

# 2017 Cajete Wildfire: Santa Fe National Forest, NM

## Testing Treatments: Collaborative Forest Landscape Restoration Project in Action

### Introduction

The Cajete fire started on June 15<sup>th</sup>, 2017 at approximately 1000 on the Jemez Ranger District of the Santa Fe National Forest. The cause was an abandoned campfire. The origin of the fire was near private property just north of State Highway 4 (Figure 1). The community of Sierra de Los Pinos is directly south and west of the fire origin. Other private inholdings are in the vicinity to the north and west.

The fire started in an untreated area of dense ponderosa pine and quickly transitioned from a surface fire into a crown fire. Fire behavior was most active the first two operational shifts.

The fire occurred within the footprint of the Southwest Jemez Collaborative Forest Landscape Restoration Project (SWJ CFLRP). The treatments displayed in figure 1 were funded by the SWJ CFLRP and played a role in protecting the community of Sierra de Los Pinos.

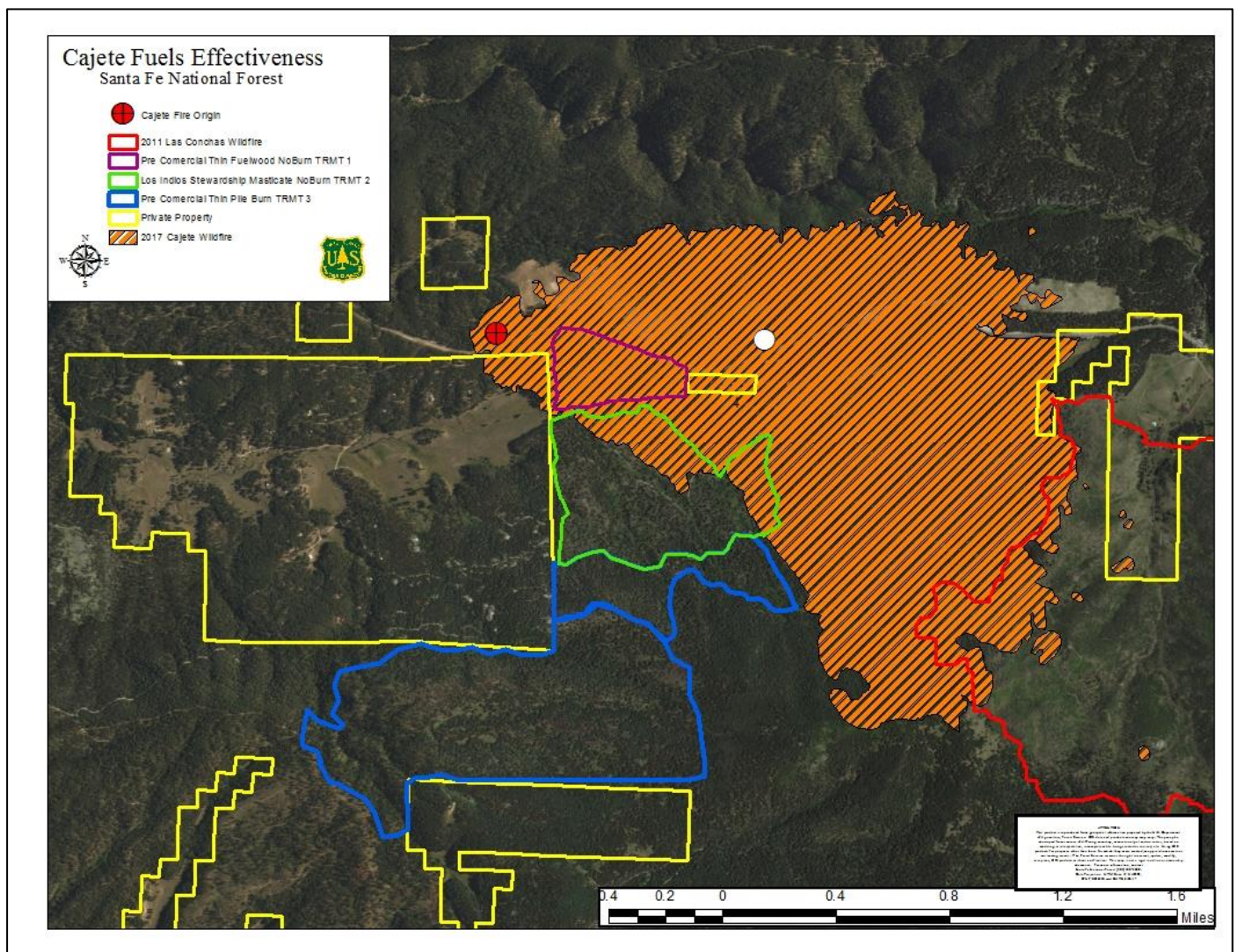


Figure 1. Cajete fire perimeter and associated fuels treatments.

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### Fire Environment

Weather observations recorded June 22<sup>nd</sup> (Figure 2) & 23<sup>rd</sup> (Figure 3) from the nearby Jemez RAWS station display critical fire weather conditions with temperatures reaching 90°F, relative humidity's falling to single digits and west winds gusting over 20mph.

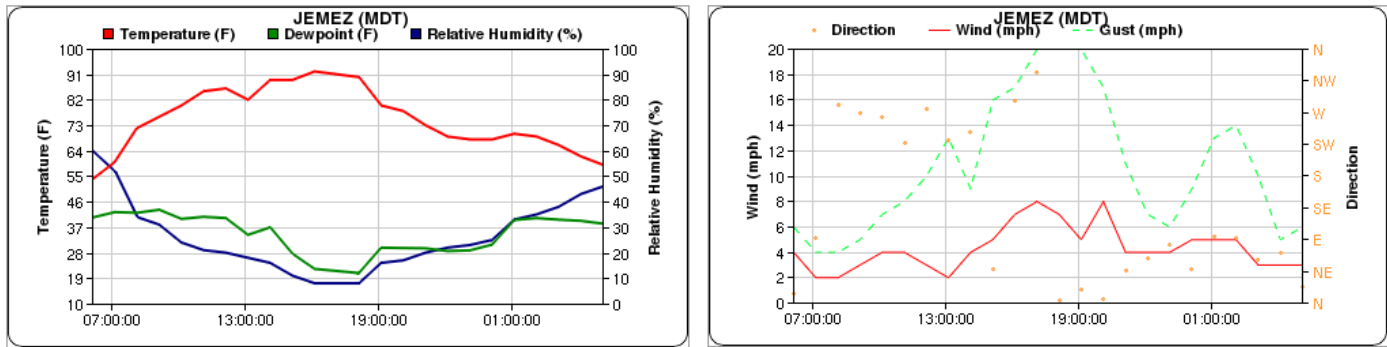


Figure 2. Weather observations from June 22<sup>nd</sup>.

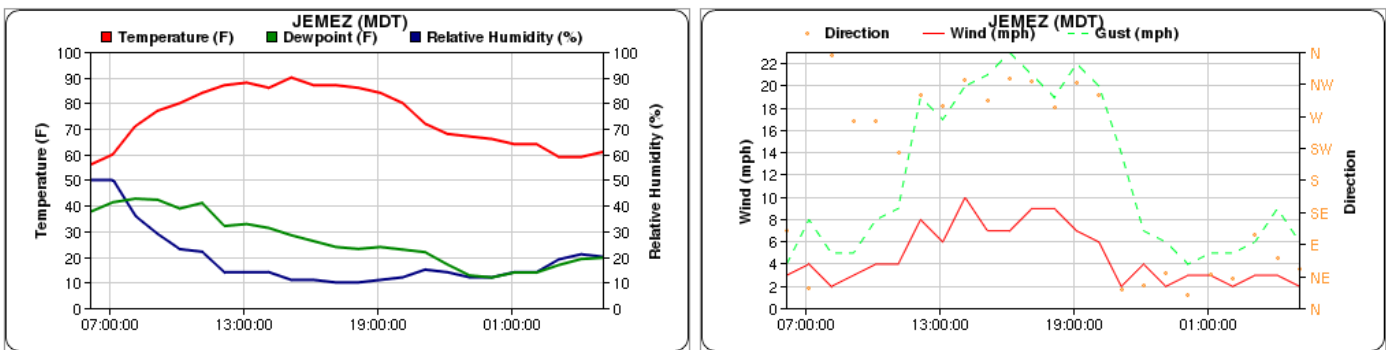


Figure 3. Weather observations from June 23<sup>rd</sup>.

### Southwest Jemez Collaborative Forest Landscape Restoration Project (SWJ CFLRP)

The SWJ CFLRP was one of the first 10 landscape projects awarded under the Collaborative Forest Landscape Restoration Program in 2010 (Figure 4). This project was developed through a collaborative process that included the Valles Caldera National Preserve, Pueblo of Jemez and many other partners. A primary focus of this CFLRP is to restore structure, function and resilience in frequent fire forests and reduce the potential for uncharacteristically severe and intense wildfires.

The fuels treatments that had an impact on the Cajete fire were funded and implemented under the SWJ CFLRP. As the SWJ Environmental Impact Statement (EIS) was being developed several areas that had prior NEPA decisions were treated funded by CFLRP funds. The areas that were treated were around the community of Sierra de Los Pinos. Sierra de Los Pinos was identified as a community at risk in the Forest's Fire Risk Assessment.

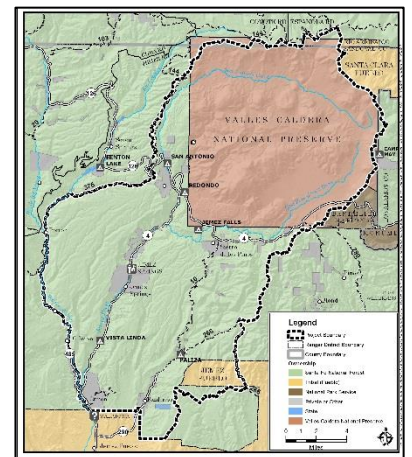


Figure 4. SWJ CFLRP

Treatments directly to the east of Sierra de los Pinos played the biggest role in reducing fire intensities and are discussed in detail below, **Fuel Treatment Effectiveness** (Figure 1).

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The SWJ CFLRP now has a signed EIS and an awarded stewardship contract. Prior to the Cajete Fire, the area north of Highway 4 was identified as a stewardship contract task order. The East Fork Task Order was ready to be awarded. If this task order had been implemented it would have modified behavior of the Cajete Fire. Instead, the fire moved through this untreated area and exhibited extreme fire behavior. Treatments done prior to the Cajete Fire demonstrate the effectiveness of thinning and burning. The Cajete fire is a reminder of the urgency and obligation for continued treatments funded with CFLRP dollars.

### **Fuel Treatment Effectiveness**

An array of treatments were implemented in the Los Griegos project area between 2010 and 2015. This report focuses on 3 treatments and their effectiveness in reducing wildfire intensity and severity. The treatments are to the east and south of Sierra de los Pinos (Figure 1 & 8.) **(Below: treatment names & colors match labels on Figure 1 & 8)**

#### Pre Commercial Thin Fuelwood No Burn (TRMT 1)

This unit was pre commercially thinned and opened for commercial fuelwood in 2015. The remaining activity fuel was lopped and scattered. The final step was to use broadcast prescribed (RX) fire. The perimeter of this unit was prepped on June 13<sup>th</sup>, two days prior to the Cajete, for an Rx burn. The unit was cut but unburned. The fire entered this treatment during the first burning period. The treatment had little effect in slowing fire spread but the fire did drop to the ground. The fire burned with high intensity and killed a large percentage of the overstory.

**Lessons Learned:** Lop and scatter should be followed by Rx fire to be effective at reducing fire intensities and severity. If a broadcast Rx fire had been implemented this treatment would have been more successful. (Figure 5).



Figure 5. Red box indicates TRMT 1

#### Los Indios Stewardship Masticate No Burn (TRMT 2)

The Los Indios Stewardship contract was one of the first treatments implemented under the SWJ CFLRP. This area was harvested and residual fuels were masticated in 2014. This unit was slated for broadcast Rx fire in the fall of 2017. The fire entered the treated area during the first burning period. The treatment significantly reduced fire behavior. The fire went from a crown fire with flame lengths over 100 feet to a surface fire with flame lengths less than 4 feet. (Figure 6). This allowed aviation and ground resources to steer the fire away from the community.



Figure 6. TRMT 2

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**Lessons Learned:** This treatment was thinned with the objective of creating heterogeneity in the canopy. This heterogeneity with canopy gaps prevented the fire from spreading through the crowns. Additionally, these canopy gaps encouraged the herbaceous and shrub layer in the understory and effectively increased live fuel moistures further inhibiting rapid surface fire spread and intensity. Even though unburned, the masticated fuel bed limited surface fire spread more effectively than a lopped and scattered fuel bed. This is attributed to an increased presence of high moisture shrubs and herbs from an open canopy and a compact surface fuel bed. If the unit had been prescribed burned fire intensity would be even more reduced.

### Pre Commercial Thin Pile Burn (TRMT 3)

This unit was pre commercially thinned and piled between 2011 and 2012. Pile burning was completed in the winter of 2014 (Figure 7). This treatment was south and up the hill from the Los Indios Stewardship treatment. Steep slopes was the reason this treatment was hand thinned and piled. The Cajete fire did not burn into this treatment area. However, this treated area was identifies as an indirect containment option during suppression actions and a contingency dozer line was put through the treated area that paralleled the private property to the west.

**Lessons Learned:** The fire did not directly “test” this treatment area. However, suppression resources recognized its potential as a safe location for an indirect suppression option. The combination of cutting and subsequent burning removed activity generated slash, increased herbaceous cover and raised the canopy base height of the overstory.

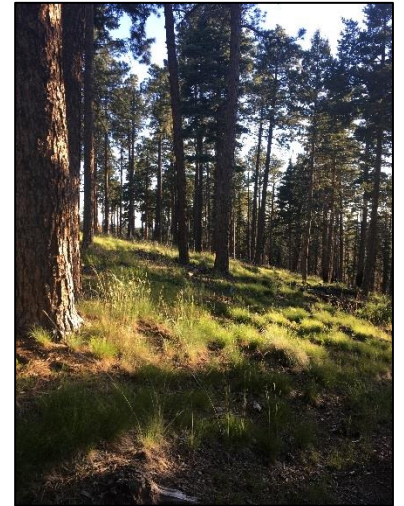


Figure 7. TRMT 3

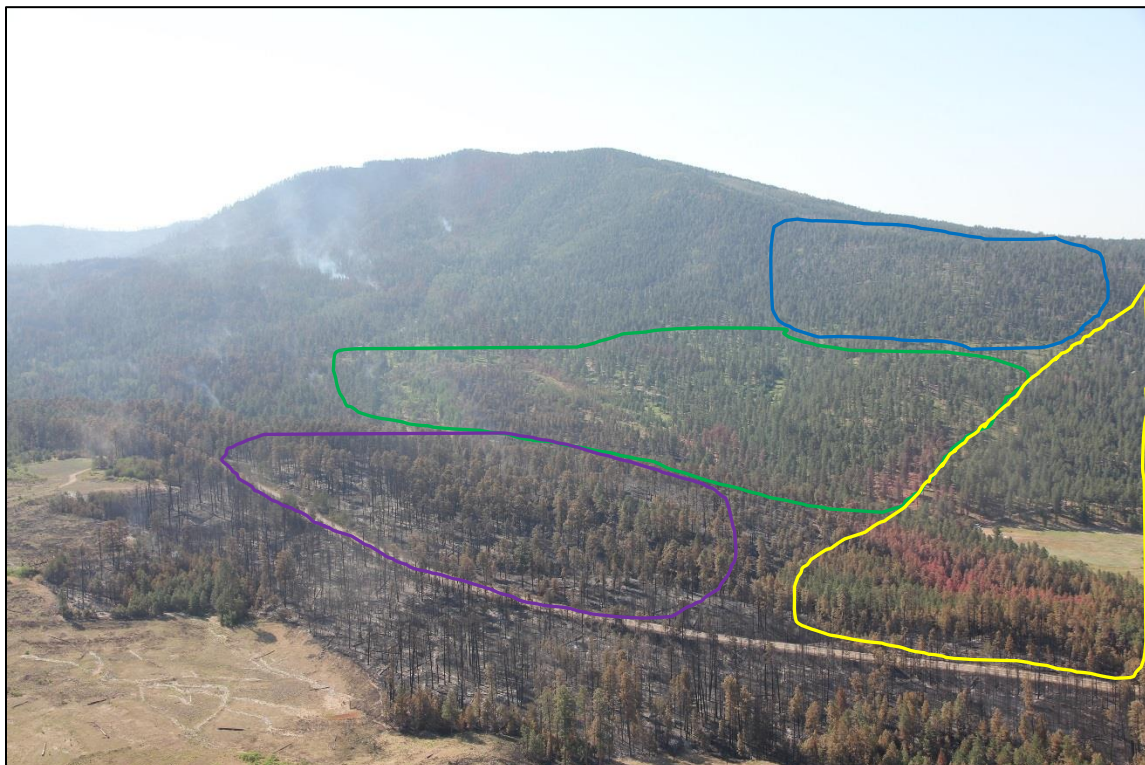


Figure 8. Aerial view of Cajete fire treatments and private property coded by color from Figure 1.

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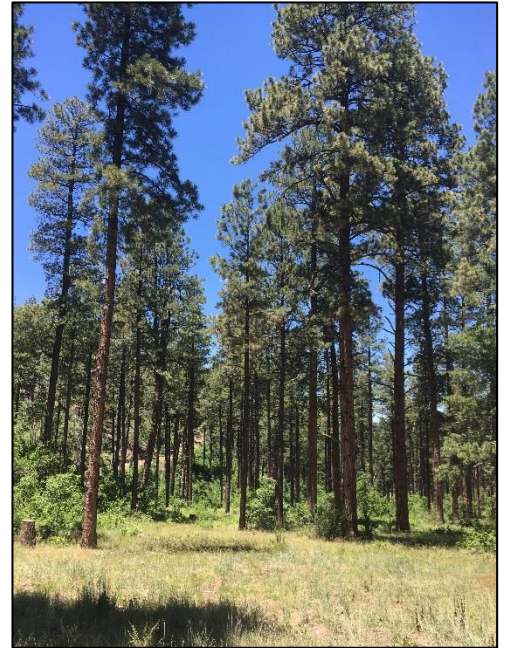
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### Summary

The Cajete Fire corroborates the effectiveness of the CFLRP funded fuel treatments in reducing fire intensity, severity and protecting the community of Sierra de Los Pinos (Figure 8). The variety of different treatment types served as a "trial by fire" experiment in which some treatments were more effective than others.

#### Key take home points include:

1. Thinned areas where the slash is lopped and scattered must be followed up by Rx fire to be effective at reducing intensities and severity. (Figure 5).
2. Creating canopy heterogeneity disrupts crown fire and increases the high moisture herb and shrub layer which helps reduce fire intensity in masticated fuel beds (Figure 6).
3. Rx burning is effective at reducing activity and natural fuel loadings, raising the canopy base height and promoting a high moisture herb and shrub layer (Figure 7).



**Los Griegos Treated Area**

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