the winter season.

- When operations require moving of equipment across a flowing stream, conduct such operations without increasing stream turbidity. For repeated crossings, install a bridge, culvert, or rock-fill crossing. Crossings should meet the 100-year flood flow and associated debris standard in the Act and Rules. Crossing installation should not occur during the winter period as defined in the Act and Rules.

- Culverts should be properly aligned within the channel and otherwise engineered, installed and maintained, to resist washout and erosion of the stream bed, stream banks and/or fill; embedded below the natural channel grade to facilitate substrate deposition on the culvert floor; and passable to fish. Culvert backfill material should be free of rocks, limbs or other debris that could dent the pipe or allow water to seep around the pipe.

- It is recommended that culvert fill length, width, and height dimensions not exceed those of the original design/installation or the original naturally occurring topography, contour, and elevation.

- It is recommended that fill within a watercourse be limited to the minimal amount necessary to accomplish the project activities.

- Move structures and associated materials not designed to withstand high water flows to areas above high water before such flows occur.

- Recommend avoid impairing water flow (velocity and low flow channel width) when installing bridges, culverts, or other structures. Place bottoms of temporary culverts at or below stream channel grade, and bottoms of permanent culvert below stream channel grade.

- Size storm drains lines/culverts adequately to carry peak storm flows for the drainage to one outfall structure. Properly align the storm drain lines/culverts and the outfall structure within the stream and otherwise engineer and install to assure resistance to washout, and to erosion of the stream bed, stream banks and/or fill. Dissipate water velocity at the outfall, to reduce erosion.

- Bridges are the preferred crossing type for fish-bearing Class I watercourses. Where bridges are used, they should be constructed as clear span bridges without abutment fills below the ordinary bankfull stage. Abutments within the bankfull stage should be armored with rock rip-rap sized to withstand displacement by expected flows. Bridges should be set high enough to pass the entire 100-year peak flow and floating debris. Log stringer bridges may

be used, but all surfacing material should be clean rock if the surface material is not otherwise planked, plated, or paved. Bridge abutments and slope protection should not constrict the channel.

- Project design may include use flatcars, log stringers, plate, or other clear-span designs as temporary bridges. Temporary bridges should be removed by the end of the work period in each year. Fills for abutments below bankfull stage should be log and/or rock. Log stringer bridges should be surfaced with filter fabric or straw, under a road surface layer of rock, to prevent surface material from entering channel during use.

- Bottomless arch culverts or embedded culvert design methods (i.e., stream simulation or active channel design) in accordance with the "Culvert Criteria for Fish Passage" found as Appendix IX-A of the California Salmonid Stream Habitat Restoration Manual (https://www.wildlife.ca.gov/Grants/FRGP/Guidance) are recommended. Bottomless culverts meeting the culvert width criteria in the manual and culvert footings should be deep enough to avoid scour exposure.

- Inspect all crossings appurtenant to proposed operations at least once after October 15th following the first storm event producing bankfull stage prior to completion of operations. The inspection should ensure that crossings are functioning as designed, road approaches hydrologically disconnect the road prism from waters, and the fine sediment present on road approach surfaces is prevented from delivery to streams.

- Culverts designed to pass the estimated 100-year flood flow, including debris and sediment loads, without overtopping or diverting. Culvert sizing factors should include transportation of bedload and the abundance and size of woody debris likely to be introduced to the stream upstream of the culvert crossing.

- Culverts and their outfall structures should be aligned with the stream channel, as wide as or wider than the channel width, and should be placed with the bottom set at or slightly below the natural streambed elevation to the maximum extent feasible.

- If culverts cannot or will not be set to grade, they should have downspouts and/or energy dissipators below the outfall as needed to effectively control erosion. If half-round downspouts (flumes) are used, they should be placed in line with the culvert, sized larger than the culvert and of sufficient size to accommodate entire anticipated stream flow. Downspouts should be securely attached to the culvert and staked or otherwise anchored to the fill slope.

- Culverts should extend lengthwise completely beyond the toe of fill.

- Sediment depositions in the stream channels at the inlets of the culvert should be excavated and disposed of at a location and in a manner where sediment should not enter into the waters of the State.

- During crossing removal, recreate the natural channel grade and orientation, with a channel bed that is as wide as or slightly wider than the original watercourse.

Pollution

- To the maximum extent feasible confine parking, material storage areas, and equipment storage outside of the river or steam channel and on previously disturbed areas.

- Prevent debris, soil, silt, sand, bark, slash, sawdust, rubbish, construction waste, cement or concrete or washings thereof, asphalt, paint, oil or other petroleum products or any other substances which could be hazardous to aquatic life, or other organic or earthen material from any logging, construction, or other associated project related activity from contaminating the soil and/or entering into or placed where it may be washed by rainfall or runoff into, waters of the State. When operations are completed, remove any excess materials or debris from the work area. Recommend avoid depositing rubbish within 150 feet of the high-water mark of any stream or lake.

- Recommend avoid pouring cement and concrete within 150 feet of a stream if precipitation is predicted within 24-hours. Recommend avoid pouring cement in or near a flowing stream, to reduce the potential for significant adverse impacts to the stream, water, or biota.

- Check and maintain any equipment or vehicles driven and/or operated within or adjacent to the stream/lake daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life.

- Position stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the stream/lake over drip pans. Stationary heavy equipment needs suitable containment to handle a catastrophic spill/leak. Locate clean up equipment such as extra boom, absorbent pads, skimmers, on site prior to the start of activities adjacent to the streambed or lake.

- Install necessary containment structures to control the placement of wet concrete and to prevent it from entering into the channel outside of those structures.

Invasive Species

- Where applicable, work should begin in the non-infected area and progress towards the infected area to minimize spread of pests around the activity site.

- To reduce the spread of new invasive plants, use certified weed-free straw and mulch.

3. Activity-Specific Best Management Practice Recommendations

These project-specific BMPs are tailored by CDFW to each project activity type that may occur across all 35 projects, and independent of habitat type.

Herbicide

- Herbicides should be applied by a certified pest control applicator per the label, following all applicable laws and regulation.

Mechanical Removal

- Tractor or heavy equipment operations should not be conducted on slopes greater than 50%.

- Tractor roads should not be constructed on slopes greater than 40%.

- Tractor or heavy equipment operation should not be conducted on known slides or unstable areas.

- Heavy equipment should not be conducted within the standard WLPZs.

- Should operations extend into the winter period, as defined by the Forest Practice Act and Rules, limitations on operations related to using saturated roads, stabilizing erodible soils and installing erosion control measures may be followed.

- Equipment maintenance should occur outside the WLPZ.