Caples Escape Fire Review

An analysis of the seasonal severity, weather events, and on-site conditions leading up to the wildfire declaration.

- Weather observations preceding the October 10, 2019 wildfire declaration of the Caples Prescribed Burn. Data was retrieved from the Owens Camp RAWS (closest RAWS to the prescribed fire location 5600ft elevation). The RAWS recorded the following observations:

Month	Precipitation	Average Temp (F)
May	5.29"	49.2°
June	0.08"	62.4°
July	0.01"	65.5°
August	0"	66.5°
September	1.45" (0.39" on 9/28-9/29)	58°

- Live fuel moisture was measured prior to and during the Caples prescribed burn. Manzanita was sampled at the Silver Fork site. Measured live fuel moisture on 9/24/2019 contained a possible error. The live fuel moisture measured on this date was 30% higher than any other measured live fuel moisture during the month of September.

Sampling Date	Fuel Moisture Percentage
September 24, 2019	134.96%
October 1, 2019	99.2%

- 9/30/2019 – the day of the ignition of the 15 acres of piles located in the Caples Ecological Restoration Project area was reported as wet with snow on the ground in areas from a couple inches to a skiff. There are 3 different areas that were lit. They are referred to as the Hay Flat, Government Meadows and the Caples Creek trailhead areas. Piles were created from 3 years to 1 year prior to ignition. Piles were hand constructed from materials that were cut resulting in a 50ft fuel break for future under-burns directly adjacent. They were composed of mixed conifers.
- 10/1/2019 - Piles in the Government Meadows crept from the influence of the piles up into a brush field. Burn plan allows for 30% creep outside of influence of the piles. That would equate to a total of 4.5 acres of creep for the 15 acres of piles that was ignited on 9/30/2019. The weather parameters outlined in the Placerville Districtwide Type 3 pile burn plan were followed. Verified by the National Weather Service. The following disclaimer was written into the burn plan regarding the amount of moisture needed to burn piles and stated "Units and/or piles will have natural or constructed control line around them or be surrounded by sufficient moisture or snow to restrict fire spread. Sufficient moisture to restrict fire spread will be determined on site by their professional judgment."
- Spot weather requests were submitted from 10/3/2019 to 10/10/2019, the day of the declared wildfire. The National Weather Service (NWS) issued a High Risk Warning for gusty N-NE winds and low RH on 10/4 for 10/5 and 10/6. On 10/5 there was an issue for a High Risk Warning for Gusty N-NE winds and Low RH for 10/9 and 10/10 it was elevated to very strong on the 8th.
- On the 10/5, there was an East winds event (around 2000) (10-20mph) that blew the fire over 1 mile of linear containment line and moved the fire 1500 feet down the ridge within the unit.
- On the 10/9, there was an East wind event (around 2000) (15-20mph) that caused a few spot fires and slop overs that were caught by the night resources. The winds blew all night and by the next morning they had increased enough that they were blowing large objects off of the hoods of vehicles at briefing

(30mph+). A recon flight had been ordered and was flown with Firewatch-51, relayed to the ground that there was a 250 acre spot on the south side of Caples creek. The RXB2 followed the protocol to declare a wildfire.

Findings: Report of live fuel moisture of 135% was an error. Both one week prior and one week later, live fuel moistures were measured at approximately 100%. Precipitation was measured at 1.45", however, reports from people involved with the burn state there was 3 inches of rain in September. Based on the Owens Camp RAWS precipitation measurements, the statement that 3 inches of rain had been received in September is inaccurate. There was no prediction of measurable precipitation in the forecast throughout the event. Wind predictions were highlighted and accurate on timing and wind speed. No Red Flag Warnings were issued directly where the fire was located, but there was a Red Flag warning issued for high winds and low RH's on 9th and the 10th of October directly west of the fire. Inaccurate live fuel moisture, perception of how much rainfall actually was on the ground and high winds likely contributed to the declaration of the wildfire.

Spot WX for the night of 10/9/2019

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.TONIGHT...

Sky/weather.........Clear.
Min temperature.....33-38.
Max humidity........27-32 percent.
Wind (20 ft)........
 Slope/valley.......Northeast winds 10 to 16 mph with gusts to
                    around 22 mph.
 Ridgetop...........East around 18 mph.
Mixing height.......3900 ft AGL decreasing to 100-600 ft AGL early
                    in the evening.
Transport winds.....East around 18 mph.
CWR.................0 percent.
LAL.................1.
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<u>An analysis of the prescribed fire plan for consistency with agency policy and guidance related to prescribed fire planning and implementation.</u>

There were 2 burn plans used on the Caples project area. One is the Placerville District Wide Pile Burn Plan (Type 3), the second is Caples RX (Type 2).

Placerville District Wide Pile Burn Plan:

- Element 1: Signature Page. The burn plan was signed by the preparer on September 9th, 2016, the technical review was signed on September 9th, 2016, and the agency administrator has two signature dates of October 18th 2016, and February 9th 2017.
- Element 2A: Agency Administrator Ignition Authorization. The authorization was signed on January 29th 2019, with an authorization period from January 29th 2019, through December 31st 2019.

- Element 2B: Prescribed Fire Go/No-Go Checklist. The checklist was completed by the Burn Boss on September 30th 2019 through October 2nd 2019.
- Element 3: Complexity Analysis summary and Final Complexity. (Not the most recent format) prepared and signed October 27th 2016, and signed by the Agency Administrator on February 9th 2017.

Findings: All elements are consistent with agency policy and guidelines outlined in the Interagency Prescribed Fire Planning and Implementation Process Guide and Prescribed Fire Complexity Rating System. The most current version on the complexity guide was not used, however it is within the applicable time frame to use the old version.

Caples Type 2 Burn Plan:

- Element 1: Signature Page: The burn plan was signed by the preparer on October 1st 2017 and on May 8th 2019, the technical review was signed on August 24th 2017, and the agency administrator October 15th 2017 and on May 22nd 2019.
- Element 2A: Agency Administrator Ignition Authorization. The authorization was signed by the FMO on May 8th 2019 and the Agency Administrator on May 22nd 2019, with an authorization period from May 22nd 2019 through December 31st 2019.
- Element 2B: Prescribed fire Go/No-Go Checklist. The Checklist was completed each day from October 4th 2019 through October 10th 2019.
- Element 3: Complexity Analysis and Final Complexity. The most current Complexity Analysis was signed by the preparer, technical reviewer and the agency administrator on October 4th 2019.

Findings: All elements are consistent with agency policy and guidelines outlined in the Interagency Prescribed Fire Planning and Implementation Guide and Prescribed Fire Complexity Rating System. There was an amendment signed on October 4th 2019, after the piles (type 3 burn) had been ignited, by the District FMO and the Agency Administrator to add an additional 1121 acres to the burn plan and the option to use aerial ignition in units A,B,C,D,E.

An analysis of prescribed fire implementation for consistency with the prescription, actions, and procedures in the prescribed fire plan.

There were 2 burn plans used preceding the declaration, a type 3 district pile burn plan from September 30th 2019 to October 3rd 2019. The Caples type 2 burn plan was used from October 3rd 2019 to October 10th 2019.

Placerville District Pile Burn Plan covers all piles made on the Placerville District, this plan incorporated the piles generated in the Caples Ecological Restoration Project area.

- Element 5: Objectives consume 70-100% of pile. If creep exceeds, or is expected to exceed 30% of total unit size in 24 hours, transition to a type 2 burn plan "may" be considered. According to how we interpreted the "30% creep" in the burn plan, pile creep exceed the 30% of unit size, and it transitioned to the type 2 Burn Plan 72 hours after the start of type 3 burn.
- Element 7: Prescription. Covers day of ignition WX parameters, WX parameters on-site day of ignition September 30th 2019 were within the plan.

- Element 9: Pre-Burn Considerations and Weather. Weather considerations for pre and post ignitions. "Units and/or piles will have natural or constructed line around them or be surrounded by sufficient moisture or snow to restrict fire spread. Sufficient moisture to restrict spread will be determined onsite by their professional judgement."
- Element 11: Organization and Equipment. One type 3 Burn Boss and 1 lighter, and 2 holders. Contingency resources are weather based from none to two type 3 engines, with a response from 30 minutes to 1 hour. Resources that were on project were one type 1 IHC.

Findings: Actions were followed within accordance to the burn plan. However it's hard to evaluate professional judgment of sufficient moisture as stated in the burn plan. Once the piles exceeded the 30% creep of the unit, the option for using a type 2 burn plan could have been implemented. From interviews the reason why the burn wasn't converted to a type 2 burn for 72 hours was the lack of available type 2 burn bosses, resources, and planning. The area had received moisture, 1.45" of precipitation during the month of September, and was perceived to be enough to hold the piles within the perimeters. There was no prediction of moisture in the 10 day outlook.

Caples type 2 Burn Plan:

Type 2 plan was implemented starting approximately 1330 on October 3rd 2019.

- Element 4: Description of the project area. Township, Range, Section noted. Narrative of unit description missing. It referenced to see Maps in Appendix A: Maps that are in the burn plan do not give an accurate description of where the units are specifically located. Fuel models are inconsistent throughout element and burn plan. On-site lists SH7, TU5, TL6, TL7 and then later list TL4, TL6, TL7, TU5. Off-site Fuels lists: GS2, TL6, TL7, TU5. Within the narrative it states "Fuels adjacent to project area units coincide with fuels present within, and vary with elevation." Percent of vegetative type and fuel models within unit: GS2=25%, TL4, TL6=35%, and TU5=15%, NB=25%. Missing 2 maps checked that are attached. (Significant or Sensitive Features, and Smoke Impact Areas)
- Element 5: Objectives. In plan Goals, Objectives, Range of Acceptable Results. Per Implementation guide: "Describe in clear, concise statements the specific measurable resource and prescribed fire objectives."
- Element 7: Prescription. Parameters are wide and not correlated in the output table. Ranges are used to capture all possible outcomes, not low to high fire severity. Some of the parameters have no range such as the POI of 64% with no variability or narrative stating what to do if outside set parameters.
- Element 11: Organization and Equipment. Required on-site 1 RXB2, 1 FIRB, 1 Holding Specialist, 2 lighters, and 1 type 3 engine. Contingency one type 2 crew 10 person (2 hour away or closer). Line production rate for required resources not identified.
- Element 17: Contingency Plan. Management action points 1, 2, 3 are nearly identical and no attached map to reference actions. Actions are vague and not specific.
- Element 18: Wildfire Declaration. Specific steps for declaring a wildfire. These steps were followed.

Findings: Inconsistent fuel models through Element 4 set up other Elements for inaccurate information. Prescription covers nearly all weather possibilities in part of the Element then very specific in others. No narrative to elaborate why it covers such a vast amount of parameters, or what to do if fire weather observations falls outside of specific parameters. Objectives need to be formatted to reflect the Implementation Guide. Organization element needs to reflect resources to produce enough handline that a fire could be caught with resources. Different organizations could be considered based off predicted fire weather and fire activity.

It is the finding of the team that these deficiencies in the burn plans did not lead to the declaration of the wildfire.

The approving agency administrator's qualifications, experience, and involvement.

- Agency Administrator (AA) was delegated to sign and approve Type 2 and Type 3 prescribed burns.

Findings: The December 14, 2018, letter for delegation from Forest Supervisor was reviewed and found to be somewhat current. Header of the delegation "FY19 Prescribed Fire Approval Delegation, Preparation, And Review Expectations." Technically the Caples Burn Plan was signed in FY19 but amendments were made on October 4th 2019, and the type 2 burn was conducted in FY20. This is not a contributing factor to the escape but noted the delegations should align with calendar years not fiscal years. AA has less than 2 years of experience in the Burn Plan realm. AA is certified at the trainee level in wildfire. AA is very involved in the process of burning and stayed actively engaged in person and via telephone.

The qualifications and experience of key personnel involved.

According to the current IQCS records, the qualifications and experience of key personnel at time of ignition is as follows:

- 9/30/2019 RXB3 qualified (8 years of experience)
- 10/1-10/2/2019 RXB3 qualified (1 years of experience)
- 10/2-10/3/2019 RXB3 qualified (3 years of experience)
- 10/3-10/10/2019 RXB2 qualified (6 years of experience)
- 10/3-10/10/2019 RXB2(t) Trainee
- 10/9-10/10/2019(Night shift) RXB2 qualified (2 months of experience)

On 10/10/2019 after the wildfire declaration, an ICT3 took command (7 years of experience). The ICT3 was the RXB2(t).

FIRB and holding specialist IQCS records were not pulled, the forest resources in those positions were qualified to act accordingly. Verified through district personnel.

Findings: Five different burn bosses, one trainee. 11 consecutive days of burning. Individuals assigned to key ICS roles varied by day on experience. Not enough information to determine if experience played a key role in this wildfire declaration. There was a wide range of people with different experience levels involved from the beginning that had influence over the 11 days of decision making.