

# **Exceptional Event Demonstration for an Exceedance of the 2012 Annual PM<sub>2.5</sub> NAAQS at Grass Valley, California on April 20, 2021 Due to Smoke From a Prescribed Fire**

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# I. Introduction

## I.a. Overview

On April 19, 2021, the Tahoe National Forest (TNF) unit of the U.S. Forest Service (USFS) conducted a prescribed fire (hereafter referred to as the Deadwood Project April 19 prescribed fire) as part of the Deadwood Vegetation Management and Fuels Reduction Project (Deadwood Project) in Placer County, California. Smoke from this prescribed fire was transported overnight to the Grass Valley area in Nevada County, California, and impacted the Grass Valley-Litton Building PM<sub>2.5</sub> monitor (Grass Valley monitor or monitoring site) operated by Northern Sierra Air Quality Management District (NSAQMD) early the following morning, causing an exceedance of the 2012 annual PM<sub>2.5</sub> National Ambient Air Quality Standard (NAAQS) on April 20, 2021. California Air Resources Board (CARB) and NSAQMD are submitting this demonstration, prepared collaboratively with a team of staff from the EPA and further supported by the Placer County Air Pollution Control District (PCAPCD) USFS, justifying exclusion of the data in Table 1 below from regulatory decision-making.

Table 1. Exceedance monitor, date, and concentration for this demonstration.

Date	Monitoring Site	Concentration (µg/m <sup>3</sup> )
April 20, 2021	Grass Valley (06-057-0005)	15.8

On September 19, 2023, CARB and NSAQMD submitted an Initial Notification for this event to the EPA. The request indicated that the data identified in Table 1 was impacted by smoke from a prescribed fire and requested review of the event under the case-by-case provision at 40 CFR 50.14(a)(1)(i)(F). Table 2 below shows the impact of exclusion of the data on the design value (DV) for Nevada County, an attainment area for the 2012 annual PM<sub>2.5</sub> NAAQS. On October 18, 2023, the EPA issued a response to the Initial Notification, requesting submission of this demonstration no later than January 12, 2024. The Initial Notification and the EPA's response are included in Appendix A of this demonstration.

Table 2. Grass Valley 2020-2022 DVs for the 2012 annual PM<sub>2.5</sub> NAAQS.

Monitoring Site	2020-2022 DV without EPA Concurrence (µg/m <sup>3</sup> )	2020-2022 DV with EPA Concurrence (µg/m <sup>3</sup> )
Grass Valley (06-057-0005)	9.6	9.6*

\*Note: exclusion of the data in Table 1 above results in a decrease of 0.01 µg/m<sup>3</sup> to the DV before rounding. After rounding, the DVs are the same. See 40 CFR part 50, Appendix N, §4.3 and §4.4. These DVs include other data flagged as affected by wildfires in the 2020-2022 period that may also be eligible for exclusion.

As described in the Initial Notification, the Grass Valley monitor is located in Nevada County, within NSAQMD's jurisdiction, which is classified as unclassifiable/attainment for the 2012

annual PM<sub>2.5</sub> NAAQS, and this event does not currently have regulatory significance for a specific action under that NAAQS. However, as of this date, no agency has prepared and submitted a demonstration for a prescribed fire smoke event to the EPA for review since the 2016 Exceptional Events Rule (EER) revisions were finalized. Therefore, CARB, NSAQMD, and the EPA jointly believe there is a compelling interest in developing a demonstration for a prescribed fire event with respect to the existing 2012 annual PM<sub>2.5</sub> NAAQS, to both provide an example for air and land management agencies of such a demonstration and to help identify any challenges for agencies in the demonstration preparation process, for both the current and proposed revised annual PM<sub>2.5</sub> NAAQS. As such, this demonstration is being submitted to the EPA for review under the case-by-case provision in 40 CFR 50.14(a)(1)(i)(F). In addition, while this event does not impact the DV for the 2012 annual PM<sub>2.5</sub> NAAQS, it is possible that a demonstration for this type of event would be needed under the proposed revisions to the annual PM<sub>2.5</sub> NAAQS, once finalized. For these reasons, a team of staff at the EPA have assisted CARB and NSAQMD in preparing this demonstration; we request that independent staff at the EPA, who did not assist in the preparation of this demonstration, review and evaluate it and determine whether to concur.

The EPA has outlined requirements for demonstrations for prescribed fire events in the EER and has further clarified those requirements in a guidance document, "Exceptional Events Guidance: Prescribed Fire on Wildland that May Influence Ozone and Particulate Matter Concentrations" (issued in 2019, hereafter referred to as the Prescribed Fire Guidance). The Prescribed Fire Guidance also refers to a separate EPA-issued guidance document, "Guidance on the Preparation of Exceptional Events Demonstrations for Wildfire Events that May Influence Ozone Concentrations" (issued in 2016, hereafter referred to as the Wildfire Ozone Guidance), for outlining certain requirements that apply to both prescribed fires and wildfires. This demonstration will describe how this event meets the requirements of the EER as described in regulation and both guidance documents, as applicable.

## I.b. Background - Geography/Topography

California is divided geographically into air basins to manage the air resources of the State on a regional basis. An air basin generally has similar meteorological and geographic conditions throughout. The State is currently divided into 15 air basins, and further subdivided into 35 local air pollution control districts or air quality management districts.

Both NSAQMD, which operates the affected monitor, and the central portion of PCAPCD, which has jurisdiction over the area where the prescribed fire was conducted, are located in the Mountain Counties Air Basin (MCAB). (The eastern portion of PCAPCD is located in the Lake Tahoe Air Basin, while the western portion is located in the Sacramento Valley Air Basin.) The MCAB, which extends from Plumas County in the north to Mariposa County in the south, lies along a portion of the Sierra Nevada mountain range, close to or contiguous with the Nevada border, and covers an area of roughly 11,000 square miles. Elevations

range from several hundred feet in the foothills to over 10,000 feet above mean sea level along portions of the Sierra crest. Topography is highly variable, including rugged mountain peaks and valleys with extreme slopes and differences in elevation in the Sierra Nevada Mountains, as well as rolling foothills to the west. The general climate of the MCAB varies considerably with elevation and proximity to the Sierra range. Regional winds are affected by the mountains and hills, which direct surface air flows, cause shallow vertical mixing, and create areas of high pollutant concentrations by hindering dispersion.<sup>1</sup>

NSAQMD's jurisdiction includes the California counties of Nevada, Sierra, and Plumas. Nevada County spans the Sierra Nevada mountain range and is bordered on the north by Sierra County and the south by Placer County, in the MCAB. To the east is the State of Nevada and to the west is Yuba County in the Sacramento Valley Air Basin. Nevada County has a population of approximately 100,000 with more than 80 percent of the population in the western portion of the county. The largest town in the western portion of the county is Grass Valley, with an estimated population of 12,817 as of 2019. Grass Valley is at an elevation of 2,500 ft in the lower western Sierra Foothills.<sup>2</sup>

Placer County is located generally northeast of the San Francisco Bay Area and southwest of Reno, Nevada. The county encompasses 1,506.5 square miles (including 82.5 square miles of water) or 964,140 acres (including 52,780 acres of water) and is bounded by Nevada County to the north, the State of Nevada to the east, El Dorado and Sacramento counties to the south, and Sutter and Yuba counties to the west.<sup>3</sup> The southwestern portion of the county includes suburban regions of the greater Sacramento area, while the northeastern area contains part of the Lake Tahoe Basin and portions of three national forests, including the Tahoe National Forest. A map showing Placer and Nevada Counties and the City of Grass Valley in relation to San Francisco, Sacramento, and Reno is shown in Figure 1.

Although characterized by warm, dry summers and wet winters, the regions of the MCAB exhibit considerable climatic diversity. The high-country region and Sierra Nevada mountains receive heavy snowfall during the winter, while weather in the valley areas is usually milder, with the foothill areas exhibiting winter climatic conditions approximating the high-country region and summer conditions closer to those in the valley areas. Predominately the surface winds in the MCAB vary from the valley through the foothills into the high-country region. During the spring, summer and fall seasons, temperature inversions are a normal occurrence, reducing dispersion of smoke and other air pollutants.<sup>4</sup>

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<sup>1</sup> Exceptional Events Demonstration for Ozone Exceedances – Northern California 2020 Wildfire Events, California Air Resources Board, November 18, 2021, pp. 8-9.

<sup>2</sup> Exceptional Events Demonstration for Ozone Exceedances – Northern California 2020 Wildfire Events, California Air Resources Board, November 18, 2021, p. 11.

<sup>3</sup> Placer County Air Pollution Control District Smoke Management Program, adopted December 13, 2001, p. 3.

<sup>4</sup> Placer County Air Pollution Control District Smoke Management Program, adopted December 13, 2001, p. 3.



Figure 1. Map of Nevada and Placer counties, the Mountain County Air Basin, and the City of Grass Valley and surrounding areas.

### I.c. Background - Monitoring

The CARB Primary Quality Assurance Organization (PQAO) is comprised of 32 of the 35 air districts in California; both NSAQMD and PCAPCD are part of the CARB PQAO. NSAQMD has operated ambient PM<sub>2.5</sub> monitors at the Grass Valley monitoring site since 1999. The site is generally located northeast of the downtown area and southwest of Nevada City, generally to the west of California Highway 49 (see Figure 2).

Initially, monitoring was accomplished through a filter-based Federal Reference Method (FRM) monitor, which collected a 24-hour sample once every 6 days. This monitor had good completeness statistics until the fourth quarter of 2020, at which time all the remaining quarters were considered incomplete until it shut down in September of 2021. Meanwhile, in late 2017, NSAQMD installed a continuous Federal Equivalency Method (FEM) at the same site, after concentrations in 2013-2015 triggered a requirement for daily sampling at the site. The FEM became the primary monitor at the site in 2020, with the FRM monitor



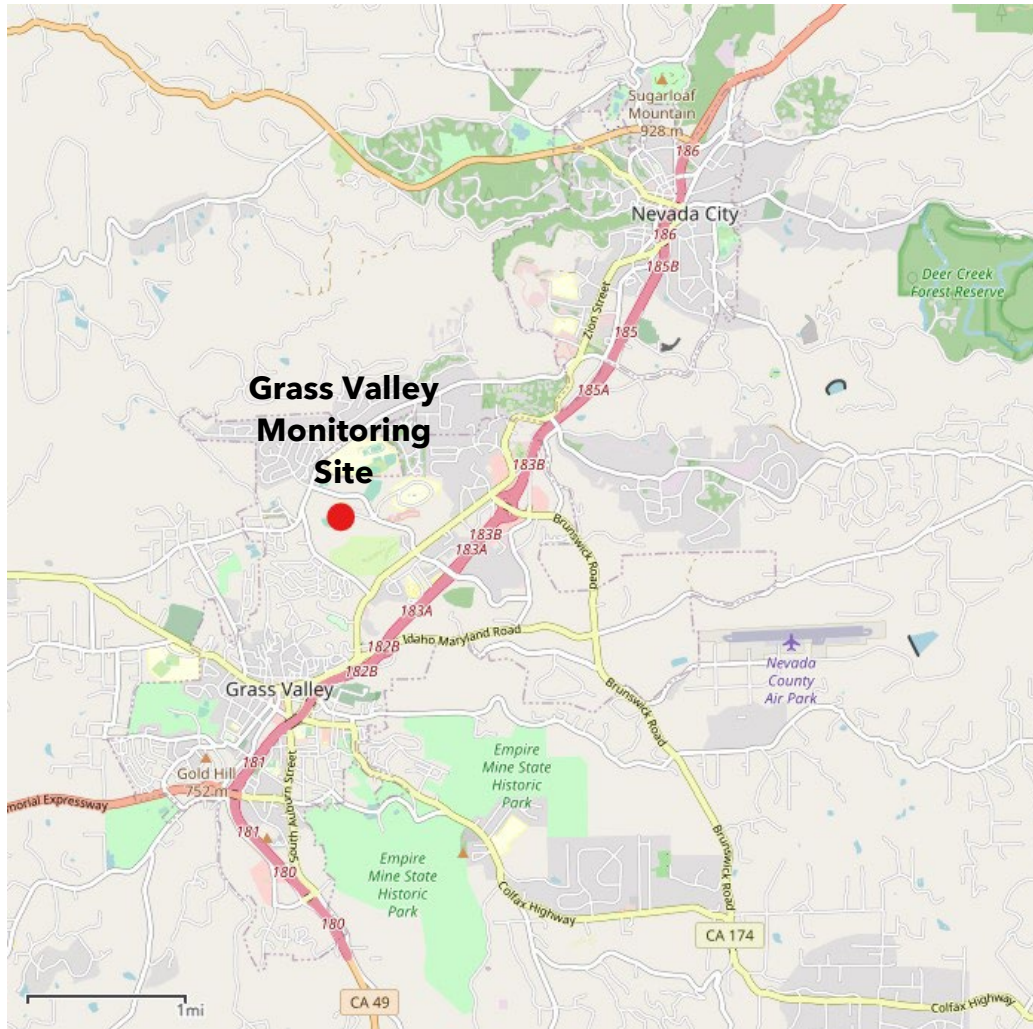


Figure 2. Map of the Grass Valley site.

transitioning to supplementary. The FEM monitor collects hourly concentration data, and was operating in April 2021, including on April 20, 2021.

There are numerous other regulatory  $PM_{2.5}$  monitoring sites within 60 miles of Grass Valley (see Figure 3), operated by CARB or other districts within the CARB PQAO. Most of these sites are outside of the MCAB, in either the Sacramento Valley Air Basin or the Lake Tahoe Air Basin, where concentrations can differ substantially from one another due to the variable and complex terrain. The Sacramento Valley monitors tend to report higher concentrations than the Grass Valley site on an annual basis. The 2020-2022 annual and 24-hour  $PM_{2.5}$  DVs for Grass Valley and the four closest regulatory monitors are presented in Table 3.

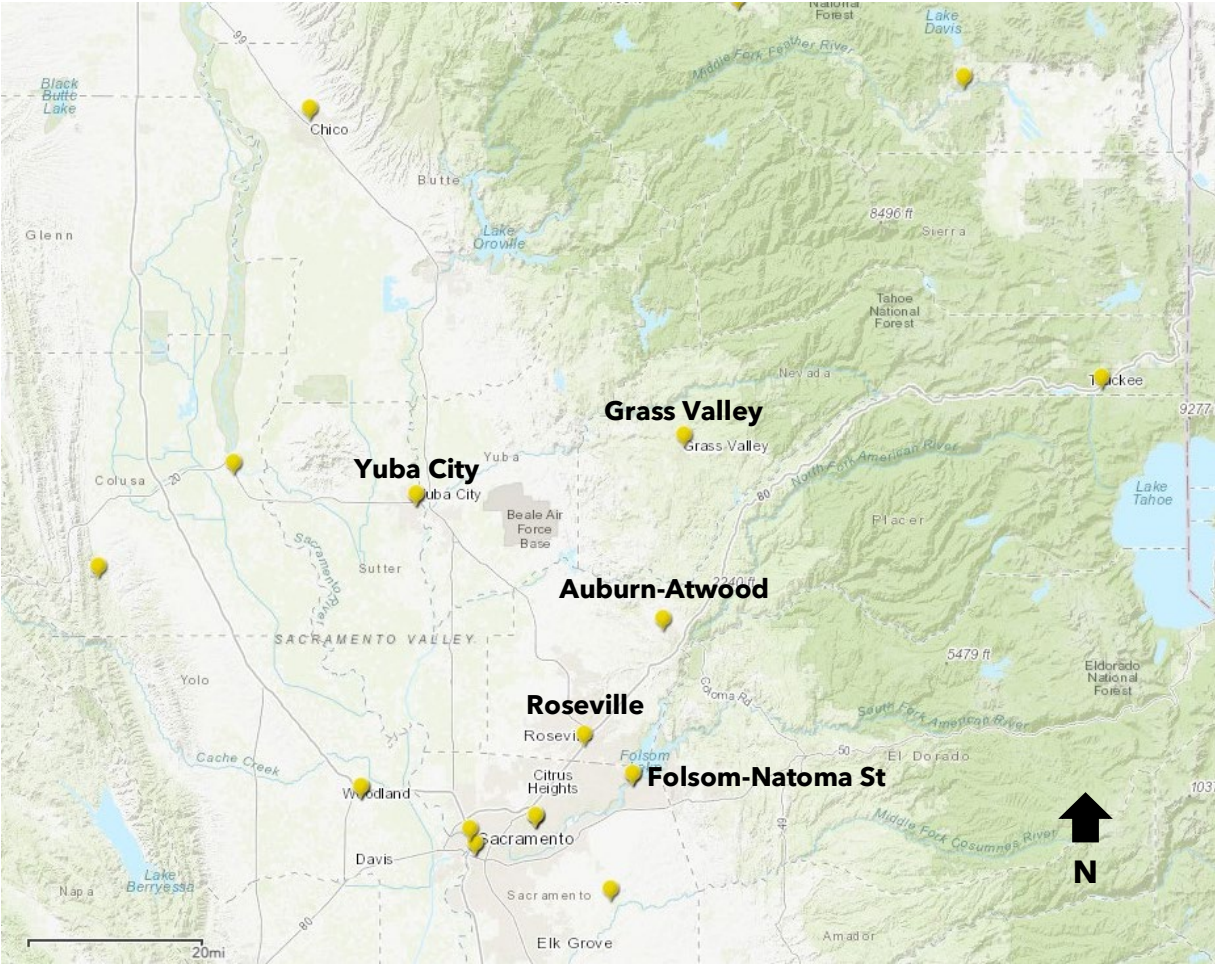


Figure 3. PM<sub>2.5</sub> monitoring sites located in areas around the Grass Valley site. Grass Valley and the four closest monitors are labeled. Source: Interactive Map of Air Quality Monitors at <https://www.epa.gov/outdoor-air-quality-data/interactive-map-air-quality-monitors>.

Table 3. 2020-2022 PM<sub>2.5</sub> DVs and 2022 annual average for sites near the Grass Valley monitoring site.

Site	24-hour DV (µg/m <sup>3</sup> )	Annual DV (µg/m <sup>3</sup> )	2022 annual average (µg/m <sup>3</sup> )
Grass Valley	62	9.6	5.9
Auburn-Atwood	65	9.8	7.4
Yuba City	55	13.8	10.7
Roseville	40	10.9	7.9
Folsom-Natoma St	27*	9.1*	6.4

\* Indicates that the data is incomplete, which may influence DVs. Source: The EPA’s Air Quality System (AQS) database.

## I.d. Background – Emissions

As a largely rural county, Nevada County has fewer anthropogenic sources of PM<sub>2.5</sub> than more populated areas of the state. A review of 2020 National Emissions Inventory (NEI) data<sup>5</sup> for Nevada County shows that there are 15 point sources of PM<sub>2.5</sub> totaling 9.1 tons of emissions per year. Area sources contribute a total of 1,140.2 tons of PM<sub>2.5</sub> emissions per year; emissions from wildfires and prescribed fires make up about 25% of the area source total, while emissions from residential wood combustion represent another 29%. Other contributing area sources include mobile sources, agricultural activity, dust, and other fuel combustion, among others. Placer County has more populated areas than Nevada County does, including suburbs of Sacramento County. The total point source emissions of PM<sub>2.5</sub> in Placer County are 136.3 tons per year, while area sources contribute 2,534.5 tons per year. Smoke from wildfires and prescribed fires contribute about 6% of the total emissions, while smoke from residential wood combustion makes up 26% of the total. Other contributing area sources in Placer County include mobile sources, open burning of vegetative debris, various industrial processes, and dust.

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<sup>5</sup> Data is available through the Online 2020 NEI Data Retrieval Tool, which can be accessed through a link from the webpage at <https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data>.

## II. Narrative Conceptual Model

This section addresses the EER requirement at 40 CFR 50.14(c)(3)(iv)(A), which requires a narrative conceptual model that describes the event causing the exceedance and a discussion of how emissions from the event led to the exceedance at the affected monitor. In addition, this section includes a summary of how mitigation requirements in 40 CFR 51.930(a) were addressed.

### II.a. Event Progression and Emission Impacts

On April 19 and 20, 2021, the American River Ranger District on the USFS TNF conducted prescribed fires as part of the Deadwood Project. The goals of the Deadwood Project include reduction of the existing fuel load to decrease fire hazards in the area, enhancing wildlife habitat, and reintroducing fire into a fire-adapted ecosystem. The Deadwood Project is further described in the Deadwood Vegetation Management and Fuels Reduction Project Environmental Assessment (Deadwood Project EA).<sup>6</sup> The Deadwood Project EA specifically emphasizes the need to decrease the potential for severe wildfire effects within the project area and beyond; the need for reductions in stand density to improve forest resilience to insect, disease, and drought-induced mortality; and the desire to increase tree species diversity and enhance stand structural diversity to develop healthy and resilient forest stands.

The Deadwood Project EA outlines the need for action in this specific region of the Tahoe National Forest, in the broader context of the land management objectives outlined in the Tahoe National Forest Land and Resource Management Plan, issued in 1990, as amended by the Sierra Nevada Forest Plan Record of Decision (2004). The objectives highlighted in these plans are further described in Sections IV. Human Activity Unlikely to Recur at a Particular Location and V. Not Reasonably Controllable or Preventable of this demonstration. The Deadwood Project Area is divided into several different units; the Deadwood Project prescribed fires that took place on April 19 and 20, 2021 occurred within Units 19, 22, 23, and 24, on the northern side of the project area. See Figure 4.

The fires were conducted under the PCAPCD Smoke Management Program (SMP). The PCAPCD SMP is a CARB-approved SMP under the California Health and Safety Code Section 41856, through the promulgation of guidelines in the California Code of Regulations Title 17. The Title 17 guidelines outline the state requirements for air district SMPs and are considered a state-certified SMP for purposes of the EPA EER. The PCAPCD SMP, in combination with the PCAPCD burn regulation, outlines the requirements for burn permits, burn registration and reporting, a burn authorization system, smoke management

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<sup>6</sup> Environmental Assessment for Deadwood Vegetation Management and Fuels Reduction Project, USDA Forest Service, Pacific Southwest Region, May 2011.



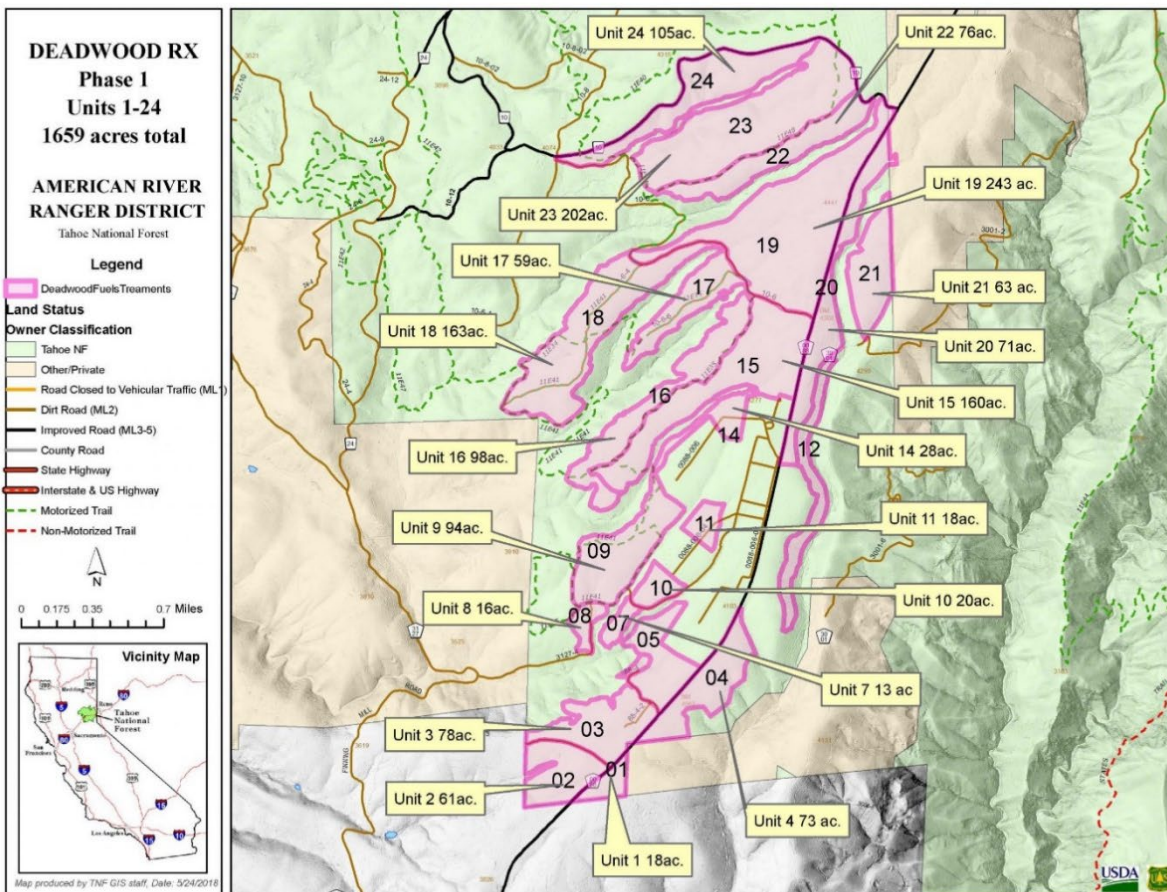


Figure 4. Map of the Deadwood Project Units 1-24.

resources, district resources, and inspection and enforcement. As part of the PCAPCD's SMP, a smoke management plan is required for the project. The Deadwood Phase I Smoke Management Plan, which included Units 19, 22, 23, and 24, was approved by PCAPCD on October 19, 2020, and was in effect during the April 19, 2021, burn. More information regarding the California and Placer County SMPs and the Deadwood Phase I Smoke Management Plan can be found in Section V. Not Reasonably Controllable or Preventable of this demonstration.

According to burn documentation submitted in the California Prescribed Fire Information Reporting System (PFIRS),<sup>7</sup> the USFS requested authorization on April 18, 2021, to conduct underburns of Deadwood Project Units 23 (105 acres) and 24 (202 acres), near the town of Foresthill, California, on April 19, 2021. Per information in PFIRS, the requests were submitted at 1:29pm on April 18, 2021, and approved at 3:31pm the same day. On April 19, 2021, the USFS began conducting a burn of these two units (referred to as the Deadwood Project April 19 prescribed fire). MODIS Terra fire detections indicate that the fire was

<sup>7</sup> PFIRS can be accessed at <https://ssl.arb.ca.gov/pfirs/>.

ignited prior to 11:15 a.m. Pacific Standard Time (PST).<sup>8</sup> Based on MODIS fire detections measured overnight between April 19 to April 20, 2021, residual burning continued into the evening and overnight hours. Additional burns within the Deadwood Project were conducted the next day on April 20, 2021, on Units 19 and 22 (referred to as the Deadwood Project April 20 prescribed fire), per information reported in PFIRS. Figure 5 shows a map of prescribed fire locations from PFIRS for all four units, in relation to the Grass Valley monitoring site and the town of Foresthill. The burn units are approximately 30-35 km (18-22 miles) south-east of the monitor location, with an approximate center-point of 39.1140 degrees north latitude and 120.7340 degrees west longitude.

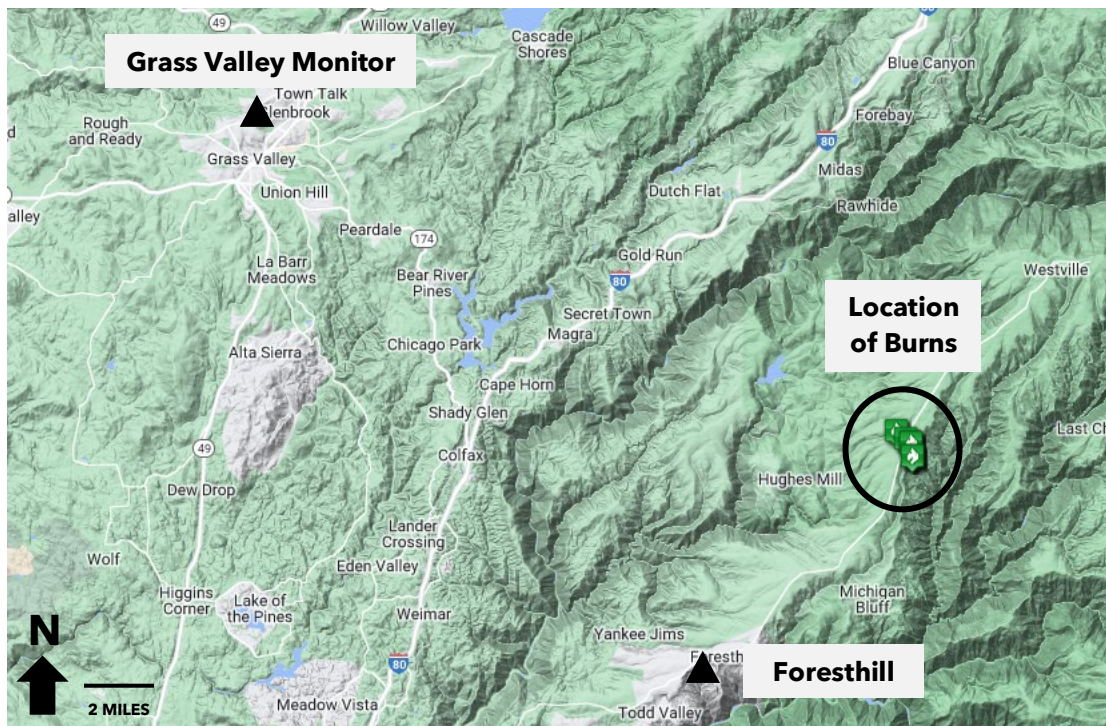


Figure 5. Location of burns on April 19 and 20, 2021, as identified in PFIRS.

Due to local meteorological patterns and topography influences, as shown by the National Oceanic and Atmospheric Administration (NOAA) Hazard Mapping System (HMS) smoke contours and HYSPLIT trajectory modeling found in Section III. Clear Causal Relationship of this demonstration, smoke from the fires conducted on April 19, 2021, was transported to the northwest late that evening. This smoke reached the Grass Valley area early in the morning hours on April 20, 2021, and caused increased concentrations of PM<sub>2.5</sub> at the ground level, including at the regulatory PM<sub>2.5</sub> monitor, for several hours on April 20, 2021. Figure 6 shows the hourly PM<sub>2.5</sub> concentrations measured at the monitoring site between

<sup>8</sup> In April 2021, the local time zone for the Grass Valley area was Pacific Daylight Time (PDT). However, for consistency in analyses of technical data, this demonstration will use PST throughout the document. The offset from PDT to PST is one hour later (*i.e.*, 12:00 PM in PST is 1:00 PM in PDT).

Average Hourly PM2.5 for Days Around Event (4-20-2021)

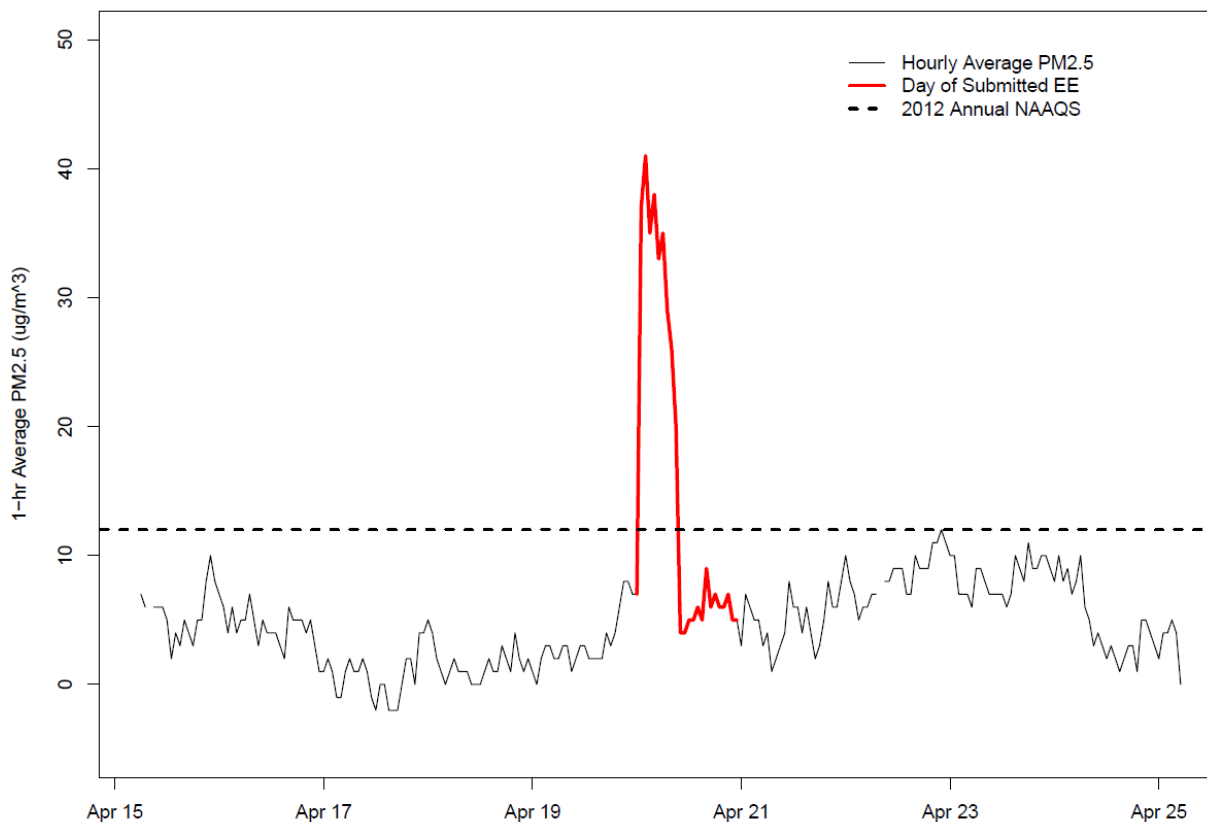


Figure 6. Hourly concentrations measured at the Grass Valley FEM monitor between April 15 and April 25, 2021.

April 15 and April 25, 2021, with the hours on April 20, 2021 highlighted in red. As seen in the figure, hourly concentrations increased substantially around 1:00 a.m. PST and remained clearly elevated until approximately 10:00 a.m. PST, when the smoke cleared. Based on the timing of the elevated concentrations in the early morning, before additional fire activity would have begun in the area on April 20, 2021, the prescribed burns that took place on April 20, 2021 do not appear to have contributed to the elevated concentrations.

## II.b. Mitigation of the Event

As described in 40 CFR 51.930(a), states requesting to exclude data due to exceptional events must take appropriate and reasonable actions to protect public health from exceedances or violations of the national ambient air quality standards. These include providing for, at a minimum, prompt public notification whenever concentrations are expected to exceed a NAAQS, public education on actions individuals may take to reduce exposures to unhealthy air quality during events, and implementation of appropriate measures to protect public health from event-caused exceedances or violations of the NAAQS.

With respect to public notification and public education, USFS issued a news release that was sent to local air quality districts, including NSAQMD and PCAPCD, as well as several local media representatives, on April 18, 2021. This news release identified that the USFS TNF American River Ranger District would be conducting prescribed burns for the Deadwood Project over the course of the following week. USFS also issued a notice of the prescribed fires that was shared via the USFS TNF Twitter account (@Tahoe\_NF) on April 19, 2021. This notice indicated that smoke from prescribed fire operations may settle into valleys in the evening and lift in the morning, similar to the pattern observed in PM<sub>2.5</sub> data at the Grass Valley site. The prescribed fire notice also identified several protective measures that individuals should take to reduce smoke exposure as needed, including limiting outdoor activities, avoiding strenuous outdoor activity and remaining indoors, and considering temporarily relocating or closing all doors and windows on the day of prescribed fire activities. Documentation of the email and notice is available in Appendix B.

With respect to implementation of measures to protect public health, as previously noted, these fires were conducted under the State of California and Placer County SMPs. The Placer County SMP requires incorporation of several mitigation measures, including an evaluation of burn alternatives and descriptions of smoke mitigation techniques to be applied to the fire, into the smoke management plan for the burn. The Deadwood Phase I Smoke Management Plan included evaluation of hand thinning/pile burn/chipping as alternatives to burning and a description of why the alternatives were not used; it also included a smoke mitigation section that discussed use of a test fire, weather monitoring, and potential discontinuation of ignition and initiation of mop up if smoke conditions are unfavorable. The Smoke Management Plan also included a review of smoke-sensitive locations near the burn and potential smoke impacts in these areas. See Appendices C and E. More information regarding the State of California and Placer County SMPs and the Deadwood Phase I Smoke Management Plan can be found in Section V. Not Reasonably Controllable or Preventable of this demonstration.

## II. Conclusion

The conceptual model above shows how the smoke from the Deadwood Project April 19 prescribed fire, which took place on April 19, 2021, and was needed to achieve land management objectives consistent with the requirements in the EER, led to the exceedance of the 2012 annual PM<sub>2.5</sub> NAAQS on April 20, 2021. Emissions from the prescribed fire on April 19, 2021, were transported to the Grass Valley area overnight due to local meteorological patterns and topography influences and caused elevated concentrations at the monitor between 1:00 a.m. and 10:00 a.m. PST. Efforts to mitigate impacts of the prescribed fire emissions on public health included public notification and education, as well as smoke mitigation measures required by the SMP. This demonstration requests concurrence on the exceedance of the 2012 annual PM<sub>2.5</sub> NAAQS measured at the Grass Valley site on April 20, 2021 for exclusion from regulatory decision making.



### III. Clear Causal Relationship

This section addresses the EER requirements at 40 CFR 50.14(c)(3)(iv)(B) by showing that the event affected air quality in such a way that there exists a clear, causal relationship between the specific event and the monitored exceedance, and at 40 CFR 50.14(c)(3)(iv)(C) by providing analyses comparing the claimed event-influenced concentrations to concentrations at the same monitoring site at other times. The Prescribed Fire Guidance and Wildfire Ozone Guidance outline the expected components of a clear causal relationship portion of a demonstration. These include a comparison of the event-related concentration to historical concentrations, evidence that the emissions from the prescribed fire were transported to the monitor, and evidence that the prescribed fire emissions affected the monitor.

#### III.a. Comparison to Historical Concentrations

The historical data analysis section of this demonstration will focus on 2018 - 2022 PM<sub>2.5</sub> FEM data from the Grass Valley site FEM monitor. As discussed above, the FRM monitor only operated every 6<sup>th</sup> day and did not sample on the day of the exceptional event (April

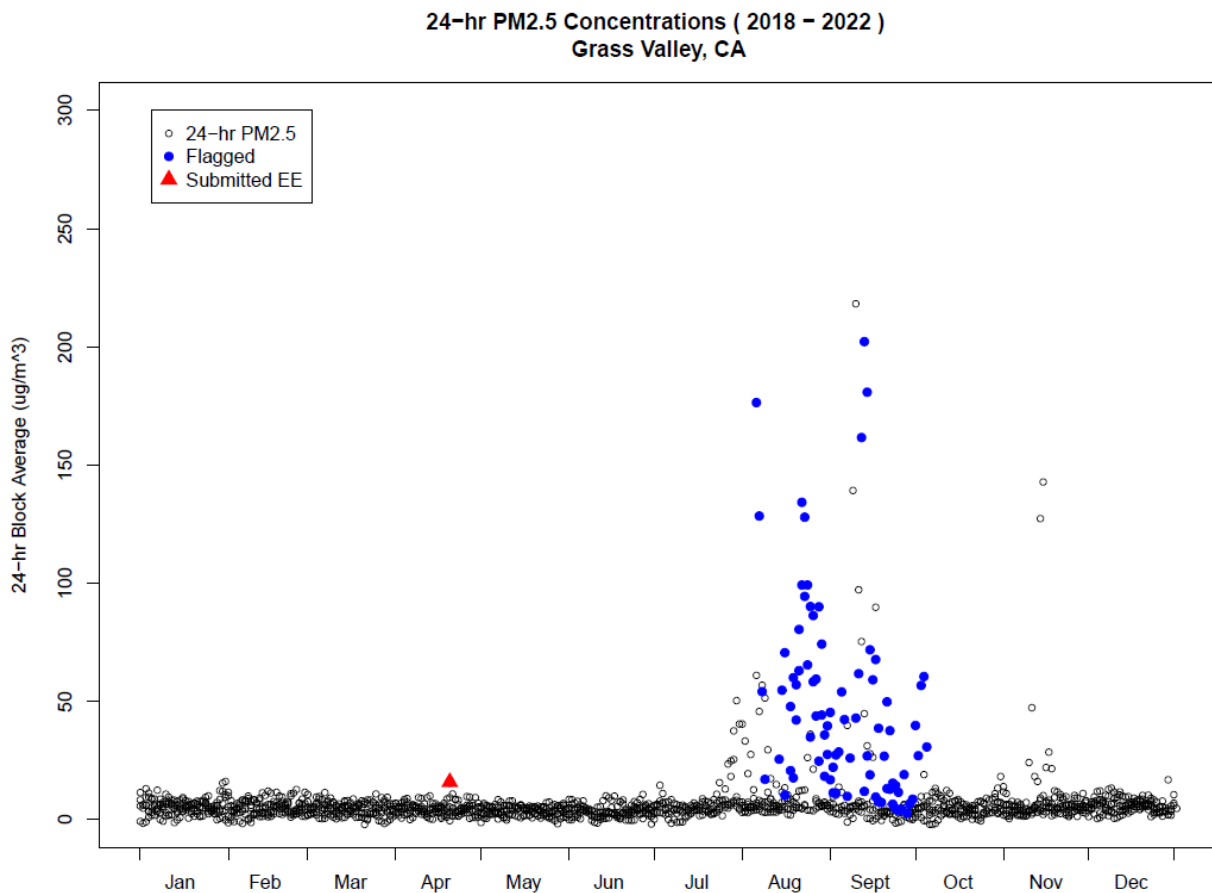


Figure 7. Plot of 24-hour PM<sub>2.5</sub> concentrations measured by the Grass Valley FEM monitor during 2018-2022 versus measurement date.

20, 2021). Furthermore, the poor data completeness of the FRM from the fourth quarter of 2019 through the remainder of its operation limits the usability of the data. The FEM monitor reported hourly data and was more reliable during this period but since the FEM only started operation in December of 2017, 2018 was the first complete year of data. 2022 data were included in these analyses so that the duration of the dataset included at least 5 years.

Figure 7 plots the 2018 through 2022 24-hour PM<sub>2.5</sub> concentrations. The concentrations are generally well below 20 µg/m<sup>3</sup> except during the “fire season,” or the period from mid-July through mid-November. This period is characterized by many elevated concentrations, most of which have been flagged in the EPA’s Air Quality System (AQS) as being influenced by wildfire smoke. Also, some elevated 24-hour values that were not flagged were likely also caused by smoke; the dates of elevated concentrations align with well-known major wildfires that occurred in California in the 2017-2022 period.

Figure 8 shows this same data but plots each year separately and provides an average value for each day as well as the 99<sup>th</sup> percentile value when all flagged days are included in the

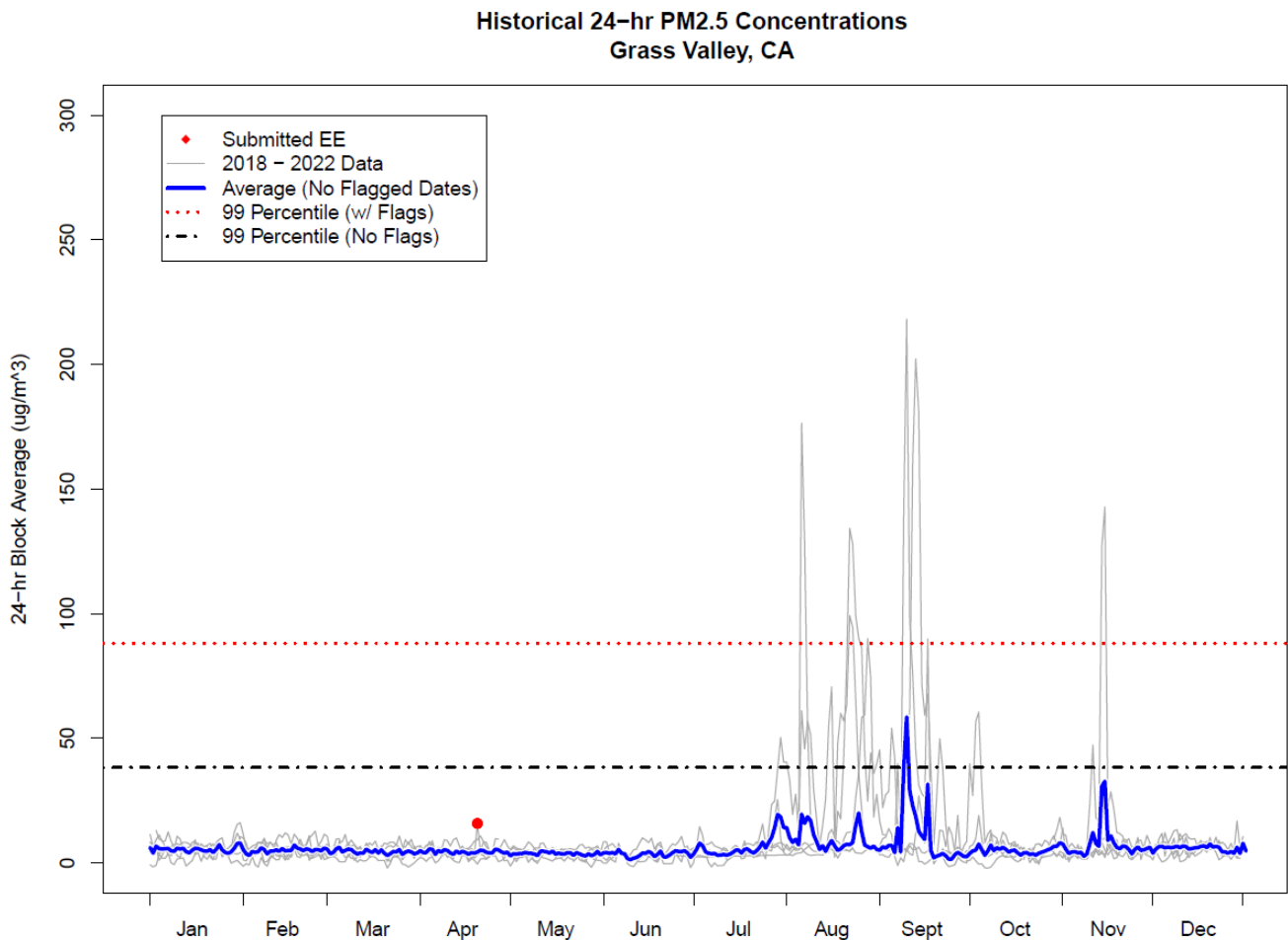


Figure 8. Time series plot of PM<sub>2.5</sub> concentrations at Grass Valley for each year between 2018-2022.

dataset and when all flagged days are removed. Although the concentration for the demonstration event date is well below both 99<sup>th</sup> percentile lines, it is higher than any other springtime (March through May) 24-hour concentration.

Table 4 provides the rank and percentile for the event concentration during the 1-yr and 5-yr periods. The rank and percentile values are above the 90<sup>th</sup> percentile, but below the 99<sup>th</sup> percentile value; this is likely due to other high concentrations measured during wildfire season.

Table 4. Rank and percentile of the event 24-hour concentration, in comparison to other 24-hour concentrations measured over 1-year and 5-year periods.

Event Date	Concentration (µg/m <sup>3</sup> )	1-year Rank	1-year Percentile	5-year Rank	5-year Percentile
2021-04-20	15.8	28	92	107	94

Table 5 shows the monthly statistics for the PM<sub>2.5</sub> concentrations at this monitoring site for 2018 through 2022. If all the flagged data are kept in the dataset, March through June has the lowest average daily PM<sub>2.5</sub> concentrations in this 5-year period. In fact, there was only one exceedance and one flag in these months, and those are due to the event concentration.

Table 5. Monthly statistics for the PM<sub>2.5</sub> concentrations at the Grass Valley site (2018-2022). "Exceedances" are days with 24-hour concentrations that exceeded the annual PM<sub>2.5</sub> NAAQS.

Month	Average No Flags (µg/m <sup>3</sup> )	Average (µg/m <sup>3</sup> )	Maximum No Flags (µg/m <sup>3</sup> )	Maximum (µg/m <sup>3</sup> )	Standard Deviation No Flags (µg/m <sup>3</sup> )	Standard Deviation (µg/m <sup>3</sup> )	Number of Exceedances	Number of Flags
Jan	5.4	5.4	16.1	16.1	3.2	3.2	5	0
Feb	5	5	12.7	12.7	3.2	3.2	2	0
Mar	4.4	4.4	11.4	11.4	2.7	2.7	0	0
Apr	4.4	4.5	10.8	15.8	2.4	2.6	1	1
May	3.7	3.7	8.5	8.5	2.1	2.1	0	0
Jun	3.5	3.5	10.6	10.6	2.5	2.5	0	0
Jul	6.5	6.5	50.3	50.3	7.2	7.2	10	0
Aug	9.5	22.4	61	176.4	10.8	30.9	55	37
Sep	11.2	18.3	218.2	218.2	28.9	36.1	38	42
Oct	5	6.1	19	60.5	3.6	7.7	9	4
Nov	7.8	7.8	142.8	142.8	15.9	15.9	11	0
Dec	5.9	5.9	16.8	16.8	2.9	2.9	4	0

Figure 9 is similar to Figure 8, but only includes springtime concentrations at the Grass Valley site. Since there is only one flagged day in this time period, the 99<sup>th</sup> percentile values for data including flags and data excluding flags is nearly identical and the event concentration is well above both. The average 24-hour concentration for each day in this time period appears to hover around 4-5 µg/m<sup>3</sup>, whereas the event concentration is 15.8 µg/m<sup>3</sup>.

**Historical Springtime 24-hr PM<sub>2.5</sub> Concentrations  
March – May  
Grass Valley, CA**

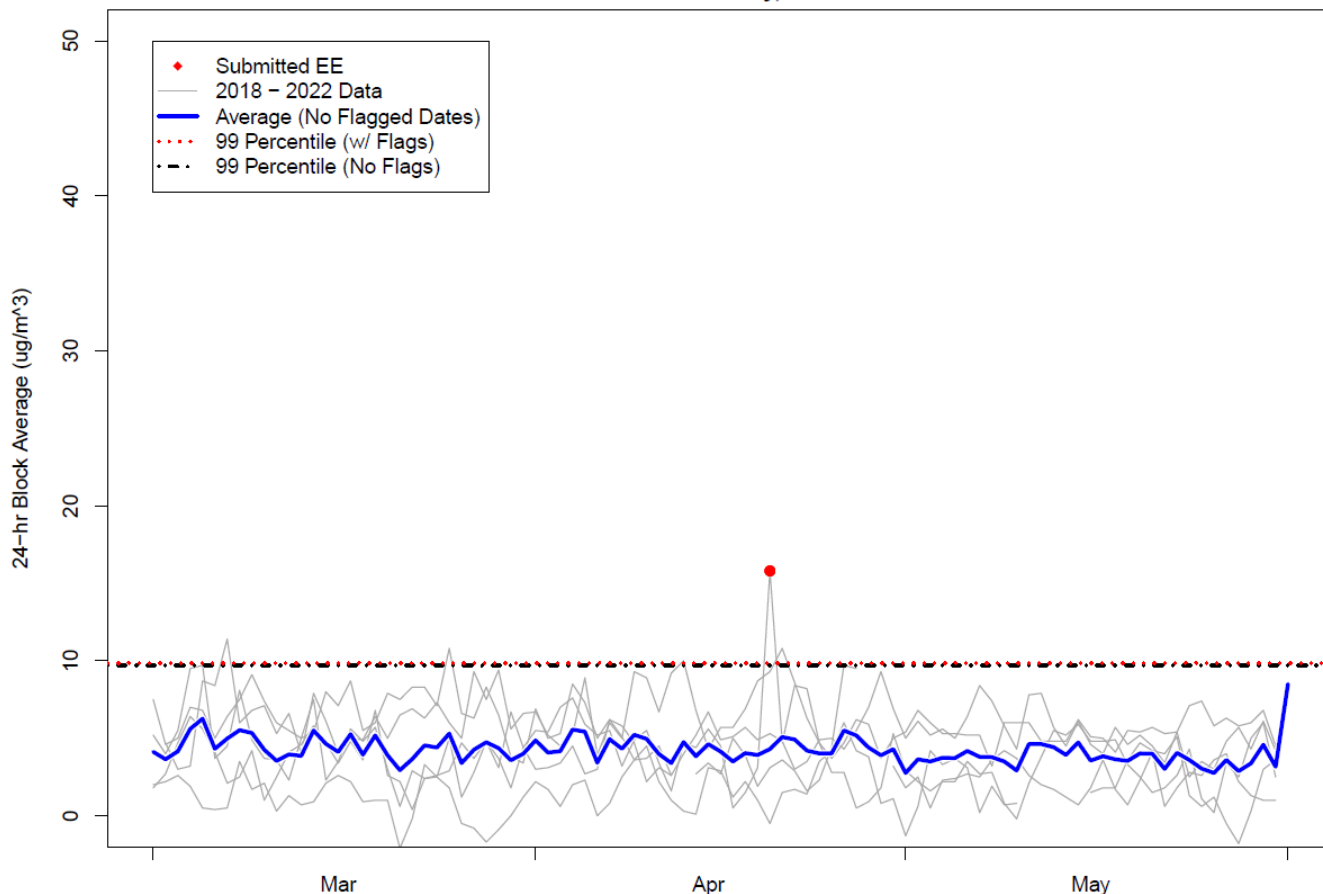


Figure 9. Time series plot of PM<sub>2.5</sub> concentrations at Grass Valley during March through May for each year between 2018-2022.

Table 6 provides the rank and percentile of the event concentration in comparison to the springtime values, showing the event date ranks 1<sup>st</sup> for all springtime values in the 2018-2022 time range.

Table 6. Rank and percentile of the event concentration when compared with other springtime (March-May) concentrations in 2021 and in a 5-year period.

Event Date	Concentration (µg/m <sup>3</sup> )	Spring 2021 Rank	Spring 2021 Percentile	Rank in 5 Springs	Percentile in 5 Springs
2021-04-20	15.8	1	99	1	99

In summary, in comparison to other springtime concentrations, the PM<sub>2.5</sub> concentration on the event day was the highest concentration measured during the 5-year period, well over the 99<sup>th</sup> percentile concentration value for the springtime, and approximately 1.4 times larger than the next highest springtime concentration.



### III.b. Evidence that Emissions were Transported from the Prescribed Fire to the Monitor

Figure 10 and Figure 11 are satellite MODIS/Terra Reflectance visual images from April 19, 2021, and April 20, 2021, and provide visual evidence of the smoke plumes coming from the Deadwood Project April 19 and 20 prescribed fires. In Figure 10, which shows observations from April 19, 2021 and was obtained from the Fire Information for Resource Management System (FIRMS) website, the prescribed fire locations are displayed as the red shapes and the Grass Valley monitor is shown by the white star icon; there is a visible smoke plume being transported to the east and south of the Deadwood Project April 19 prescribed fire.<sup>9</sup> While the image shows smoke being transported away from the Grass Valley monitor, it is important to consider that this satellite image only represents smoke transport in the afternoon on April 19 during the time when the satellite passed over the prescribed fires. As discussed below, the HYSPLIT modeling indicates that the winds shifted toward the north and west during the nighttime hours and transported the residual smoke toward the Grass Valley monitor, causing the elevated PM<sub>2.5</sub> concentrations.

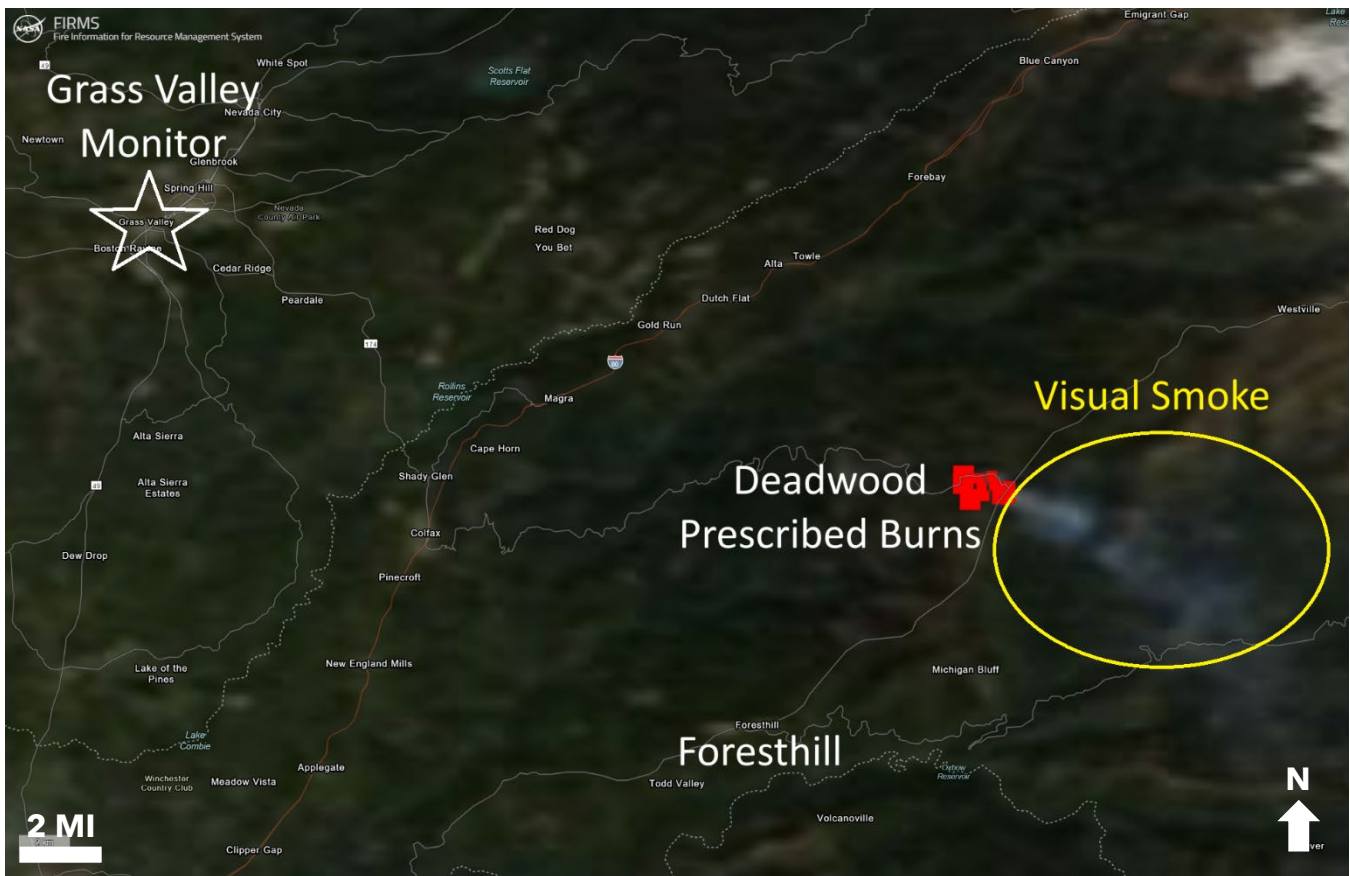


Figure 10. Visible smoke plumes from satellite observations on April 19, 2021.

<sup>9</sup> The FIRMS website is operated by the National Aeronautics and Space Administration and can be accessed at <https://firms.modaps.eosdis.nasa.gov/>.

Figure 11, which was created using the AirNowTech Navigator, shows a visible smoke plume being transported to the north of the Deadwood Project April 20 prescribed fire. Figure 11 also displays Hazard Mapping System (HMS) Smoke Polygons,<sup>10</sup> providing further evidence of the smoke plumes generated by the prescribed fires. These smoke polygons were generated from data collected by the Geostationary Operational Environmental Satellite (GOES)-16 (East) and GOES-17 (West) satellites passing over the area between 8:00 am and 4:00 pm PST on April 20, 2021. The smoke density was classified as “light” for these smoke detections. While these satellite images represent conditions on the following day and do not provide evidence of smoke from the prescribed fires directly impacting the Grass Valley monitor, they provide evidence that the nearby prescribed fires were generating smoke and at some point between April 19 and April 20, conditions shifted from eastward transport to northward transport of smoke. Unfortunately, the HMS fire and smoke products have limited temporal coverage which is tied to the times when the GOES satellites pass over a given location. During this event, the elevated monitor concentrations occurred overnight during times when there is no visual satellite imagery available.

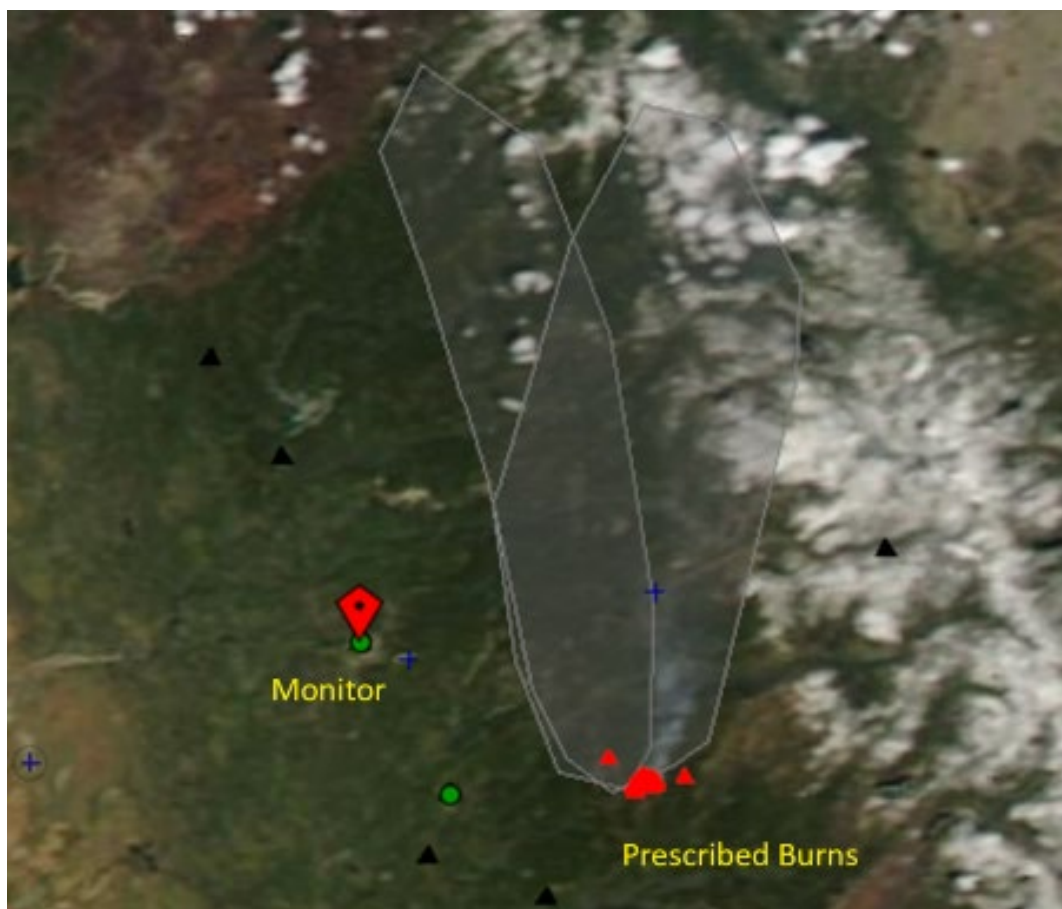


Figure 11. Visible smoke plumes and HMS smoke polygons from April 20, 2021.

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<sup>10</sup> HMS smoke polygons are contours that represent human drawn lines based on satellite visible imagery; see <https://www.ospo.noaa.gov/Products/land/hms.html#about> for more information.



To further evaluate whether smoke from the Deadwood Project April 19 prescribed fire contributed to the anomalously high PM<sub>2.5</sub> values measured at the Grass Valley site on April 20, 2021, additional modeling tools were used to examine smoke transport and dispersion in the area. The Prescribed Fire Guidance recommends that trajectory analyses be performed to evaluate smoke transport. NOAA's HYSPLIT model is frequently used to produce trajectories for assessments associated with air quality programs. HYSPLIT back-trajectories generated for specific monitor locations for days of high PM concentrations illustrate the potential source region for the air parcel that affected the monitor on the day of the high concentration and provide a useful tool for identifying meteorological patterns associated with monitored exceedances.

As shown in Figure 6 in Section II. Narrative Conceptual Model of this demonstration, elevated hourly PM<sub>2.5</sub> concentrations were measured at the Grass Valley monitor beginning around 1:00 a.m. PST on April 20, 2021, and continuing until around 10:00 a.m. PST that morning. Figure 12 shows a series of 24-hour HYSPLIT back-trajectories that were started

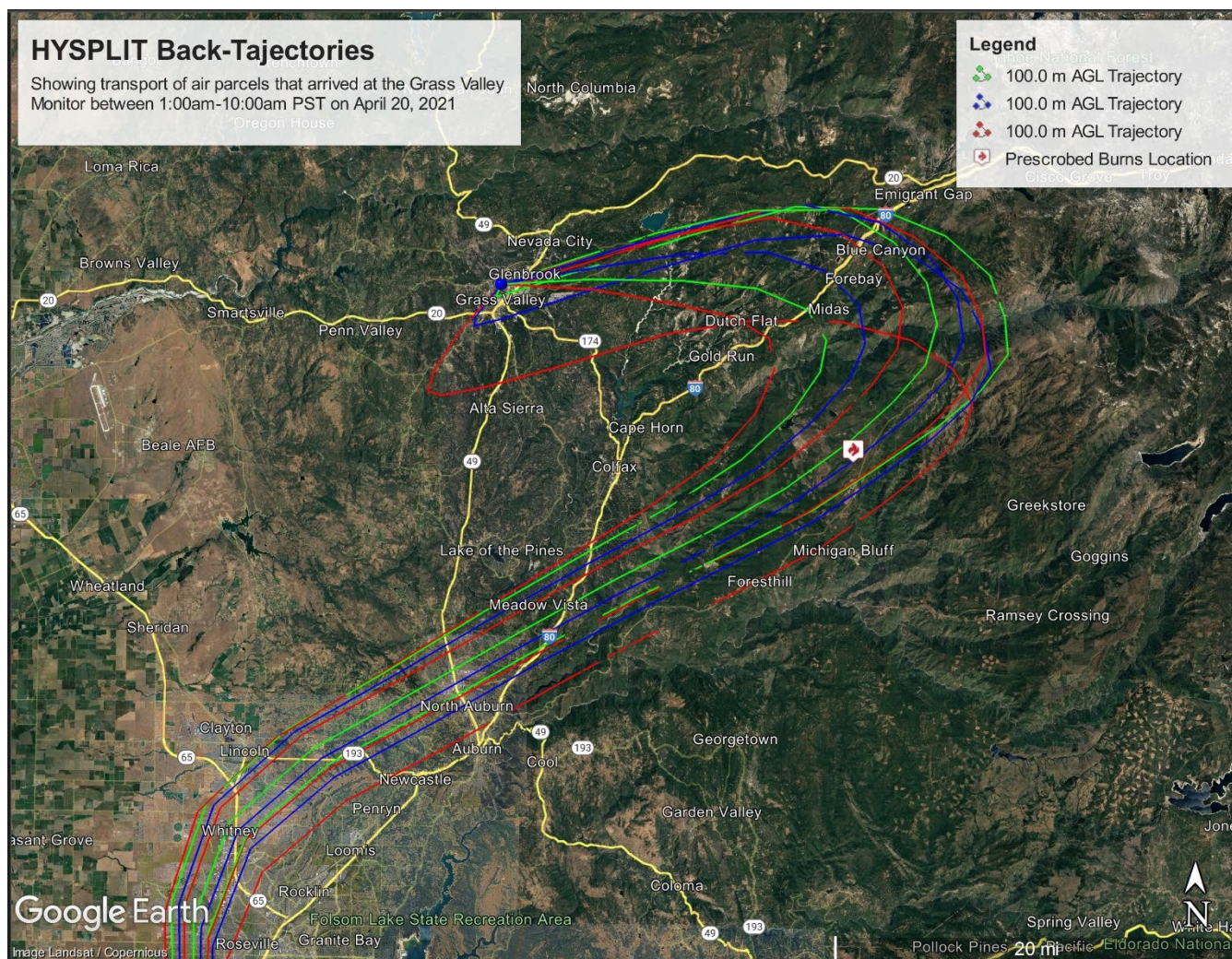


Figure 12. HYSPLIT back trajectories from the Grass Valley site at 100 meters above ground level, initiated between 1:00a.m. and 10:00a.m. PST.

each hour between 1:00-10:00 a.m. PST on April 20, 2021, at the Grass Valley site (39.23 degrees North Latitude, 121.06 degrees West Longitude). Each back trajectory was started at the monitor location at a height of 100 meters above ground level and tracked air parcels back in time 24 hours from the trajectory start time. As recommended in Appendix A3 of the Wildfire Ozone Guidance, trajectory starting heights should be no less than 100 meters above ground level to avoid uncertainty caused by direct interference with terrain.

As can be seen in Figure 12, many of the back trajectories pass over the area of the Deadwood Project April 19 prescribed fire shown by the white box icon with a flame on it. Note that each line on the map represents the centerline of the HYSPLIT modeled trajectory path of the air parcels, so they should not be interpreted to show the precise locations, but instead should be interpreted as estimates of the path of the air parcels. Taken together, these hourly back trajectories provide strong evidence that residual smoke from the two units that were burned on April 19, 2021, was likely transported to the Grass Valley monitor

**Average Hourly PM<sub>2.5</sub> for Days in April  
(2018 – 2022)**

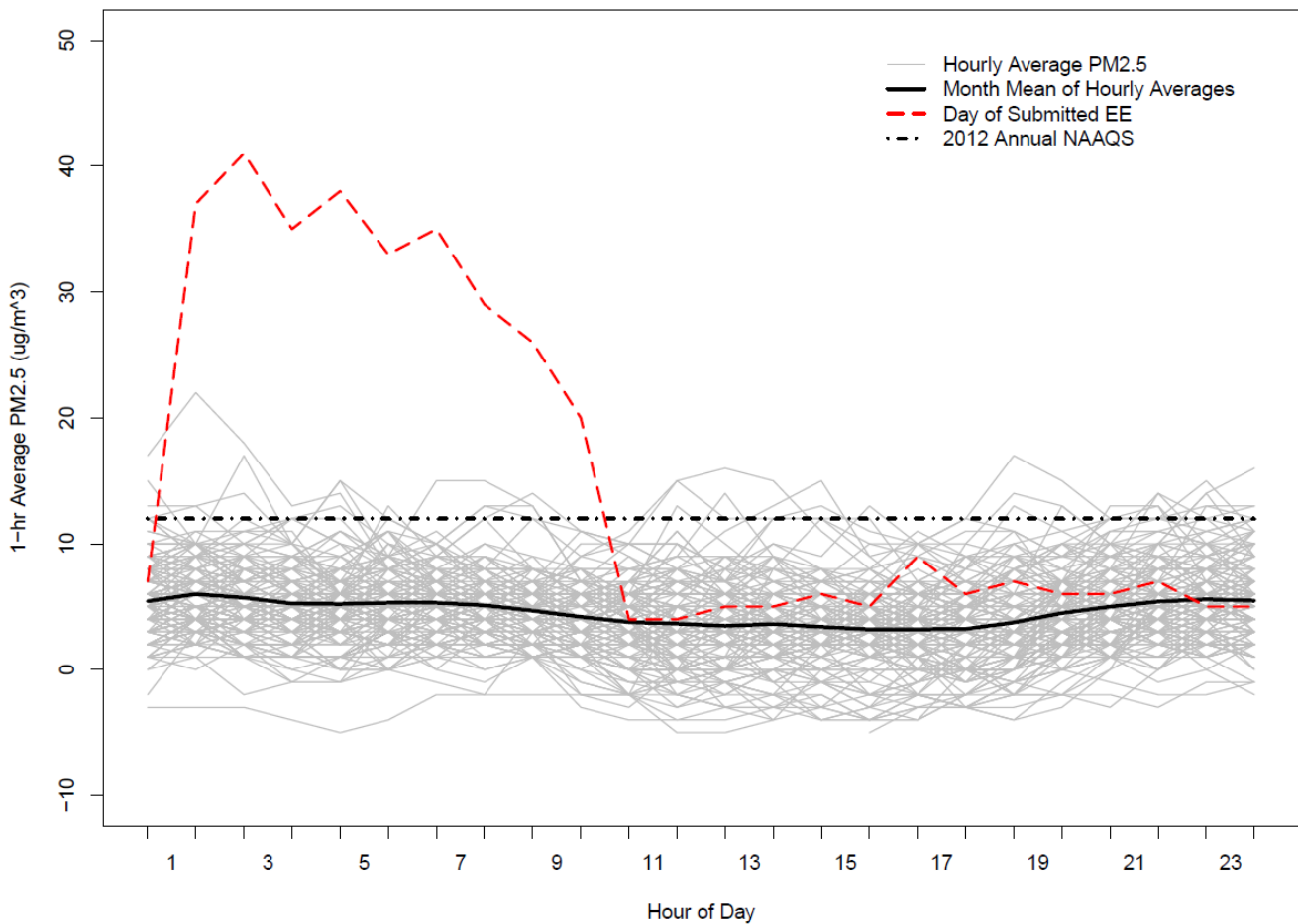


Figure 13. Hourly concentrations of PM<sub>2.5</sub> reported on the event day (red dashed line) and all other April days (grey lines) from 2018-2022.

and contributed to the elevated concentrations measured in the early morning hours on April 20, 2021.

### III.c. Evidence that Prescribed Fire Emissions Affected the Monitor

Although we know that the event concentration was the highest 24-hour concentration in the springtime from 2018-2022, it is also useful to see how the hourly data compare to other unflagged days. Figure 13 displays the hourly data for all April days in 2018-2022. The red dashed line shows the concentrations for the event date, while the grey lines show all the remaining April days in this time period. As shown in the figure, the morning of April 20, 2021, had much higher hourly PM<sub>2.5</sub> concentrations than any other April day. In fact, the hourly concentration started around the hourly average from 12:00-1:00 a.m. PST, climbed to values around 35-40 µg/m<sup>3</sup>, and then returned to the hourly average from 10:00-11:00 a.m. PST. This plot also displays a very modest diurnal pattern in the average daily data. It appears the nighttime and morning hours tend to have slightly higher average hourly PM<sub>2.5</sub> concentrations and that the mid-day and afternoon hours tend to have the lowest average hourly PM<sub>2.5</sub> concentrations.

### III.d. Conclusion

The analyses and data presented in this section support that the 24-hour concentration on April 20, 2021, was clearly caused by the smoke from the Deadwood Project April 19 prescribed fire. Although the submitted concentration (15.8 µg/m<sup>3</sup>) was not exceedingly high when compared with the PM<sub>2.5</sub> concentrations during the usual wildfire season measured at the Grass Valley site, it is the highest ranked springtime (March-May) value over the 5 years of continuous PM<sub>2.5</sub> monitoring data from 2018-2022 at the site and it is 1.4 times higher than the next highest 24-hour concentration measured during this time, and is 3.5 times higher than the 5-year average of monitored concentrations in the month of April.

The analyses presented above also indicate that parcels of air likely traveled from the prescribed fire smoke plume to the Grass Valley site. HYSPLIT back-trajectories from the monitor pass over the area of the Deadwood Project April 19 prescribed fire. These back-trajectories provide strong evidence that residual smoke from the two units that were burned on April 19, 2021 was likely transported to the Grass Valley monitor, causing the elevated concentrations measured in the early morning hours on April 20th. This evidence is further supported by satellite data indicating visual smoke in the area, with plumes being transported to the east of the fires during the daylight hours on April 19<sup>th</sup>, and then smoke being transported to the north during the daylight hours on April 20<sup>th</sup>.

In addition, the hourly PM<sub>2.5</sub> data during the event date followed a unique pattern when compared with the other days in April over the last five years. The morning hourly concentrations were six to seven times higher than the average hourly concentrations for

that time of day and were much higher (by a factor of 2) than the day with the second highest hourly PM<sub>2.5</sub> data.

As discussed in the Prescribed Fire Guidance, the EPA evaluates exceptional events demonstrations using a weight of evidence approach. The information, data, and analyses presented in this section, taken together, provide sufficient weight of evidence that smoke from the Deadwood Project April 19 prescribed fire clearly caused the elevated 24-hour PM<sub>2.5</sub> concentration at the Grass Valley site on April 20, 2021, resulting in an exceedance of the 2012 annual PM<sub>2.5</sub> NAAQS.



## IV. Human Activity Unlikely to Recur at a Particular Location

This section addresses the EER requirement at 40 CFR 50.14(c)(3)(iv)(E), which requires that the event was either a human activity that is unlikely to recur at a particular location or a natural event. The Prescribed Fire Guidance acknowledges that prescribed fires and their emissions are events caused by human activity and therefore must address the “human activity unlikely to recur at a particular location” criterion, and outlines how fire recurrence can be used to satisfy this criterion for a prescribed fire event. The demonstration must describe the actual frequency with which a burn was conducted and show that the prescribed fire was conducted consistent with either the natural fire return interval, or the prescribed fire frequency needed to establish, restore and/or maintain a sustainable and resilient wildland ecosystem. For this event, the prescribed fire was conducted consistent with the frequency needed to establish, restore, and/or maintain a sustainable and resilient wildland ecosystem, as further described below.

### IV.a. Prescribed Fire Frequency Needed to Establish, Restore and/or Maintain a Sustainable and Resilient Wildland Ecosystem

The Deadwood Project area is located in Placer County along the Foresthill Divide, on the American River Ranger District of the Tahoe National Forest. The Deadwood Project Final Decision Notice states that this area would naturally be dominated by mixed-conifer tree stands and some hardwoods, but is currently dominated by ponderosa pine, which took hold following the 1960 Volcano Fire. The natural fire interval for this area can be difficult to determine due to the influence of logging and fire suppression over the last century. Historical estimates for ponderosa pine and mixed conifer forests in this region show that low-to-moderate intensity burns occurred many times each century, with a fire return interval ranging from 8-22 years.<sup>11</sup> The fire rotation generally decreases as the years progress, due to increasing fire frequencies, sizes, and severities. The prescribed fire frequency needed for ecosystem health could vary depending on events affecting the forest that are not reasonably controllable. For example, prescribed fire may be needed more frequently than the natural variation when unforeseen events such as wildfire or insect-caused tree mortality contribute to additional hazardous fuel accumulation.<sup>12</sup>

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<sup>11</sup> Moody, T.J., Fites-Kaufman, J. & Stephens, S.L. Fire history and climate influences from forests in the Northern Sierra Nevada, USA. *fire eco*/**2**, 115-141 (2006). <https://doi.org/10.4996/fireecology.0201115>

<sup>12</sup> Sierra Nevada Forest Plan Amendment - Final Supplemental Environmental Impact Statement, USDA Forest Service, August 2013.

Figure 14, which is replicated from the Final Decision Notice, shows the wildfire history covering the 50-year period prior to the Notice (1961-2011).<sup>13</sup> Following the assessment in 2011 and through the Deadwood Project April 19 prescribed fire in 2021, Placer County has recorded 69 additional wildfires that totaled around 189,547 acres in and around the county. Other fires, including the 2021 Mosquito Fire, have also occurred in the area since the Deadwood Project April 19 prescribed fire.<sup>14</sup> As described in the Final Decision Notice, wildfire in the area was largely suppressed from the 1960 Volcano Fire until the Deadwood Project Final Decision Notice was issued in 2011. Decades of fire suppression allowed the ponderosa stands to become overly dense while forest fuels accumulated.<sup>15</sup>

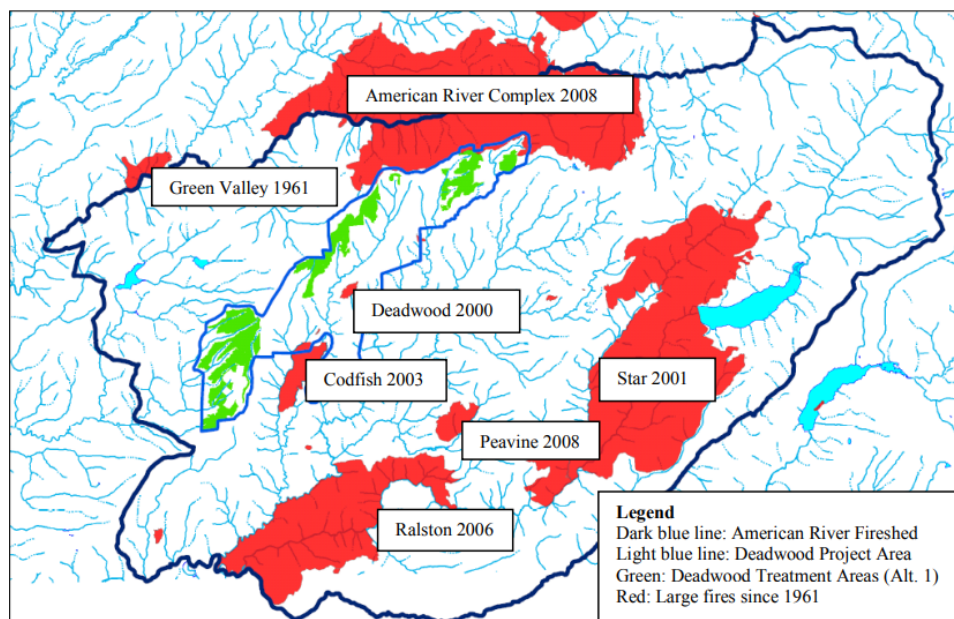


Figure 14. Size and location of wildfires that have occurred in and around the Deadwood Project area from 1961-2011, excluding the 1960 Volcano Fire. From the Deadwood Project Final Decision Notice.

The long-term ecological management objective for this area is to reduce fuel loads and restore ecosystem densities to levels where multiple aged pines, oaks, and shade tolerant tree species are intermixed with open brushy areas. The goals for fire and fuels management, as described in the Tahoe National Forest Land Management Plan, as Amended by the Sierra Nevada Amendment (2004), include “reducing threats to communities and wildlife habitat from large, severe wildfires and re-introducing fire into fire-adapted ecosystems.” The program of prescribed fires approved in the Deadwood Project

<sup>13</sup> Final Decision Notice and Finding of No Significant Impact for Deadwood Vegetation Management and Fuels Reduction Project, USDA Forest Service, American River Ranger District, May 2011.

<sup>14</sup> Calculated using information from Appendix G, Fire History, Placer County Document Center, found at <https://www.placer.ca.gov/DocumentCenter/View/55478/Appendix-G-Fire-History>, and Fire Incident Archives, California Department of Forestry and Fire Protection, found at <https://www.fire.ca.gov/incidents>.

<sup>15</sup> Final Decision Notice and Finding of No Significant Impact for Deadwood Vegetation Management and Fuels Reduction Project, USDA Forest Service, American River Ranger District, May 2011.



will ultimately protect the public, enhance woodland species habitat, improve fire suppression safety and efficiency, and increase the feasibility of a future prescribed fire program aimed at establishing a fire regime of more frequent, low intensity fires.<sup>16</sup>

Over a 15-year timeframe (approximately 1995-2010), 4,307 acres of prescribed fire treatments occurred within the Deadwood Project Area. An estimated 1,483 acres were pile burned and 2,824 acres underburned.<sup>17</sup> Further manual and mechanical treatment of 4,238 acres over at least 5 years through the Deadwood Project would reduce both existing and generated surface fuels, making the introduction of low intensity prescribed fire into the ecosystem much easier and safer in future burn programs.<sup>18</sup> With less vegetation/fuel, it is expected there would be less smoke with any future burning.

The majority of all the Deadwood units were treated mechanically within the past 10-12 years to allow for low to moderate intensity prescribed fire to be applied to the landscape to restore forest resiliency and accomplish desired natural resource objectives. Deadwood Project Unit 23 and Unit 24 are 202 acres and 105 acres, respectively. These units were mechanically thinned and released with a follow up of mastication (i.e., grinding, shredding, chunking or chopping forest vegetation and downed material) approximately 5-8 years before the prescribed fire.<sup>19</sup> By 2021 the fuel bed was considered moderate to high, and prescribed fire was authorized as a "cost effective and environmentally beneficial follow up treatment to ground based thinning."<sup>20</sup> This is consistent with both the Tahoe National Forest Land Use Management Plan and the estimated historical fire return interval range.

## IV.b. Conclusion

Based on the documentation provided in this section, the prescribed fire event satisfied the human activity unlikely to recur at a particular location criterion because it followed the prescribed fire frequency needed to restore and maintain a sustainable and resilient wildland ecosystem, as contained in the Tahoe National Forest Land Management Plan (1990), as amended by the Sierra Nevada Amendments (2004), and supported by additional land management documents regarding the Deadwood Project.

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<sup>16</sup> Final Decision Notice and Finding of No Significant Impact for Deadwood Vegetation Management and Fuels Reduction Project, USDA Forest Service, American River Ranger District, May 2011.

<sup>17</sup> Environmental Assessment for Deadwood Vegetation Management and Fuels Reduction Project, USDA Forest Service, American River Ranger District, May 2011.

<sup>18</sup> Final Decision Notice and Finding of No Significant Impact for Deadwood Vegetation Management and Fuels Reduction Project, USDA Forest Service, American River Ranger District, May 2011.

<sup>19</sup> Prescribed Fire Burn Plan, Deadwood Under Burn Phase 1, USDA Forest Service, American Ranger District, October 2018.

<sup>20</sup> Placer County Air Pollution Control District, Application and Permit to Burn #5697, October 19, 2020. 2020-Deadwood Rx Phase 1, Alternatives to Burning.

## V. Not Reasonably Controllable or Preventable

This section addresses the EER requirement at 40 CFR 50.14(c)(3)(iv)(D) by demonstrating that the event was both not reasonably controllable and not reasonably preventable, as further described for prescribed fires in 40 CFR 50.14(b)(3). For this demonstration, the “not reasonably controllable” prong is satisfied by showing that the prescribed fire was conducted under an adopted and implemented certified SMP, while the “not reasonably preventable” prong is satisfied by describing the benefits that would have been foregone if the fire were not conducted.

### V.a. Not Reasonably Controllable

The Prescribed Fire Guidance states that the controllability prong of the not reasonably controllable or preventable criterion can be satisfied if (1) the prescribed fire was conducted under an adopted and implemented certified SMP, or (2) the prescribed fire was conducted with appropriate basic smoke management practices. If a demonstration intends to rely on a SMP to satisfy the not reasonably controllable prong, the SMP must be certified prior to the burn being conducted. The Deadwood Project April 19 prescribed fire was not reasonably controllable because it was conducted under California’s adopted and certified SMP which was being implemented at the time of the burn.

In 2001, the state of California adopted Title 17 of the California Code of Regulations, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning.<sup>21</sup> On August 14, 2003, the EPA sent the state of California a letter accepting these guidelines as substantially meeting the agency’s requirements under the “Interim Air Quality Policy on Wildland and Prescribed Fire.”<sup>22</sup> In 2020, the EPA’s Office of Air Quality Planning and Standards confirmed that this letter meets the requirements of certification of California’s state SMP under the 2016 EER.<sup>23</sup> Both the certification in 2003 and the EPA’s confirmation of its application to the 2016 EER in 2020 preceded the prescribed fire discussed in this demonstration.

Title 17 of the California Code of Regulations, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning, §80120 dictates burn permitting in the state of California. A land manager must acquire a valid air quality burn permit from an air district or ‘designated agency’ to conduct or allow prescribed burning. A ‘designated agency’ is defined in §80101(j) as “any agency designated by the Air Resources Board as

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<sup>21</sup> Title 17 of the California Code of Regulations, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning, §80110-80330. Effective Date March 14, 2001.

<sup>22</sup> Letter titled *EPA Accepts California’s Smoke Management Guidelines for Agricultural and Prescribed Burning*, from EPA Region 9 Air Division Director Jack P. Broadbent to California Air Resource Board Executive Director Catherine Witherspoon, dated August 14, 2003.

<sup>23</sup> Email titled *CARB Title 17 Smoke Management Program certification letter*, from EPA Region 9 staff member Anna Mebust to California Air Resource Board staff member Theresa Najita, dated February 11, 2020.

having authority to issue agricultural burning, including prescribed burning, permits.” Further, §80140 instructs each air district in the state to adopt, implement, and enforce a SMP. PCAPCD adopted their SMP in 2001 and it was approved by California’s Air Resource Board in 2002.<sup>24</sup>

In the Placer County SMP, when a land manager decides to conduct a prescribed burn, depending on the size of the project and the PM emissions calculated, a smoke management plan may be required.<sup>25</sup> If required, the plan may either be a full smoke management plan with all the required components, or a modified plan, depending on complexity. The air district and land manager work together to have a completed and approved plan prior to the issuance of an air district burn permit. Once the air district has approved the plan and issued the air district burn permit, the land manager can request an authorization to burn from the air district within 24 hours prior to the burn, which may be granted if appropriate conditions are met.

The application and permit to burn for the Deadwood Project, with the project smoke management plan attached, was submitted by the US Forest Service American River Ranger District for wildland vegetation management burning and was approved in October of 2020 with an expiration date in October of 2021.<sup>26</sup> As noted in the narrative conceptual model, per information in PFIRS, the USFS request for authorization to burn for the Deadwood Project April 19 fire was submitted at 1:29pm on April 18, 2021, and was approved by PCAPCD at 3:31pm the same day.

The Deadwood Project smoke management plan includes smoke impact mitigation techniques as required under PCAPCD’s SMP. The plan includes considerations regarding smoke dispersion, such as monitoring for meteorological conditions that could ‘increase settling smoke in drainage and low-lying areas.’ The Deadwood Project smoke management plan also included discussions of smoke sensitive areas, public notification methods intended to be used by USFS, and various smoke mitigation techniques to consider during the burn, including weather monitoring, conducting a test fire, and initiating mop-up when necessary. These elements are required by Title 17 and PCAPCD’s SMP and were included in the smoke management plan due to the project size and calculated emissions.<sup>27</sup>

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<sup>24</sup> Placer County Air Pollution Control District, Smoke Management Program. Adopted on December 13, 2001. Approved by CARB on March 15, 2002.

<sup>25</sup> This document uses “SMP” to refer to a Smoke Management Program, consistent with the EPA’s language in the EER; however, we note that PCAPCD’s program uses the term “SMP” to refer to the submitted smoke management plan. In this document, we use the term consistent with the EER language and refer to the smoke management plan by the full name or by “plan.”

<sup>26</sup> Placer County Air Pollution Control District, Application and Permit to Burn #5697, October 19, 2020.

<sup>27</sup> Placer County Air Pollution Control District, Application and Permit to Burn #5697, October 19, 2020. 2020-Deadwood Rx Phase 1, DU-23 and DU-24.

The smoke sensitive areas discussed in the Deadwood Project smoke management plan did not include Grass Valley, but focused on areas closer to the burn, within about 10 miles. The plan did discuss Dutch Flat, an area located generally between the burns and Grass Valley, and noted that the area was across a major river canyon and had not experienced smoke impacts during prior burning. As noted in Section II. Narrative Conceptual Model and documented in Appendix B, the USFS engaged in various public notification methods, including emailing local air districts and media outlets with a news release prior to the burn, as well as posting a prescribed fire notice on social media.

As described above, the available documentation supports that USFS and PCAPCD fulfilled the requirements of the PCAPCD SMP, including submission and approval of a smoke management plan and air district burn permit and required components, request for and approval of authorization of the burn, and implementation of burn plan components for smoke mitigation. This evidence supports that the SMP was being implemented at the time of the burn.

### V.b. Not Reasonably Preventable

The Prescribed Fire Guidance states that a demonstration can satisfy the not reasonably preventable prong of the not reasonably controllable or preventable criterion by describing the benefits that would have been foregone if the fire were not conducted. The EER at 40 CFR 50.14(B)(3)(ii)(C) states that this demonstration may rely upon and reference a multi-year land or resource management plan for the area with a stated objective to establish, restore, and/or maintain a sustainable and resilient wildland ecosystem, and/or to preserve endangered or threatened species through a program of prescribed fire. The available land management documentation governing this prescribed fire shows that the fire was not reasonably preventable because of the benefits that would have been foregone if the fire had not been conducted.

As described in the Tahoe National Forest Land Management Plan (1990), Sierra Nevada Amendments (2004), and Section IV of this demonstration, there are a variety of ecological benefits to prescribed fire in the Tahoe National Forest and Deadwood Project area.

The Deadwood Project Smoke Management Plan considered hand thinning as an alternative to burning, which would be followed up with pile burning or chipping. This alternative was not pursued because it was not deemed cost-effective, but prescribed burning was approved as cost effective and environmentally beneficial.<sup>28</sup> Prescribed burning is also approved as a best management practice under the Tahoe National Forest Land Use Management Plan.

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<sup>28</sup> Placer County Air Pollution Control District, Application and Permit to Burn #5697, October 19, 2020. 2020-Deadwood Rx Phase 1, Alternatives to Burning.

Without prescribed burning, the Deadwood Project area's tree stands and underbrush would continue to become increasingly dense and homogenous. The increased density of the forest leaves it vulnerable to wildfires, insect disturbance, and tree mortality. Increased homogeneity of the forest composition further limits desired wildfire habitat, and by extension wildlife species and biodiversity. No historic or culturally significant sites were located within the burn units (see Appendix F); significant sensitive species and/or habitat on site or near the project area include California red legged frog (*Rana draytonii*), foothill yellow legged frog (*Rana boylei*), California spotted owl (*Strix occidentalis occidentalis*), and northern goshawk (*Accipiter gentilis*).

If this prescribed fire had not been conducted, a variety of benefits would be foregone, including improved tree growth and conditions for hardwood species, increased biodiversity, fuel load reduction, and overall forest resiliency to disturbances such as pests, disease, and severe wildfire.<sup>29</sup>

### V.c. Conclusion

Based on the documentation provided in this section, the event satisfies the "not reasonably controllable" criterion, because it was conducted under a certified and implemented SMP. Similarly, the prescribed fire event satisfies the "not reasonably preventable" criterion because the prescribed fire was necessary to restore and maintain a sustainable and resilient wildland ecosystem, as described in the Tahoe National Forest Land Management Plan (1990), amended by the Sierra Nevada Amendments (2004). Thus, the event was neither reasonably controllable nor reasonably preventable.

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<sup>29</sup> Final Decision Notice and Finding of No Significant Impact for Deadwood Vegetation Management and Fuels Reduction Project, USDA Forest Service, American River Ranger District, May 2011.

## VI. Public Comment

This section satisfies the EER requirements at 40 CFR 50.14(c)(3)(iv)(A-C) to:

1. Document that the State followed the public comment process and that the comment period was open for a minimum of 30 days (which may be concurrent with the beginning of the EPA's review period of the demonstration);
2. Submit the public comments received along with the demonstration; and,
3. Address those comments disputing or contradicting factual evidence provided in the demonstration.

The demonstration was posted for public comment on NSAQMD's "Public Notices" webpage:

<https://myairdistrict.com/index.php/public-notice/>

The comment period began on November 30, 2023 and ended on December 29, 2023. The posting noted that formal comments regarding the technical merits of this specific event and demonstration with respect to the requirements of the Exceptional Events Rule could be submitted to NSAQMD at [office@myairdistrict.com](mailto:office@myairdistrict.com). No comments were received.

## VII. Conclusions and Recommendations

This Exceptional Event demonstration has shown that the PM<sub>2.5</sub> monitor at Grass Valley was impacted by smoke from the Deadwood Project April 19 prescribed fire, causing PM<sub>2.5</sub> concentrations that exceeded the 2012 annual PM<sub>2.5</sub> NAAQS of 12 µg/m<sup>3</sup> on April 20, 2021. The demonstration further shows that this prescribed fire event meets the EPA's definition of an Exceptional Event under the 2016 EER:

- Section II. Narrative Conceptual Model includes a narrative conceptual model for the event, as required by 40 CFR 50.14(c)(3)(iv)(A).
- Section III. Clear Causal Relationship includes a comparison to historical data, as required by 40 CFR 50.14(c)(3)(iv)(C), that shows the event concentration is very high compared to typical springtime values measured at the site, and further demonstrates (through analysis of satellite observations, HYSPLIT trajectory modeling, and analysis of hourly PM<sub>2.5</sub> data) that emissions were transported to the monitor and caused the exceedance of the 2012 annual PM<sub>2.5</sub> NAAQS at the Grass Valley monitor, showing a clear causal relationship between the event and exceedance as required by 40 CFR 50.14(c)(3)(iv)(B).
- Section IV. Human Activity Unlikely to Recur at a Particular Location includes evidence that the prescribed fire event meets the EER definition of a human activity that is unlikely to recur at a particular location as required by 40 CFR 50.14(c)(3)(iv)(E), by establishing that the prescribed fire was conducted consistent with the prescribed fire frequency needed to establish, restore, and/or maintain a sustainable and resilient wildland ecosystem as supported by land management plans and prescribed fire documentation.
- Section V. Not Reasonably Controllable or Preventable includes evidence that the prescribed fire meets the EER definitions of being both not reasonably controllable and not reasonably preventable, as required by 40 CFR 50.14(c)(3)(iv)(D), by showing that the prescribed fire was conducted under the California SMP (an adopted and implemented state-certified SMP), and describing the benefits that would have been foregone if the fire were not conducted as documented in the land management plans and prescribed fire documentation.
- Additional procedural requirements such as identifying regulatory significance with respect to 40 CFR 50.14(a)(1)(i), documenting public notification of the event as required by 40 CFR 50.14(c)(1)(i), and providing for a public comment period for this demonstration as required in 40 CFR 50.14(c)(3)(v) have also been addressed in Sections I. Introduction, II. Narrative Conceptual Model, and VI. Public Comment.

Therefore, CARB and NSAQMD jointly request that the EPA review and concur that this demonstration shows this event meets the requirements of the EER for prescribed fires, resulting in exclusion of the PM<sub>2.5</sub> concentration listed in Table 1 of this demonstration from regulatory decisions for the 2012 annual PM<sub>2.5</sub> NAAQS.

## Appendices

- A. CARB and NSAQMD Initial Notification and EPA Response
- B. Documentation of Public Notification and Education
  - a. USFS Email and News Release - Foresthill Prescribed Fires April 2021
  - b. Prescribed Burn Public Notice for Deadwood Phase-1 Units 19, 22, 23, & 24 - USFS
- C. Links to Publicly Posted Documentation Cited in this Demonstration
- D. California SMP Certification Letter and EPA Confirmation Email
- E. Excerpts from Deadwood Project Application and Permit to Burn
- F. Excerpts from Deadwood Under Burn Phase 1 Prescribed Fire Burn Plan



# Appendix A

## EE Initial Notification Summary Information      PM<sub>2.5</sub>

Submitting Agency: **Northern Sierra AQMD**

Agency Contact: **Julie Hunter**

Date Submitted: **September 19, 2023**

Applicable NAAQS: **2012 annual PM<sub>2.5</sub> NAAQS**

Affected Regulatory Decision<sup>1</sup>: **Other/Case-by-case**

Rationale: While this event does not impact a regulatory action and does not affect the reported design value for this area, Northern Sierra AQMD is requesting review of this prescribed fire exceptional event as a national example of such a demonstration, given that no concurred demonstration for a prescribed fire exceptional event is available since the 2016 EER revisions were finalized.

*(for classification decisions, specify level of the classification with/without EE concurrence)*

Area Name/Designation Status: **Attainment (Nevada County)**

Design Value Period (list three year period): **2020-2022**

*(where there are multiple relevant design value periods, summarize separately)*

### **A) Information specific to each flagged site day that may be submitted to EPA in support of the affected regulatory decision listed above**

Date of Event	Type of Event (high wind, volcano, wildfires/prescribed fire, other <sup>2</sup> )	AQS Flag	Site AQS ID	Site Name	Exceedance Concentration (with units)	Notes (e.g. event name, links to other events)
April 20, 2021	Prescribed Fire	IM	06-057-0005	Grass Valley-Litton Building	15.8 µg/m <sup>3</sup>	Deadwood Project prescribed fires

### **B) Violating Sites Information**

**(listing of all violating sites<sup>3</sup> in the planning area, regardless of operating agency, and regardless of whether or not they are affected by EEs)**

Site (AQS ID)	Design Value ( <u>without</u> EPA concurrence on all events listed in table A above)	Design Value ( <u>with</u> EPA concurrence on all events listed in table A above)
Grass Valley-Litton Building (06-057-0005)*	9.6 µg/m <sup>3</sup>	9.6 µg/m <sup>3</sup>

\*Note: the design value is not violating, but see justification above regarding regulatory significance.

<sup>1</sup> designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call

<sup>2</sup> Provide additional information for types of event described as "other"

<sup>3</sup> Note if violating monitor is a near-road monitor

**C-1) Summary of Maximum Design Value (DV) Site Information (Effect of EPA Concurrence on Maximum Design Value Site Determination) - 2022**

**(Two highest values from Table B)**

Maximum DV site (AQS ID) <b>without EPA concurrence</b> on any of the events listed in table A above	Design Value 9.6 µg/m <sup>3</sup> (invalid)	Design Value Site Grass Valley-Litton Building (06-057-0005)	Comment
Maximum DV site (AQS ID) <b>with EPA concurrence</b> on all events listed in table A above	Design Value 9.6 µg/m <sup>3</sup> (invalid)	Design Value Site Grass Valley-Litton Building (06-057-0005)	Comment

**D) List of any sites (AQS ID) within planning area with invalid design values (e.g. due to data incompleteness)**

Truckee-Fire Station (06-057-1001) has an invalid 2022 design value of 8.5 µg/m<sup>3</sup>.



**OFFICE OF AIR AND RADIATION**

WASHINGTON, D.C. 20460

October 18, 2023

Ms. Sylvia Vanderspek  
Manager, Air Quality Planning Branch  
Air Quality Planning and Science Division  
California Air Resources Board  
Post Office Box 2815  
Sacramento, California 95812

Via Email: [sylvia.vanderspek@arb.ca.gov](mailto:sylvia.vanderspek@arb.ca.gov)

Dear Ms. Vanderspek:

This letter responds to the California Air Resources Board (CARB) and Northern Sierra Air Quality Management District (NSAQMD) exceptional events (EE) Initial Notification of Intent (INI) submittal, emailed to Anna Mebust on September 19, 2023, regarding exclusion of particulate matter 2.5 microns or less (PM<sub>2.5</sub>) data affected by EEs. The INI submittal stated that emissions from a prescribed fire on April 20, 2021, caused an exceedance of the 2012 annual PM<sub>2.5</sub> National Ambient Air Quality Standards (NAAQS) at the Grass Valley-Litton Building monitoring site (AQS ID: 06-057-0005) within the Nevada County Attainment Area for the 2012 annual PM<sub>2.5</sub> NAAQS.

The Grass Valley monitor is located in an attainment area for the 2012 annual PM<sub>2.5</sub> NAAQS. At this time, this event does not have regulatory significance for a specific action under that NAAQS. However, because no air agency has prepared or submitted a prescribed fire demonstration since the U.S. Environmental Protection Agency (EPA) finalized the 2016 Exceptional Events Rule revisions, the EPA believes there is compelling interest in preparing a prescribed fire demonstration for the 2012 annual PM<sub>2.5</sub> NAAQS. The EPA anticipates that this demonstration will serve as an example exceptional events demonstration for prescribed fires. The EPA has discussed this specific event and demonstration with CARB and NSAQMD. We request that CARB submit a formal demonstration for this event to the EPA for review under the case-by-case provision in 40 CFR 50.14(a)(1)(i)(F) no later than January 12, 2024.

The EPA is committed to providing timely guidance and input to CARB and NSAQMD should questions arise as you work towards the January 12, 2024, submission target date. We appreciate the coordination and collaboration to date and look forward to continued engagement throughout the development and submittal of the demonstration. If you have any questions regarding this determination, please feel free to contact Anna Mebust at [mebust.anna@epa.gov](mailto:mebust.anna@epa.gov) or (415) 972-3265.

We appreciate your partnership in working through implementation of the Exceptional Events Rule.

Sincerely,

A handwritten signature in black ink, consisting of a large loop followed by a long horizontal stroke that tapers to the right.

Joseph Goffman  
Principal Deputy Assistant Administrator

cc: Alicia Adams, CARB, [alicia.adams@arb.ca.gov](mailto:alicia.adams@arb.ca.gov)  
Jeremy Avise, CARB, [jeremy.avise@arb.ca.gov](mailto:jeremy.avise@arb.ca.gov)  
Michael Benjamin, CARB, [michael.benjamin@arb.ca.gov](mailto:michael.benjamin@arb.ca.gov)  
Ann Hobbs, Placer County Air Pollution Control District, [ahobbs@placer.ca.gov](mailto:ahobbs@placer.ca.gov)  
Julie Hunter, NSAQMD, [julieh@myairdistrict.com](mailto:julieh@myairdistrict.com)  
Theresa Najita, CARB, [theresa.najita@arb.ca.gov](mailto:theresa.najita@arb.ca.gov)

## Appendix B

**From:** [Ann Hobbs](#)  
**To:** [Mebust, Anna \(she/her/hers\)](#)  
**Subject:** FW: Rx burn on the ARRD 04/19/2021-04/23/2021  
**Date:** Wednesday, November 1, 2023 4:11:03 PM  
**Attachments:** [image001.png](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[Foresthill Prescribed Fires April 2021.pdf](#)  
[Deadwood Rx Phase 1 04-14-21.pdf](#)

---

Ann Hobbs  
Associate Planner  
Placer County Air Pollution Control District  
110 Maple Street, Auburn, CA 95603  
(530) 745-2327 (FAX) - (530) 745-2373

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---

**From:** Crawford, Brian -FS <brian.crawford@usda.gov>  
**Sent:** Sunday, April 18, 2021 4:17 PM  
**To:** Whitaker, Aaron - FS, Nevada City, CA <aaron.whitaker@usda.gov>; Ann Hobbs <AHobbs@placer.ca.gov>; Allen, Rachele - FS <rachele.allen@usda.gov>; Angel Hertslet <angel.hertslet@tnc.org>; Auburn Journal <ajournal@goldcountrymedia.com>; Bill Sullivan Auburn Journal <bills@goldcountrymedia.com>; billp@goldcountrymedia.com; Brian Eagan <Brian.eagan@fire.ca.gov>; Chief Kushen Placer Fire <chiefkushen@placerhillfire.org>; Chris Gray-Garcia <CMGray@placer.ca.gov>; Cluck, Danny- FS <Daniel.Cluck@usda.gov>; dporter@TNC.ORG; Darin Reintjes PCWA <dreintjes@pcwa.net>; Dave Whitt, Chief <dwhitt@foresthillfire.org>; Dowling <dowlingluana@gmail.com>; esmith@tnc.org; EIDo Air Qual <aqmd@edcgov.us>; ENF <enf@usda.com>; ENF Camino ECC <cacicc@firenet.gov>; Firestorm Sandidge <sandidgefire@gmail.com>; Flannery, Joseph -FS <joseph.flannery@usda.gov>; Gallian <RGallian@masonbruce.com>; Garnett, George R - NRCS, Athens, GA <george.garnett@usda.gov>; ECC, CATNF01 -FS <catnf01.ecc@usda.gov>; Jed Matcham, Chief <jmatcham@foresthillfire.org>; Jesse Morris CDF <Jesse.morris@fire.ca.gov>; KAH1 <info@kahi.com>; News KNCO <news@knco.com>; Knox, Jesse -FS <jesse.knox@usda.gov>; FS-PA LTBMU <SM.FS.paltbmu@usda.gov>; Macdonald, Marissa -FS <marissa.macdonald@usda.gov>; Messenger <messenger@sebastiancorp.net>; Mike Ridey, Chief <mridley@foresthillfire.org>; Minden ECC <mindendispatch@gmail.com>; FS-Grass Valley Command Center <SM.FS.cagvcc@usda.gov>; No Sierra AQ district <office@myairdistrict.com>; Robinson <rei@robinsonenterprises.com>; Stephanie Herrera <SHerrera@placer.ca.gov>; Steve Garcia CDF <steven.garcia@fire.ca.gov>; Sullivan, Mary - FS <mary.sullivan2@usda.gov>; FS-r5\_tahoe <r5\_tahoe@usda.gov>; Riesenhuber, Teresa -FS <teresa.riesenhuber@usda.gov>; tnf info 1 <adam.collins-torruella@usda.com>; Walker forest, Roberta - FS <roberta.walkerforest@usda.gov>; V defert <v\_defert@hotmail.com>; Walsh, Terri -FS

<terri.walsh@usda.gov>; Wendy Williams <WWilliams@placer.ca.gov>; Withrow, Jason -FS <jason.withrow@usda.gov>; Woodbridge, Michael -FS <michael.woodbridge@usda.gov>; Pascale Fusshoeller <yubanet@yubanet.com>; News Yubanet <news@yubanet.com>

**Subject:** [EXTERNAL] Rx burn on the ARRD 04/19/2021-04/23/2021

Greetings all,

Over the next week, the Tahoe NF-American River Ranger District will be conducting additional prescribed burns in the Sugar Pine area. The goal is to complete upwards of 700 acres in the days and weeks to come. Please see attachment for more details.



**Brian Crawford**  
**District Fuels Specialist**

**Forest Service**  
**Tahoe National Forest, American River**  
**Ranger District**

**p: 530-367-2224 x227**  
**[brian.crawford@usda.gov](mailto:brian.crawford@usda.gov)**

22836 Foresthill Road  
Foresthill, CA 95631

[www.fs.fed.us](http://www.fs.fed.us)



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Forest Service  
U.S. DEPARTMENT OF AGRICULTURE

Tahoe National Forest

## Forest Service News Release

Contact Title: Joe Flannery, Tahoe National Forest Public Affairs Officer  
(530)715-1949

[joseph.flannery@usda.gov](mailto:joseph.flannery@usda.gov)

[www.fs.usda.gov/tahoe](http://www.fs.usda.gov/tahoe)

[twitter.com/Tahoe\\_NF](https://twitter.com/Tahoe_NF) | [facebook.com/TahoeNF](https://facebook.com/TahoeNF)

### Forest Service Planning 626-acre Prescribed Fire Near Foresthill

**Foresthill, Calif.** —The U.S. Forest Service is planning a series of prescribed fires beginning on Tuesday, April 13, 2021 adjacent to Foresthill Road approximately nine miles north-east of the community of Foresthill.

Fire management personnel intend to burn units 19, 22, 23, and 24 of the Deadwood Prescribed Fire Project. Ignitions may occur over several days or up to two weeks depending on environmental conditions. Please see the attached map for specific prescribed fire unit locations. In total, over 626 acres of prescribed fires are planned for ignition.

Smoke from prescribed fire operations is normal and may continue for several days after an ignition depending on the project size and environmental conditions. Smoke may settle into the valleys in the evening and lift in the morning.

The Tahoe National Forest has collaborated with the Placer County Air Pollution Control District while planning this project and other prescribed fires within the Foresthill area.

Motorists are advised to drive with caution and are asked to watch out for firefighters and fire equipment near the Foresthill and Sugar Pine roads. Traffic controls may be implemented if needed.

The goal of this prescribed burn is to decrease the existing fire hazard and to prevent and reduce the impact of future fires in the area. Other benefits include enhancing wildlife habitat and reintroducing fire into a fire-adapted ecosystem.

###

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**TAHOE NATIONAL FOREST**  
 SUPERVISOR'S OFFICE  
 631 Coyote Street, Nevada City, CA 95959

## Prescribed Fire Notice

### Deadwood Phase-1 Units 19, 22, 23, & 24

**4/13/2021-4/23/2021**

**Underburn**      626 Acres

#### Why Are We Burning?

The goal of this prescribed burn is to decrease the existing fire hazard and to prevent and reduce the impact of future fires in the area. Other benefits include enhancing wildlife habitat and reintroducing fire into a fire-adapted ecosystem.

#### Why Now?

Current conditions allow for prescribed burning. Each prescribed fire operation follows a prescribed fire burn plan, which considers temperature, humidity, wind, moisture of the vegetation, and conditions for the dispersal of smoke. This information is used to decide when and where to burn. The Tahoe National Forest strives to give as much advance notice as possible before burning, but some operations may be conducted on short notice.

#### Smoke

Smoke from prescribed fire operations is normal and may continue for several days after an ignition depending on the project size and environmental conditions. Smoke may settle into the valleys in the evening and lift in the morning. The Tahoe National Forest coordinates with state and local county air pollution control districts and monitors weather conditions closely prior to prescribed fire ignition. If you smell smoke, take precautions and use common sense to reduce any harmful health effects by limiting outdoor activities. When you can smell smoke or when it is visible in your area, avoid strenuous outdoor activity and remain indoors as much as possible. These precautions are especially important to children, older adults, and those with heart and lung conditions. If you are sensitive to smoke, consider temporarily relocating and closing all doors and windows on the day of the prescribed fire activities. Symptoms of smoke exposure can include coughing, wheezing, shortness of breath or difficulty breathing, chest tightness or pain, nausea, and unusual fatigue or lightheadedness. Use caution when driving near prescribed burns.

#### American River Ranger District

##### Legal Location

Township 15 N Range 11 E  
 Section(s): 27

##### Location Description

Foresthill Road approximately 9 miles NE from the town of Foresthill. Prescribed fire will be contained by Foresthill Road on the East, Forest Road 10-6 on the South and West, and Sugar Pine Road on the North and West.

##### Contact:

Joe Flannery - Public Affairs Officer  
 (530) 715-1949  
[joseph.flannery@usda.gov](mailto:joseph.flannery@usda.gov)

For more information about the Tahoe National Forest, go to [www.fs.usda.gov/tahoe](http://www.fs.usda.gov/tahoe).  
 Join the conversation by following us on Twitter at [twitter.com/Tahoe\\_NF](https://twitter.com/Tahoe_NF) and Facebook at [www.facebook.com/TahoeNF](https://www.facebook.com/TahoeNF).



## Appendix C

The following includes several links to publicly available information cited in the demonstration:

- a. Title 17 of the California Code of Regulations, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning, §80110-80330. Effective Date March 14, 2001. <https://ww2.arb.ca.gov/sites/default/files/2021-06/Title17.pdf>
- b. Placer County Air Pollution Control District, Smoke Management Program. Adopted on December 13, 2001. Approved by CARB on March 15, 2002. <https://www.placerair.org/DocumentCenter/View/2124/District-Smoke-Management-Program-PDF>
- c. Appendix G, Fire History, Placer County Document Center. Found at <https://www.placer.ca.gov/DocumentCenter/View/55478/Appendix-G-Fire-History>
- d. Fire Incident Archives, California Department of Forestry and Fire Protection. Found at <https://www.fire.ca.gov/incidents>
- e. Final Decision Notice and Finding of No Significant Impact for Deadwood Vegetation Management and Fuels Reduction Project, USDA Forest Service, American River Ranger District, May 2011. <https://usfs-public.app.box.com/v/PinyonPublic/file/932247886419>
- f. Tahoe National Forest Land Management Plan, USDA Forest Service, 1990. <https://www.fs.usda.gov/main/tahoe/landmanagement/planning>
- g. Sierra Nevada Forest Plan Amendment - Final Supplemental Environmental Impact Statement, USDA Forest Service, August 2013. [https://www.fs.usda.gov/Internet/FSE\\_DOCUMENTS/stelprdb5434157.pdf](https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5434157.pdf)
- h. Environmental Assessment for Deadwood Vegetation Management and Fuels Reduction Project, USDA Forest Service, Pacific Southwest Region, May 2011. <https://usfs-public.app.box.com/v/PinyonPublic/file/932256940057>

Appendix D



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
75 Hawthorne Street  
San Francisco, CA 94105-3901

August 14, 2003

Catherine Witherspoon  
Executive Officer  
Air Resources Board  
P.O. Box 2815  
Sacramento, CA 95812

Re: EPA Accepts California's Smoke Management Guidelines for Agricultural and Prescribed Burning

Dear Ms. Witherspoon:

We have reviewed California's Title 17, Subchapter 2, Smoke Management Guidelines for Agricultural and Prescribed Burning, §80110-80330, submitted on June 2, 2003 and find it substantially meets our requirements. EPA made this determination using the "Interim Air Quality Policy on Wildland and Prescribed Fires," dated April 23, 1998.

If you have any questions, please call John Kennedy of my staff at 415-947-4129 or by e-mail at [kennedy.john@epa.gov](mailto:kennedy.john@epa.gov) or Larry Biland at 415-947-4132 or by email at [biland.larry@epa.gov](mailto:biland.larry@epa.gov).

Sincerely,

A handwritten signature in black ink that reads "Jack P. Broadbent".

Jack P. Broadbent  
Director, Air Division

Printed on Recycled Paper

**From:** [Mebust, Anna](#)  
**To:** [\(theresa.naiita@arb.ca.gov\)](mailto:Naiita, Theresa@ARB)  
**Cc:** [Vallano, Dena](#); [YOSHIMURA, GWEN](#); [Scott, Denise](#); [Vanderspek, Sylvia@ARB](#); [Mims, Dartanion@ARB](#); [Suarez-Murias, Christine@ARB](#); [Larry Greene](#)  
**Subject:** CARB Title 17 Smoke Management Program certification letter  
**Date:** Tuesday, February 11, 2020 8:30:00 AM  
**Attachments:** [Copy of EPA letter to CARB RE SMP dated 2003-08-14.pdf](#)

---

Hi Theresa,

While I was at ARB for the Air and Land Managers meeting last week, I received a copy of the attached letter from EPA to ARB sent August 14, 2003, stating that we found that the Title 17 Smoke Management provisions met our requirements under the "Interim Air Quality Policy on Wildland and Prescribed Fires" (dated April 23, 1998). Folks at ARB had been asking me whether this letter was sufficient support that the California SMP is "certified" under our Exceptional Events rule, for the purposes of relying on a certified SMP to show the "not reasonably controllable" criterion for prescribed fires.

I circled back with our colleagues at OAQPS who work on Exceptional Events, and they verified that this letter is acceptable as "certification" of the California SMP for this purpose.

Please note that any prescribed fire demonstration relying on the SMP to show the "not reasonably controllable" criterion would also need to provide evidence that the SMP was being implemented at the time of the fire. If a district does not have an ARB-approved SMP (as required under Title 17), I believe a prescribed fire in their jurisdiction may not meet the requirement that the California SMP was being implemented.

I've CCed some additional folks who have shown interest in this discussion. Please let me know if any of you have any questions.

Anna K. Mebust, Ph.D.  
Air Quality Analysis Office  
U.S. EPA Region 9  
75 Hawthorne Street (AIR-4-2)  
San Francisco, CA 94105  
Phone: 415.972.3265  
Email: [mebust.anna@epa.gov](mailto:mebust.anna@epa.gov)

# Appendix E

Permit (Page 1) and Smoke Management Plan (Pages 1, 6-9, 13-15)



110 Maple Street, Auburn, CA 95603 • (530) 745-2330 • Fax (530) 745-2373 • www.placerair.org

Erik C. White, Air Pollution Control Officer

## APPLICATION AND PERMIT TO BURN

PERMIT # 5697

### PLEASE CHECK TYPE OF BURNING

- |  |  |
|--|--|
| <input type="checkbox"/> Development of Land for Commercial or Residential Use     | <input type="checkbox"/> Agricultural (Pruning or Field Crops) |
| <input type="checkbox"/> Forest Management (inc Harvesting Activities)             | <input type="checkbox"/> Landfill                              |
| <input checked="" type="checkbox"/> Wildland Vegetation Management (Public Agency) | <input type="checkbox"/> Range Improvement                     |
| <input type="checkbox"/> Levee, Ditch and Reservoir Maintenance Activities         | <input type="checkbox"/> Public Officer / Fire Training        |
| <input type="checkbox"/> Fire Hazard Reduction                                     | <input type="checkbox"/> Mechanized                            |

### PLEASE PRINT

Name: Brian Crawford Phone Number: 530-367-2224  
 Business Name (if applicable): USFS - TNF - AMERICAN RIVER RANGER DISTRICT  
 Mailing Address: 22830 FORESTHILL RD City: FORESTHILL Zip: 95631  
 Location of Burn: Foresthill Road and FR 10, FORESTHILL Zip: 95631  
(Street, Road, Cross Road, or Other Identity, Section - Township - Range)  
 Distance to Nearest Populated Area: See 2020 - Deadwood Rx SMP  
 Fire Agency: USFS - TNF - AMERICAN RIVER RANGER DISTRICT (530-367-2224)

BURN PERMIT CONDITIONS	STREET MAP WITH CROSS ROADS
1. Burn Only on "Burn Day" 2. Make sure your smoke does not become a nuisance to neighbors Only vegetation can be burned 4. Observe the rules on the back of this permit 5. Contact your fire agency prior to burning 6.	Burn Permit for Wildland Vegetation Management Burning <i>Deadwood SMP</i>

Type of Material to be Burned: Brush, small trees, forest litter  
 Estimated Amount of Material to Burn: 783 acres  
(Dimensions in Acres, Cubic Yards, Pile Size or Tons)  
 Reason for Burning: forest management

By signing this permit, I or my agent is responsible for burning under the conditions of this permit. I or my agent is not excused from liability in the event the fire creates a nuisance, hazard or escapes control. If I am not the property owner, I understand that both the owner and myself are liable for violating applicable burn rules. In addition, I have verified with all jurisdictions that there are no restrictions for the above location. I attest that all the information given on this permit is accurate.

Applicant's Signature: \_\_\_\_\_ Date: \_\_\_\_\_

FOR AIR DISTRICT USE ONLY			
Burn Permit Fees			
Issue Date: <u>10/19/2020</u>	Burn Permit		\$86.17
Expiration Date: <u>10/19/2021</u>	Acreage	783 acres @ \$ 1.653895 /acre	\$1,295.00
Issued By: <u>ANN HOBBS</u>	Inspection	0 hours @ \$ 103.41 /hour	\$0.00
	Smoke Plan Review	1 hours @ \$ 103.41 /hour	\$103.41
	SAC Valley Fee		\$0.00
	Additional Fees		
	<b>Total Burn Permit</b>		<b>\$1,484.58</b>

BURN DAY INFORMATION	
Within a 12 mile radius of Auburn ..... 530-889-6868	All other areas in Placer County ..... 1-800-998-2876



## 2020-Deadwood Rx Phase 1

### Land Manager Information

Field Contact Person:	Phone: (530) 367-2224	24 Hour Phone: (303) 596-9586
Land Manager Name: USFS-TNF- American River Ranger District	Email: bbcrawford@fs.fed.us	Address: 22830 Foresthill Rd. Foresthill, CA 95631

### Landowner Information

USFS-TNF- American River Ranger District
Address: 22830 Foresthill Rd. Foresthill, CA 95631

### Project Specifics

Project Acres: 783	Overnight Burn?: Yes	Burn Start: 10-2020	Burn Goal: Forest Management
Duration (days): 14	Preferred Season: Any	Burn End: 09-2021	Primary Air District: Placer County APCD

### Broadcast and/or Understory Units

<b>DU-23</b>			
<b>General Information</b>			
Acres: 202	Fuel Arrangement: Natural	General Fuel Moisture: Moderate	Min 1000 hr Fuel Moisture: N/A
Tons per Acre: 4.4	Fuel Density: Typical	Cover Type: WESTSIDE PONDEROSA PINE FOREST	Max 1000 hr Fuel Moisture: N/A
<p>General Description: <b>Deadwood Unit-23 (DU-23) was mechanically thinned and released with a follow up of mastication approximately 5-8 years ago. Fuel modules TU5 (181) best represent the current fuels structure and fuel loading. The unit is long, and fairly narrow. DU-23 is bound by the Loop 3 trail system and DU-22 to the south east, while the north west side borders DU-24. Forest Road 10-6 on the south west and the 10 road on the north east.</b></p>			
Emissions Calculation Method: 0.007	Estimated Emissions:		6.22
<b>Location Information</b>			
County: Placer	District: Placer County APCD	Air Basin: Mountain Counties	Crossroads: Foresthill Road and FR 10
Meridian: Mt Diablo	Township: 15N	Range: 11E	Section: 27
Latitude: 39.113081	Longitude: -120.731567	Slope: 0-15%	Aspect: WSW
Min Elev: 4150	Max Elev: 4530	Mean Elev: 4340	
<b>Ignition Prescription</b>			
Source of meteorological information:	<p>General Fire Weather Forecast: NWS zone CAZ269 <a href="https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones">https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones</a> Spot Weather Forecast: <a href="https://www.weather.gov/spot/request/">https://www.weather.gov/spot/request/</a> 1300 Regional Smoke Management Conference line: 888-844-9904 pc: 5859144</p>		
Other considerations to ensure adequate smoke dispersion:	<p>Monitor possible inversions and approaching low pressure systems that may bring colder temperatures and increase settling of smoke in drainage and low lying areas. Additional coordination with neighboring air quality districts may be required to to manage air quality issues in sensitive air sheds.</p>		
<b>Surface Wind</b>			
Ideal Direction: W	Min: SE	Max: NNW	Ideal Speed: 12 Min: 8 Max: 18
<b>Transport Wind Direction</b>			
Ideal: W	Min: SSW	Max: NNW	
<b>Relative Humidity</b>			
Ideal: 20	Min: 15	Max: 30	
<b>Temperature</b>			
Ideal:	Min: 55	Max: 85	
Target Mixing	2000		

<b>Surface Wind</b>						
Ideal Direction:	<b>SW</b>	Min:	<b>SE</b>	Max:	<b>NW</b>	Ideal Speed: <b>12</b> Min: <b>8</b> Max: <b>18</b>
<b>Transport Wind Direction</b>						
Ideal:	<b>W</b>	Min:	<b>SSW</b>	Max:	<b>NNW</b>	
<b>Relative Humidity</b>						
Ideal:	<b>20</b>	Min:	<b>15</b>	Max:	<b>30</b>	
<b>Temperature</b>						
Ideal:		Min:	<b>55</b>	Max:	<b>85</b>	
Target Mixing Height:	<b>2000</b>					

<b>DU-16</b>						
<b>General Information</b>						
Acres:	<b>98</b>	Fuel Arrangement:	<b>Natural</b>	General Fuel Moisture:	<b>Moderate</b>	Min 1000 hr Fuel Moisture: <b>N/A</b>
Tons per Acre:	<b>4.4</b>	Fuel Density:	<b>Typical</b>	Cover Type:	<b>WESTSIDE PONDEROSA PINE FOREST</b>	Max 1000 hr Fuel Moisture: <b>N/A</b>
General Description:	<b>Deadwood Unit-16 (DU-16) was mechanically thinned and released approximately 5-8 years ago. Fuel modules TU5 (165) and TL3 (183) best represent the current fuels structure and fuel loading. The unit is a long, narrow unit that sits above a moderate to steep canyon northwest of unit which has been contained with dozer line. The north edge of the unit sits along Forest Road 10-6 and bordered by the Loop 3 trail and unit 15 to the east. There is a small section of DU-16 that lays just south of part of the Loop 3 trail and may be burn as a separate unit.</b>					
Emissions Calculation Method:	<b>0.007</b>	Estimated Emissions:				<b>3.02</b>

<b>Location Information</b>							
County:	<b>Placer</b>	District:	<b>Placer County APCD</b>	Air Basin:	<b>Mountain Counties</b>	Crossroads:	<b>Foresthill Road and FR 10</b>
Meridian:	<b>Mt Diablo</b>	Township:	<b>15N</b>	Range:	<b>11E</b>	Section:	<b>33</b>
Latitude:	<b>39.096533</b>	Longitude:	<b>-120.737419</b>	Slope:	<b>0-15%</b>	Aspect:	<b>WSW</b>
Min Elev:	<b>4000</b>	Max Elev:	<b>4300</b>	Mean Elev:	<b>4150</b>		

<b>Ignition Prescription</b>	
Source of meteorological information:	<b>General Fire Weather Forecast: NWS zone CAZ269 <a href="https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones">https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones</a> Spot Weather Forecast: <a href="https://www.weather.gov/spot/request/">https://www.weather.gov/spot/request/</a> 1300 Regional Smoke Management Conference line: 888-844-9904 pc: 5859144</b>
Other considerations to ensure adequate smoke dispersion:	<b>Monitor possible inversions and approaching low pressure systems that may bring colder temperatures and increase settling of smoke in drainage and low lying areas. Additional coordination with neighboring air quality districts may be required to to manage air quality issues in sensitive air sheds.</b>

<b>Surface Wind</b>						
Ideal Direction:	<b>W</b>	Min:	<b>SE</b>	Max:	<b>NNW</b>	Ideal Speed: <b>12</b> Min: <b>8</b> Max: <b>18</b>
<b>Transport Wind Direction</b>						
Ideal:	<b>W</b>	Min:	<b>SSW</b>	Max:	<b>NNW</b>	
<b>Relative Humidity</b>						
Ideal:	<b>20</b>	Min:	<b>15</b>	Max:	<b>30</b>	
<b>Temperature</b>						
Ideal:		Min:	<b>55</b>	Max:	<b>85</b>	
Target Mixing Height:	<b>2000</b>					

<b>DU-19</b>						
<b>General Information</b>						
Acres:	<b>243</b>	Fuel Arrangement:	<b>Natural</b>	General Fuel Moisture:	<b>Moderate</b>	Min 1000 hr Fuel Moisture: <b>N/A</b>
Tons per Acre:	<b>4.4</b>	Fuel Density:	<b>Typical</b>	Cover Type:	<b>WESTSIDE PONDEROSA PINE FOREST</b>	Max 1000 hr Fuel Moisture: <b>N/A</b>
General Description:	<b>Deadwood Unit-19 (DU-19) was mechanically thinned and released with a follow up of mastication approximately 1-2 years ago. Fuel modules TL1 (181) best represent the current fuels structure and fuel loading. The large unit is bound by a drainage to the northwest and is then surrounded by paved and dirt roads. Deadwood Unit 22 is located on the other side of the drainage. There is a small parcel of private property located in the north east corner near the Divide Road/Foresthill Road intersection.</b>					



Emissions Calculation Method:	<b>0.007</b>	Estimated Emissions:	<b>7.48</b>
<b>Location Information</b>			
County:	<b>Placer</b>	District:	<b>Placer County APCD</b>
Meridian:	<b>Mt Diablo</b>	Township:	<b>15N</b>
Latitude:	<b>39.106278</b>	Longitude:	<b>-120.727978</b>
Min Elev:	<b>4340</b>	Max Elev:	<b>4500</b>
Air Basin:	<b>Mountain Counties</b>	Crossroads:	<b>Foresthill Road and FR 10</b>
Range:	<b>11E</b>	Section:	<b>37</b>
Slope:	<b>0-15%</b>	Aspect:	<b>WSW</b>
Mean Elev:	<b>4420</b>		
<b>Ignition Prescription</b>			
Source of meteorological information:	<b>General Fire Weather Forecast: NWS zone CAZ269 <a href="https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones">https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones</a> Spot Weather Forecast: <a href="https://www.weather.gov/spot/request/">https://www.weather.gov/spot/request/</a> 1300 Regional Smoke Management Conference line: 888-844-9904 pc: 5859144</b>		
Other considerations to ensure adequate smoke dispersion:	<b>Monitor possible inversions and approaching low pressure systems that may bring colder temperatures and increase settling of smoke in drainage and low lying areas. Additional coordination with neighboring air quality districts may be required to manage air quality issues in sensitive air sheds.</b>		
<b>Surface Wind</b>			
Ideal Direction:	<b>W</b>	Min:	<b>SE</b>
Max:	<b>NNW</b>	Ideal Speed:	<b>12</b>
Min:	<b>8</b>	Max:	<b>18</b>
<b>Transport Wind Direction</b>			
Ideal:	<b>W</b>	Min:	<b>SSW</b>
Max:	<b>NNW</b>		
<b>Relative Humidity</b>			
Ideal:	<b>20</b>	Min:	<b>15</b>
Max:	<b>30</b>		
<b>Temperature</b>			
Ideal:		Min:	<b>55</b>
Max:		Max:	<b>85</b>
Target Mixing Height:	<b>2000</b>		

<b>D 5</b>			
<b>General Information</b>			
Acre:	<b>0</b>	Fuel Arrangement:	<b>Natural</b>
General Fuel Moisture:	<b>Moderate</b>	Min 1000 hr Fuel Moisture:	<b>N/A</b>
Tons per Acre:	<b>0</b>	Fuel Density:	<b>Typical</b>
Cover Type:	<b>WESTSIDE PONDEROSA PINE FOREST</b>	Max 1000 hr Fuel Moisture:	<b>N/A</b>
General Description:	<b>Deadwood Unit-15 (DU-15) was completed on 06/06/2019</b>		
Emissions Calculation Method:	<b>0</b>	Estimated Emissions:	<b>0</b>
<b>Location Information</b>			
County:	<b>Placer</b>	District:	<b>Placer County APCD</b>
Meridian:	<b>Mt Diablo</b>	Township:	<b>15N</b>
Latitude:	<b>39.095611</b>	Longitude:	<b>-120.735342</b>
Min Elev:	<b>4050</b>	Max Elev:	<b>4300</b>
Air Basin:	<b>Mountain Counties</b>	Crossroads:	<b>Foresthill Road and FR 10</b>
Range:	<b>11E</b>	Section:	<b>34</b>
Slope:	<b>0-15%</b>	Aspect:	<b>WSW</b>
Mean Elev:	<b>4175</b>		
<b>Ignition Prescription</b>			
Source of meteorological information:	<b>General Fire Weather Forecast: NWS zone CAZ269 <a href="https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones">https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones</a> Spot Weather Forecast: <a href="https://www.weather.gov/spot/request/">https://www.weather.gov/spot/request/</a> 1300 Regional Smoke Management Conference line: 888-844-9904 pc: 5859144</b>		
Other considerations to ensure adequate smoke dispersion:	<b>Monitor possible inversions and approaching low pressure systems that may bring colder temperatures and increase settling of smoke in drainage and low lying areas. Additional coordination with neighboring air quality districts may be required to manage air quality issues in sensitive air sheds.</b>		
<b>Surface Wind</b>			
Ideal Direction:	<b>W</b>	Min:	<b>SE</b>
Max:	<b>NNW</b>	Ideal Speed:	<b>12</b>
Min:	<b>8</b>	Max:	<b>18</b>
<b>Transport Wind Direction</b>			
Ideal:	<b>W</b>	Min:	<b>SSW</b>
Max:	<b>NNW</b>		
<b>Relative Humidity</b>			
Ideal:	<b>20</b>	Min:	<b>15</b>
Max:	<b>30</b>		

<b>Temperature</b>			
Ideal:	Min:	55	Max: 85
Target Mixing Height:	2000		

<b>DU-8</b>							
<b>General Information</b>							
Acres:	0	Fuel Arrangement:	Natural	General Fuel Moisture:	Moderate	Min 1000 hr Fuel Moisture:	N/A
Tons per Acre:	0	Fuel Density:	Typical	Cover Type:	WESTSIDE PONDEROSA PINE FOREST	Max 1000 hr Fuel Moisture:	N/A
General Description:	Deadwood Unit-8 (DU-8) was completed 10/04/2019						
Emissions Calculation Method:	0	Estimated Emissions:				0	

<b>Location Information</b>							
County:	Placer	District:	Placer County APCD	Air Basin:	Mountain Counties	Crossroads:	Foresthill Road and FR 10
Meridian:	Mt Diablo	Township:	14N	Range:	11E	Section:	4
Latitude:	39.077181	Longitude:	-120.748931	Slope:	0-15%	Aspect:	WSW
Min Elev:	3770	Max Elev:	3820	Mean Elev:	3795		

<b>Ignition Prescription</b>	
Source of meteorological information:	General Fire Weather Forecast: NWS zone CAZ269 <a href="https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones">https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones</a> Spot Weather Forecast: <a href="https://www.weather.gov/spot/request/">https://www.weather.gov/spot/request/</a> 1300 Regional Smoke Management Conference line: 888-844-9904 pc: 5859144
Other considerations to ensure adequate smoke dispersion:	Monitor possible inversions and approaching low pressure systems that may bring colder temperatures and increase settling of smoke in drainage and low lying areas. Additional coordination with neighboring air quality districts may be required to to manage air quality issues in sensitive air sheds.

<b>Surface Wind</b>											
Ideal Direction:	W	Min:	SE	Max:	NNW	Ideal Speed:	12	Min:	8	Max:	18
<b>Transport Wind Direction</b>											
Ideal:	W	Min:	SSW	Max:	NNW						
<b>Relative Humidity</b>											
Ideal:	20	Min:	15	Max:	30						
<b>Temperature</b>											
Ideal:		Min:	55	Max:	85						
Target Mixing Height:	2000										

<b>DU-22</b>							
<b>General Information</b>							
Acres:	76	Fuel Arrangement:	Natural	General Fuel Moisture:	Moderate	Min 1000 hr Fuel Moisture:	N/A
Tons per Acre:	4.4	Fuel Density:	Typical	Cover Type:	WESTSIDE PONDEROSA PINE FOREST	Max 1000 hr Fuel Moisture:	N/A
General Description:	Deadwood Unit-22 (DU-22) was mechanically thinned and released approximately 5-8 years ago. Fuel modules TU5 (165) and TL3 (183) best represent the current fuels structure and fuel loading. The unit is a long, narrow unit that hugs the gentle contours above a drainage to the south east. The north west side of the unit is DU-23.						
Emissions Calculation Method:	0.007	Estimated Emissions:				2.34	

<b>Location Information</b>							
County:	Placer	District:	Placer County APCD	Air Basin:	Mountain Counties	Crossroads:	Foresthill Road and FR 10
Meridian:	Mt Diablo	Township:	15N	Range:	11E	Section:	27
Latitude:	39.111561	Longitude:	-120.728606	Slope:	0-15%	Aspect:	WSW
Min Elev:	4240	Max Elev:	4550	Mean Elev:	4395		

<b>Ignition Prescription</b>	
Source of meteorological information:	General Fire Weather Forecast: NWS zone CAZ269 <a href="https://www.wrh.noaa.gov/fire2/">https://www.wrh.noaa.gov/fire2/</a>



latitude=39.21&longitude=-120.55&latlon=Go&wfo=rev&interface=fwzones Spot Weather Forecast: <https://www.weather.gov/spot/request/> 1300 Regional Smoke Management Conference line: 888-844-9904 pc: 5859144

Other considerations to ensure adequate smoke dispersion: **Monitor possible inversions and approaching low pressure systems that may bring colder temperatures and increase settling of smoke in drainage and low lying areas. Additional coordination with neighboring air quality districts may be required to to manage air quality issues in sensitive air sheds.**

<b>Surface Wind</b>							
Ideal Direction:	<b>W</b>	Min:	<b>SE</b>	Max:	<b>NNW</b>	Ideal Speed:	<b>12</b> Min: <b>8</b> Max: <b>18</b>
<b>Transport Wind Direction</b>							
Ideal:	<b>W</b>	Min:	<b>SSW</b>	Max:	<b>NNW</b>		
<b>Relative Humidity</b>							
Ideal:	<b>20</b>	Min:	<b>15</b>	Max:	<b>30</b>		
<b>Temperature</b>							
Ideal:		Min:	<b>55</b>	Max:	<b>85</b>		
Target Mixing Height:	<b>2000</b>						

<b>DU-24</b>								
<b>General Information</b>								
Acres:	<b>105</b>	Fuel Arrangement:	<b>Natural</b>	General Fuel Moisture:	<b>Moderate</b>	Min 1000 hr Fuel Moisture:	<b>N/A</b>	
Tons per Acre:	<b>4.4</b>	Fuel Density:	<b>Typical</b>	Cover Type:	<b>WESTSIDE PONDEROSA PINE FOREST</b>	Max 1000 hr Fuel Moisture:	<b>N/A</b>	
General Description:	<b>Deadwood Unit-24 (DU-15) was mechanically thinned and released approximately 5-8 years ago. Fuel modules TU5 (165) best represent the current fuels structure and fuel loading. The unit bound by the 10 road along the northern and western border. There is a dense, shallow drainage that separated DU-24 from DU-23.</b>							
Emissions Calculation Method:	<b>0.007</b>	Estimated Emissions:				<b>3.23</b>		

<b>Location Information</b>							
County:	<b>Placer</b>	District:	<b>Placer County APCD</b>	Air Basin:	<b>Mountain Counties</b>	Crossroads:	<b>Foresthill Road and FR 10</b>
Meridian:	<b>Mt Diablo</b>	Township:	<b>15N</b>	Range:	<b>11E</b>	Section:	<b>28</b>
Latitude:	<b>39.116217</b>	Longitude:	<b>-120.736364</b>	Slope:	<b>0-15%</b>	Aspect:	<b>WSW</b>
Min Elev:	<b>4020</b>	Max Elev:	<b>4460</b>	Mean Elev:	<b>4240</b>		

<b>Ignition Prescription</b>							
Source of meteorological information:	<b>General Fire Weather Forecast: NWS zone CAZ269 <a href="https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones">https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones</a> Spot Weather Forecast: <a href="https://www.weather.gov/spot/request/">https://www.weather.gov/spot/request/</a> 1300 Regional Smoke Management Conference line: 888-844-9904 pc: 5859144</b>						
Other considerations to ensure adequate smoke dispersion:	<b>Monitor possible inversions and approaching low pressure systems that may bring colder temperatures and increase settling of smoke in drainage and low lying areas. Additional coordination with neighboring air quality districts may be required to to manage air quality issues in sensitive air sheds.</b>						

<b>Surface Wind</b>							
Ideal Direction:	<b>W</b>	Min:	<b>SE</b>	Max:	<b>NNW</b>	Ideal Speed:	<b>12</b> Min: <b>8</b> Max: <b>18</b>
<b>Transport Wind Direction</b>							
Ideal:	<b>W</b>	Min:	<b>SSW</b>	Max:	<b>NNW</b>		
<b>Relative Humidity</b>							
Ideal:	<b>20</b>	Min:	<b>15</b>	Max:	<b>30</b>		
<b>Temperature</b>							
Ideal:		Min:	<b>55</b>	Max:	<b>85</b>		
Target Mixing Height:	<b>2000</b>						

<b>DU-1</b>							
<b>General Information</b>							
Acres:	<b>0</b>	Fuel Arrangement:	<b>Natural</b>	General Fuel Moisture:	<b>Moderate</b>	Min 1000 hr Fuel Moisture:	<b>N/A</b>
Tons per Acre:	<b>0</b>	Fuel Density:	<b>Typical</b>	Cover Type:	<b>WESTSIDE PONDEROSA PINE FOREST</b>	Max 1000 hr Fuel Moisture:	<b>N/A</b>

Method:							
<b>Location Information</b>							
County:	<b>Placer</b>	District:	<b>Placer County APCD</b>	Air Basin:	<b>Mountain Counties</b>	Crossroads:	<b>Foresthill Road and FR 10</b>
Meridian:	<b>Mt Diablo</b>	Township:	<b>15N</b>	Range:	<b>11E</b>	Section:	<b>34</b>
Latitude:	<b>39.102197</b>	Longitude:	<b>-120.722153</b>	Slope:	<b>0-15%</b>	Aspect:	<b>WSW</b>
Min Elev:	<b>4230</b>	Max Elev:	<b>4400</b>	Mean Elev:	<b>4315</b>		
<b>Ignition Prescription</b>							
Source of meteorological information:		<b>General Fire Weather Forecast: NWS zone CAZ269 <a href="https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones">https://www.wrh.noaa.gov/fire2/?latitude=39.21&amp;longitude=-120.55&amp;latlon=Go&amp;wfo=rev&amp;interface=fwzones</a> Spot Weather Forecast: <a href="https://www.weather.gov/spot/request/">https://www.weather.gov/spot/request/</a> 1300 Regional Smoke Management Conference line: 888-844-9904 pc: 5859144</b>					
Other considerations to ensure adequate smoke dispersion:		<b>Monitor possible inversions and approaching low pressure systems that may bring colder temperatures and increase settling of smoke in drainage and low lying areas. Additional coordination with neighboring air quality districts may be required to to manage air quality issues in sensitive air sheds.</b>					
<b>Surface Wind</b>							
Ideal Direction:	<b>W</b>	Min:	<b>SE</b>	Max:	<b>NNW</b>	Ideal Speed:	<b>12</b> Min: <b>8</b> Max: <b>18</b>
<b>Transport Wind Direction</b>							
Ideal:	<b>W</b>	Min:	<b>SSW</b>	Max:	<b>NNW</b>		
<b>Relative Humidity</b>							
Ideal:	<b>20</b>	Min:	<b>15</b>	Max:	<b>30</b>		
<b>Temperature</b>							
Ideal:		Min:	<b>55</b>	Max:	<b>85</b>		
Target Mixing Height:	<b>2000</b>						

### Pile Units

- No Pile units were included in this SMP.

### Smoke Sensitive Areas

<b>Foresthill</b>			
SSA Elevation:	<b>3000 ft</b>	Direction:	<b>SW</b> Distance: <b>5.27 mi. miles</b>
Most likely time of potential impacts:	<b>Overnight</b>		
SSA Description:			
Has prescribed burning occurred in this area before?	<b>Yes</b>		
If yes, did smoke impact the area?:	<b>No</b>		
If yes, please describe impacts:	<b>none</b>		
<b>Dutch Flat</b>			
SSA Elevation:	<b>3300 ft</b>	Direction:	<b>NW</b> Distance: <b>10.1 mi. miles</b>
Most likely time of potential impacts:	<b>Morning</b>		
SSA Description:	<b>Area is accross major river canyon no smoke impacts in the past</b>		
Has prescribed burning occurred in this area before?	<b>Yes</b>		
If yes, did smoke impact the area?:	<b>No</b>		
If yes, please describe impacts:	<b>None</b>		
<b>Michigian Bluff</b>			
SSA Elevation:	<b>3600 ft</b>	Direction:	<b>S</b> Distance: <b>1.8 miles</b>
Most likely time of potential impacts:	<b>Overnight</b>		
SSA Description:	<b>Te area is on a ridge top. Unlikely to be affected by smoke.</b>		

Has prescribed burning occurred in this area before?	<b>Yes</b>
If yes, did smoke impact the area?:	<b>No</b>
If yes, please describe impacts:	<b>none</b>

<b>Iowa Hill</b>					
SSA Elevation:	<b>2861 ft</b>	Direction:	<b>NW</b>	Distance:	<b>6.8 mi. miles</b>
Most likely time of potential impacts:	<b>Overnight</b>				
SSA Description:	<b>NA</b>				
Has prescribed burning occurred in this area before?	<b>No</b>				
If yes, did smoke impact the area?:	<b>No</b>				
If yes, please describe impacts:	<b>NA</b>				

<b>Alta</b>					
SSA Elevation:	<b>3100 ft</b>	Direction:	<b>N</b>	Distance:	<b>10.1 mi. miles</b>
Most likely time of potential impacts:	<b>Evening</b>				
SSA Description:	<b>Smoke filtering through drainages &amp; hand ignitions will be visible.</b>				
Has prescribed burning occurred in this area before?	<b>No</b>				
If yes, did smoke impact the area?:	<b>No</b>				
If yes, please describe impacts:	<b>NA</b>				

### Public Contact Methods

	Television	Radio	Newspaper	Signs/Flyers	Telephone	Email	Website
	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
Description of Contact Method(s):	<b>This Rx fire project will be on a list of projects that the Forest will initially notify regional media outlets through a formal notice and updates to the Tahoe N.F. web site. As the project gets closer to ignition operations, local staff will notify local agencies and media directly via phone, email, etc.</b>						
Signage Description:	<b>Flyers will be placed at local businesses and District information board. Additional signage will be placed along the Foresthill Divide Road and major Forest Roads.</b>						

### Alternatives to Burning

Alternative Name:	<b>Hand Thinning/pile burn/chipping</b>
Description:	<b>The Deadwood Environmental Assessment was signed for approval in 2011. Since that time, units have received initial thinning treatments consisting of mechanical thinning from below and mastication. Since these initial treatments, brush has grown back to a height of 3 to 5 feet tall in some areas. In order to maintain these units in a state to reduce the threat of wildfire to the Foresthill Divide Road, the brush needs to be reduced. One possible treatment is to hand thin approx. 1700 acres with additional follow up treatment of burning piles or to haul the slash to areas for chipping.</b>
Did you use this alternative?	<b>No</b>
Estimated emissions and fuel reduction, or reasons for not using this alternative:	
Additional Comments:	<b>Estimated cost to hand thin the 1700 acres were at a rate of \$14,000/day for a 20 person crew working a 16 hour day. Contract negotiations were unable to reach a cost benefit compared to Prescribed fire, therefore this alternative was not pursued. Prescribed burning within the project area was approved and authorized as a cost effective and environmentally beneficial follow up treatment to ground based thinning and approved as a Best Management Practice (BMP) under the Tahoe National Forest- Land Use Management Plan. No other alternatives have been put forward as the time of the SMP submission.</b>

### Smoke Mitigation

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Contingency Name:	<b>Discontinue ignition and initiate mop-up</b>
Contingency Measure?	<b>Yes</b>
Smoke Minimization Measure?	<b>Yes</b>
Description:	<b>Discontinue ignition except that which is required to retain control of burn. Immediately initiate mop-up operations to minimize smoke impacts. Mop-up should be discontinued and ignition resumed if favorable smoke conditions return.</b>
Contingency Name:	<b>Test Fire</b>
Contingency Measure?	<b>Yes</b>
Smoke Minimization Measure?	<b>Yes</b>
Description:	<b>A test fire will be conducted before each unit ignition. The Burn Boss will select a representative location of appropriate fuel conditions that is easily accessible by holding resources where prescription elements can be produced and measured. The test fire will be large enough to ensure objectives can be effectively measured. This site will generally be along the top and downwind portions of the unit. Ideal locations will be along the Foresthill Rd., trails, and Forest Roads. If holding issues or objectives will not be met; resources will suppress and contain the test fire as soon as possible, ensuring techniques will not hinder future ignitions. Fuel consumption, flame lengths, and smoke dispersal within this test burn will be used to determine if burning will meet objectives. Pending the results of the test fire, the Burn Boss will decide if firing will commence and notify GVECC.</b>
Contingency Name:	<b>Weather Monitoring</b>
Contingency Measure?	<b>Yes</b>
Smoke Minimization Measure?	<b>Yes</b>
Description:	<b>For all District wide under burning, a local SPOT weather forecast will be obtained prior to and during ignition operations. Additional weather information can/may be obtained during the daily 1300 regional weather conference. The preference for district wide burning is generally a forecasted weather pattern of cool, dry weather that allows for good to excellent fuel consumption and atmospheric mixing with good relative humidity recovery at night. Forecast weather that predict strong drying north or east winds within 72 hours of estimated project completion may delay, modify or cancel ignition strategies. On-site fuels and weather information may be obtained utilizing a belt weather kit, or alternate instrument (Kestrel). Fuel moisture will be determined by computing 1 and 10 hour fuels moisture. Both weather and fuels information can be obtained (but calibrated to local conditions) from the local RAWS.</b>

**SMR Comments**

Land Manager Comments:	<b>Completed units have been removed or made inactive from this plan 10/11/20 BBC</b>
Air District Comments:	<b>None</b>

**Project Maps**

Map Name: ([View PDF in a new window](#))



Appendix F

Pages 1 (cover page), 21, 24-26

U.S. FOREST SERVICE  
PACIFIC SOUTHWEST REGION  
TAHOE NATIONAL FOREST



AMERICAN RIVER RANGER DISTRICT  
PRESCRIBED FIRE BURN PLAN

ADMINISTRATIVE UNIT(S):

**DEADWOOD UNDER BURN PHASE 1  
(UNITS 1-5, 7-10, 14-24)**

PREPARED BY: B. B. Crawford DATE: 10/01/2018  
Brian Crawford, RXB2

Technical Review by: Jennifer Hinckley DATE: 10/10/2018  
Jennifer Hinckley, RXB2

Reviewed By: Jesse Knox DATE: 10/16/18  
Jesse Knox, District Fire Management Officer, RXB2

COMPLEXITY RATING: MODERATE

MINIMUM RXBB REQUIREMENT: RXB 2

APPROVED BY: Eli Ilano DATE: 10.16.18  
Eli Ilano, TNF Forest Supervisor

<b>ELEMENT 4:</b> <b>DESCRIPTION OF PRESCRIBED FIRE AREA</b>	<b>PROJECT NAME:</b>	<b>DEADWOOD UNDER BURN</b>
	<b>BURN UNIT NAME:</b>	<b>UNIT-19 (DU-19)</b>
	<b>FUNDING SOURCE:</b>	<b>0517 NFHF1719</b>
<b>Physical Description</b>		
<p><b>Location:</b> DU-19 is at the intersection of the Foresthill Divide Road and Forest Road 10. The bottom of the unit is bordered by Forest Road 10-6. T 15 N, R 11 E, Sec. 37/ Lat. N 39° 06'22.60 X Long. W 120° 43'40.72</p> <p><b>Size:</b> DU-19 is 243 acres.</p> <p><b>Topography:</b> elevation: 4340-4500 feet, flat aspect, 0-30% slope.</p>		
<b>Project or Burn Unit Boundary Description</b>		
<p><b>Vegetative type and fuel model(s):</b> Deadwood Unit-19 (DU-19) was mechanically thinned and released with a follow up of mastication approximately 1-2 years ago. Fuel modules TL1 (181) best represent the current fuels structure and fuel loading. The large unit is bound by a drainage to the northwest and is then surrounded by paved and dirt roads. Deadwood Unit 22 is located on the other side of the drainage. There is a small parcel of private property located in the north east corner near the Divide Road/Foresthill Road intersection.</p> <p><b>Project description:</b> The Deadwood Prescribed Fire Project area is approximately 2,600 acres of primary and follow up treatment of burning. The project will be divided into three separate phases with phase 1 totaling approximately 1,701 acres, phase 2 totaling approximately 815 acres, and phase 3 totaling 140 acres.</p>		
<b>Fuels Description</b>		
<b>On-Site Fuels Data</b>	<b>Adjacent Fuels Data</b>	
<p>DU-19 has been thinned from below utilizing mechanical thinning and mastication creating an open canopy with an open understory, generally FM TL1 (Scott and Burgan 2005). Fuel bed is minimal to light load timber activity slash with mixed grasses and shrubs. Overstory is a mixed conifer stand including ponderosa pine (<i>pinus ponderosa</i>), white fir (<i>abies concolor</i>), and incense cedar (<i>calocedrus decurrens</i>). Canopy base height ranges from ten to thirty feet. Understory vegetation of mixed shrub, ranges from one to two feet in height and sparse in some areas. Duff layer depths range from one-half to six inches with pockets void of vegetation. Currently, there are light to low amounts of 100-hour fuels one to three inches in diameter. 1000-hour fuels are minimal.</p>	<p>Generally, FM TL4 (Scott and Burgan 2005). Fuel bed is moderate load conifer litter with mixed grasses and shrubs. Overstory is a mixed conifer stand including ponderosa pine (<i>pinus ponderosa</i>), white fir (<i>abies concolor</i>), and incense cedar (<i>calocedrus decurrens</i>). Canopy base height ranges from five to ten feet. Understory vegetation, mixed shrub, ranges from three to five feet. Duff layer depths range from two to six inches with pockets of heavy vegetation. Currently, there are high amounts of large woody debris greater than eight inches in diameter.</p>	
<b>Description of Unique Features (hazards, regulations, issues, constraints, etc.)</b>		
<p><i>Examples may include fences to protect, power poles, historical/cultural sites, threatened and endangered species or habitat, etc.</i></p> <ul style="list-style-type: none"> <li>• Offsite features include fences, private property infrastructure including municipal water and electricity supply lines, recreational sites and trail systems.</li> <li>• No historic or cultural significant sites are located within the unit.</li> <li>• Other significant sensitive species and/or habitat on site or near the project area include California red legged frog (<i>rana draytonii</i>), foothill yellow legged frog (<i>rana boylei</i>), California spotted owl (<i>strix occidentalis occidentalis</i>) and northern goshawk (<i>accipiter gentilis</i>). As of the time of this prescribed fire plan, there are no sensitive wildlife or botanical species issues or concerns that exist for DU-19.</li> </ul>		

<b>ELEMENT 4:</b> <b>DESCRIPTION OF PRESCRIBED FIRE AREA</b>	<b>PROJECT NAME:</b>	<b>DEADWOOD UNDER BURN</b>
	<b>BURN UNIT NAME:</b>	<b>UNIT-22 (DU-22)</b>
	<b>FUNDING SOURCE:</b>	<b>0517 NFHF1719</b>
<b>Physical Description</b>		
<p><b>Location:</b> DU-22 is located in between Forest Road 10 to the north, Forest Road 10-6 to the south west, the Loop 3 Trail to the northwest and DU-19 to the South East. There is good access to the unit by vehicle or OHV from the roads mentioned above. T 15 N, R 11 E, Sec. 27/ Lat. N 39° 06'41.62 X Long. W 120° 43'42.98</p> <p><b>Size:</b> DU-22 is 76 acres.</p> <p><b>Topography:</b> elevation: 4550-4240 feet, south aspect, 0-30% slope.</p>		
<b>Project or Burn Unit Boundary Description</b>		
<p><b>Vegetative type and fuel model(s):</b> Deadwood Unit-22 (DU-22) was mechanically thinned and released approximately 5-8 years ago. Fuel modules TU5 (165) and TL3 (183) best represent the current fuels structure and fuel loading. The unit is a long, narrow unit that hugs the gentle contours above a drainage to the south east. The north west side of the unit is DU-23.</p> <p><b>Project description:</b> The Deadwood Prescribed Fire Project area is approximately 2,600 acres of primary and follow up treatment of burning. The project will be divided into three separate phases with phase 1 totaling approximately 1,701 acres, phase 2 totaling approximately 815 acres, and phase 3 totaling 140 acres.</p>		
<b>Fuels Description</b>		
<b>On-Site Fuels Data</b>	<b>Adjacent Fuels Data</b>	
<p>DU-22 has been thinned from below utilizing mechanical thinning creating an open canopy with moderate to high amounts of brush and litter, generally FM TU5 (Scott and Burgan 2005). Fuel bed is moderate to high load timber activity slash with mixed grasses and shrubs. Overstory is a mixed conifer stand including ponderosa pine (<i>pinus ponderosa</i>), white fir (<i>abies concolor</i>), and incense cedar (<i>calocedrus decurrens</i>). Canopy base height ranges from ten to thirty feet. Understory vegetation of mixed shrub, ranges from three to eight feet in height and dense in some areas. Duff layer depths range from one-half to six inches with pockets void of vegetation. Currently, there are low to moderate amounts of 100-hour fuels one to three inches in diameter. 1000-hour fuels are minimal.</p>	<p>Generally, FM TL4 (Scott and Burgan 2005). Fuel bed is moderate load conifer litter with mixed grasses and shrubs. Overstory is a mixed conifer stand including ponderosa pine (<i>pinus ponderosa</i>), white fir (<i>abies concolor</i>), and incense cedar (<i>calocedrus decurrens</i>). Canopy base height ranges from five to ten feet. Understory vegetation, mixed shrub, ranges from three to five feet. Duff layer depths range from two to six inches with pockets of heavy vegetation. Currently, there are high amounts of large woody debris greater than eight inches in diameter.</p>	
<b>Description of Unique Features (hazards, regulations, issues, constraints, etc.)</b>		
<p><i>Examples may include fences to protect, power poles, historical/cultural sites, threatened and endangered species or habitat, etc.</i></p> <p>Offsite features include fences, private property infrastructure including municipal water and electricity supply lines, recreational sites and trail systems. No historic or cultural significant sites are located within the unit. Other significant sensitive species and/or habitat on site or near the project area include California red legged frog (<i>rana draytonaii</i>), foothill yellow legged frog (<i>rana boylei</i>), California spotted owl (<i>strix occidentalis occidentalis</i>) and northern goshawk (<i>accipiter gentilis</i>). As of the time of this prescribed fire plan, no wildlife issues or concerns exist for DU-22.</p>		

<b>ELEMENT 4:</b>	<b>PROJECT NAME:</b>	<b>DEADWOOD UNDER BURN</b>
<b>DESCRIPTION OF PRESCRIBED FIRE AREA</b>	<b>BURN UNIT NAME:</b>	<b>UNIT-23 (DU-23)</b>
	<b>FUNDING SOURCE:</b>	<b>0517 NFHF1719</b>
<b>Physical Description</b>		
<p><b>Location:</b> DU-23 is located along Forest Road 10 and Forest Road 10-6. There is good access to the unit by vehicle or OHV. The unit can also be accessed from the Loop 3 trail.</p> <p>T 15 N, R 11 E, Sec. 27/ Lat. N 39° 06'47.09 X Long. W 120° 43'53.64</p> <p><b>Size:</b> DU-23 is 202 acres.</p> <p><b>Topography:</b> elevation: 4150-4530 feet, south east aspect, 0-30% slope.</p>		
<b>Project or Burn Unit Boundary Description</b>		
<p><b>Vegetative type and fuel model(s):</b>                  Deadwood Unit-23 (DU-23) was mechanically thinned and released with a follow up of mastication approximately 5-8 years ago. Fuel modules TU5 (181) best represent the current fuels structure and fuel loading. The unit is long, and narrow. DU-23 is bound by the Loop 3 trail system and DU-22 to the south east, while the north west side borders DU-24. Forest Road 10-6 on the south west and the 10 road on the north east.</p> <p><b>Project description:</b>                  The Deadwood Prescribed Fire Project area is approximately 2,600 acres of primary and follow up treatment of burning. The project will be divided into three separate phases with phase 1 totaling approximately 1,701 acres, phase 2 totaling approximately 815 acres, and phase 3 totaling 140 acres.</p>		
<b>Fuels Description</b>		
<b>On-Site Fuels Data</b>	<b>Adjacent Fuels Data</b>	
DU-23 has been thinned from below utilizing mechanical thinning and mastication creating an open canopy with an open understory, generally FM TU5 (Scott and Burgan 2005). Fuel bed is moderate to high load timber brush with mixed grasses and shrubs. Overstory is a mixed conifer stand including ponderosa pine ( <i>pinus ponderosa</i> ), white fir ( <i>abies concolor</i> ), and incense cedar ( <i>calocedrus decurrens</i> ). Canopy base height ranges from ten to thirty feet. Understory vegetation of mixed shrub, ranges from three to eight feet in height and dense in some areas. Duff layer depths range from one-half to six inches with pockets void of vegetation. Currently, there are light to low amounts of 100-hour fuels one to three inches in diameter. 1000-hour fuels are minimal.	Generally, FM TL4 (Scott and Burgan 2005). Fuel bed is moderate load conifer litter with mixed grasses and shrubs. Overstory is a mixed conifer stand including ponderosa pine ( <i>pinus ponderosa</i> ), white fir ( <i>abies concolor</i> ), and incense cedar ( <i>calocedrus decurrens</i> ). Canopy base height ranges from five to ten feet. Understory vegetation, mixed shrub, ranges from three to five feet. Duff layer depths range from two to six inches with pockets of heavy vegetation. Currently, there are high amounts of large woody debris greater than eight inches in diameter.	
<b>Description of Unique Features (hazards, regulations, issues, constraints, etc.)</b>		
<p><i>Examples may include fences to protect, power poles, historical/cultural sites, threatened and endangered species or habitat, etc.</i></p> <p>Offsite features include fences, private property infrastructure including municipal water and electricity supply lines, recreational sites and trail systems. No historic or cultural significant sites are located within the unit. Other significant sensitive species and/or habitat on site or near the project area include California red legged frog (<i>rana draytonaii</i>), foothill yellow legged frog (<i>rana boylei</i>), California spotted owl (<i>stirx occidentalis occidentalis</i>) and northern goshawk (<i>accipiter gentilis</i>). As of the time of this prescribed fire plan, no wildlife issues or concerns exist for DU-23.</p>		



<b>ELEMENT 4:</b> <b>DESCRIPTION OF PRESCRIBED FIRE AREA</b>	<b>PROJECT NAME:</b>	<b>DEADWOOD UNDER BURN</b>
	<b>BURN UNIT NAME:</b>	<b>UNIT-24 (DU-24)</b>
	<b>FUNDING SOURCE:</b>	<b>0517 NFHF1719</b>
<b>Physical Description</b>		
<p><b>Location:</b> DU-24 is located along the Forest Road 10. The southern part is along the Forest Road 10-6 and the south east borders DU-23. There is good access to the parameter of the unit by vehicle or OHV. T 15 N, R 11 E, Sec. 28/ Lat. N 39° 06'58.38"X Long. W 120° 44'10.91"</p> <p><b>Size:</b> DU-24 is 105 acres.</p> <p><b>Topography:</b> elevation: 4020-4460 feet, south aspect, 0-30% slope.</p>		
<b>Project or Burn Unit Boundary Description</b>		
<p><b>Vegetative type and fuel model(s):</b> Deadwood Unit-24 (DU-24) was mechanically thinned and released approximately 5-8 years ago. Fuel modules TU5 (165) best represent the current fuels structure and fuel loading. The unit bound by the 10 road along the northern and western border. There is a dense, shallow drainage that separated DU-24 from DU-23.</p> <p><b>Project description:</b> The Deadwood Prescribed Fire Project area is approximately 2,600 acres of primary and follow up treatment of burning. The project will be divided into three separate phases with phase 1 totaling approximately 1,701 acres, phase 2 totaling approximately 815 acres, and phase 3 totaling 140 acres.</p>		
<b>Fuels Description</b>		
<b>On-Site Fuels Data</b>	<b>Adjacent Fuels Data</b>	
<p>DU-24 has been thinned from below utilizing mechanical thinning creating an open canopy with a dense understory, generally FM TU5 (Scott and Burgan 2005). Fuel bed is moderate to high load shrub with mixed grasses and litter. Overstory is a mixed conifer stand including ponderosa pine (<i>pinus ponderosa</i>), white fir (<i>abies concolor</i>), and incense cedar (<i>calocedrus decurrens</i>). Canopy base height ranges from ten to thirty feet. Understory vegetation of mixed shrub, ranges from three to eight feet in height and sparse in some areas. Duff layer depths range from one-half to six inches with pockets void of vegetation. Currently, there are light to low amounts of 100-hour fuels one to three inches in diameter. 1000-hour fuels are minimal.</p>	<p>Generally, FM TL4 (Scott and Burgan 2005). Fuel bed is moderate load conifer litter with mixed grasses and shrubs. Overstory is a mixed conifer stand including ponderosa pine (<i>pinus ponderosa</i>), white fir (<i>abies concolor</i>), and incense cedar (<i>calocedrus decurrens</i>). Canopy base height ranges from five to ten feet. Understory vegetation, mixed shrub, ranges from three to five feet. Duff layer depths range from two to six inches with pockets of heavy vegetation. Currently, there are high amounts of large woody debris greater than eight inches in diameter.</p>	
<b>Description of Unique Features (hazards, regulations, issues, constraints, etc.)</b>		
<p><i>Examples may include fences to protect, power poles, historical/cultural sites, threatened and endangered species or habitat, etc.</i></p> <p>Offsite features include fences, private property infrastructure including municipal water and electricity supply lines, recreational sites and trail systems. No historic or cultural significant sites are located within the unit. Other significant sensitive species and/or habitat on site or near the project area include California red legged frog (<i>rana draytonii</i>), foothill yellow legged frog (<i>rana boylei</i>), California spotted owl (<i>stirix occidentalis occidentalis</i>) and northern goshawk (<i>accipiter gentilis</i>). As of the time of this prescribed fire plan, no wildlife issues or concerns exist for DU-24.</p>		