

Butte Fire – OR-UPF-120132
Umpqua and Deschutes National Forests
Long-term Assessment and Implementation Plan



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Photo from Cinnamon Butte Lookout, 8/18/12

PNW Long-term Assessment Team:

SOPL/LTAN: Bill Aney

LTAN: Rick Stratton Trevor Miller(t)

FBAN: Steve Harbert Eric Trimble(t)

Operations: Nate Goodrich (SOPL)

FOBS: Erik Spillman

FEMO: Deb Davis

GIS/Google Earth Technical Assistance: Mike Brown

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Executive Summary

The Butte Fire was first detected on the afternoon of August 14, 2012 on the Umpqua NF near the crest of the Cascades and Windigo Butte, and by August 17 had burned about 140 acres of high elevation forest on both the Deschutes and Umpqua NFs. A type 2 IMT began managing the fire on August 16, and the PNW Long Term Assessment Team began their assessment on August 17. By August 20, the fire had been contained, and the LTAT completed their work.

The LTA evaluates the risk of a free-burning fire impacting four specific values at risk identified by the local units. Natural resource values in the immediate vicinity of the fire are most at risk – developed values are more distant, are easier to protect from a spreading fire, and (in the case of Lemolo Lake and Diamond Lake areas) are less vulnerable because of dominant wind patterns. Existing topographic breaks tend to slow the modeled fire growth towards the nearby spotted owl habitat areas and into the current Crescent Ranger District NEPA planning area, although both would be likely be impacted by a free-burning fire by the end of the season.

By evaluating several other local fires in the historic record, the LTA identifies several weather related triggers that can be used to predict future growth events for the Butte Fire. Overnight humidity recovery, thermal troughs, and ERC values are most correlated with growth events, as well as strong west winds.

About half of the fire seasons in the historical record for this area are over by the end of September. Mid-range and long-range outlooks are for drier than normal conditions and normal temperatures for the fall in central Oregon – perhaps indicating a later than average season end in 2012.

The LTA includes 9 separate prospects, or segments of potential containment lines, that can be used in the event of a free-burning fire – either from the Butte Fire or another fire in the future. Each prospect is mapped, with description of actions, costs/resource requirements, exposure hours, likelihood of success, and consequences of not implementing the actions.

Introduction

The Butte Fire was first detected on the afternoon of August 14, 2012 on the Umpqua National Forest near Windigo Butte, and within ¼ mile of the Cascade crest (Figure 1). By August 15, the fire had spread across the crest onto the Deschutes National Forest, and by August 17 the fire was estimated at 160 acres, burning in high elevation forest of lodgepole pine, mountain hemlock and true firs.

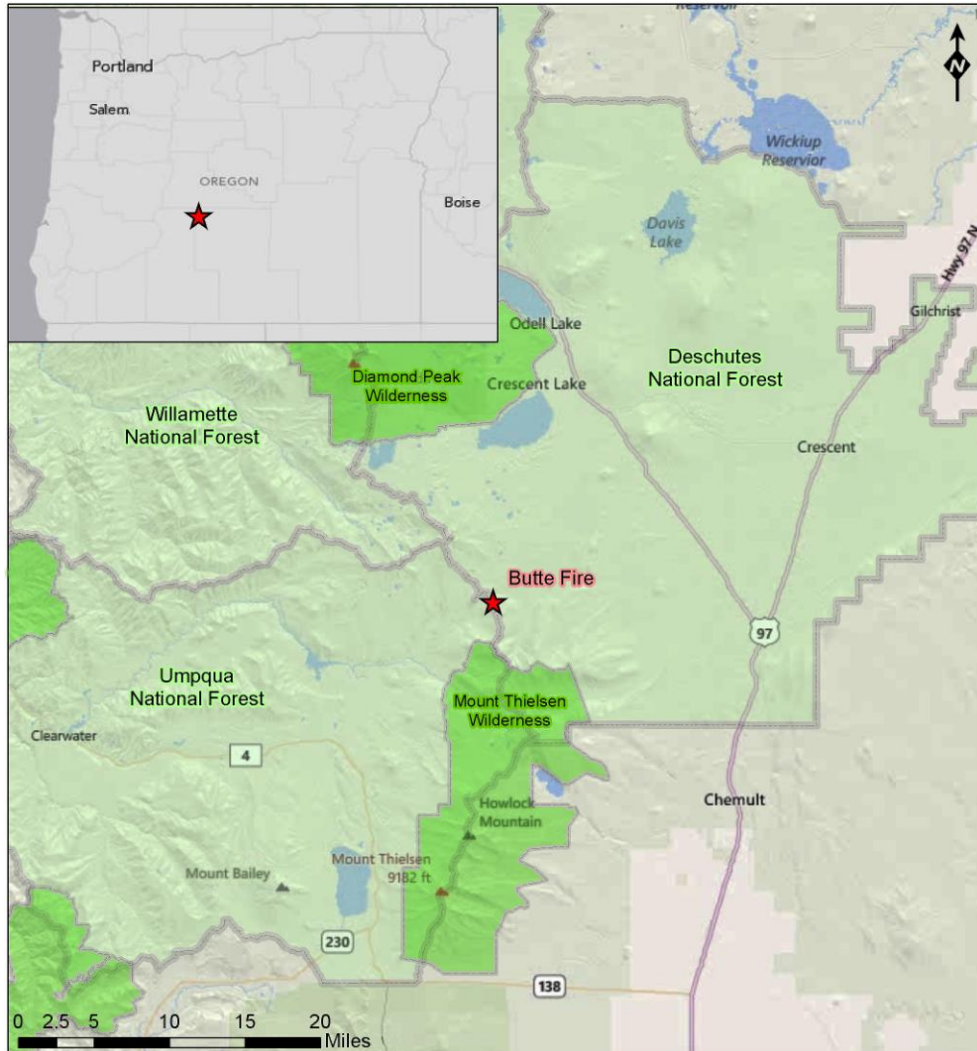


Figure 1: Fire vicinity map for Butte Fire, Umpqua and Deschutes National Forests, Oregon

A Type 2 incident management team (IMT) began managing the fire on August 16, and was initially given strategic objectives of keeping fire within a 7000+ acre area bounded by roads, trails, and natural features (Figure 2). The Pacific Northwest Long Term Fire Assessment team was ordered on August 16, and arrived on the morning of August 17 to begin a long term assessment of the fire.

As safety considerations and fire behavior allowed, the incident management team recognized that they could work the fire more directly, and was given an additional objective that aligned with this strategy. By August 19th the team had contained nearly the fire at 140 acres with a combination of dozer line and hand line, supported by a hoselay.

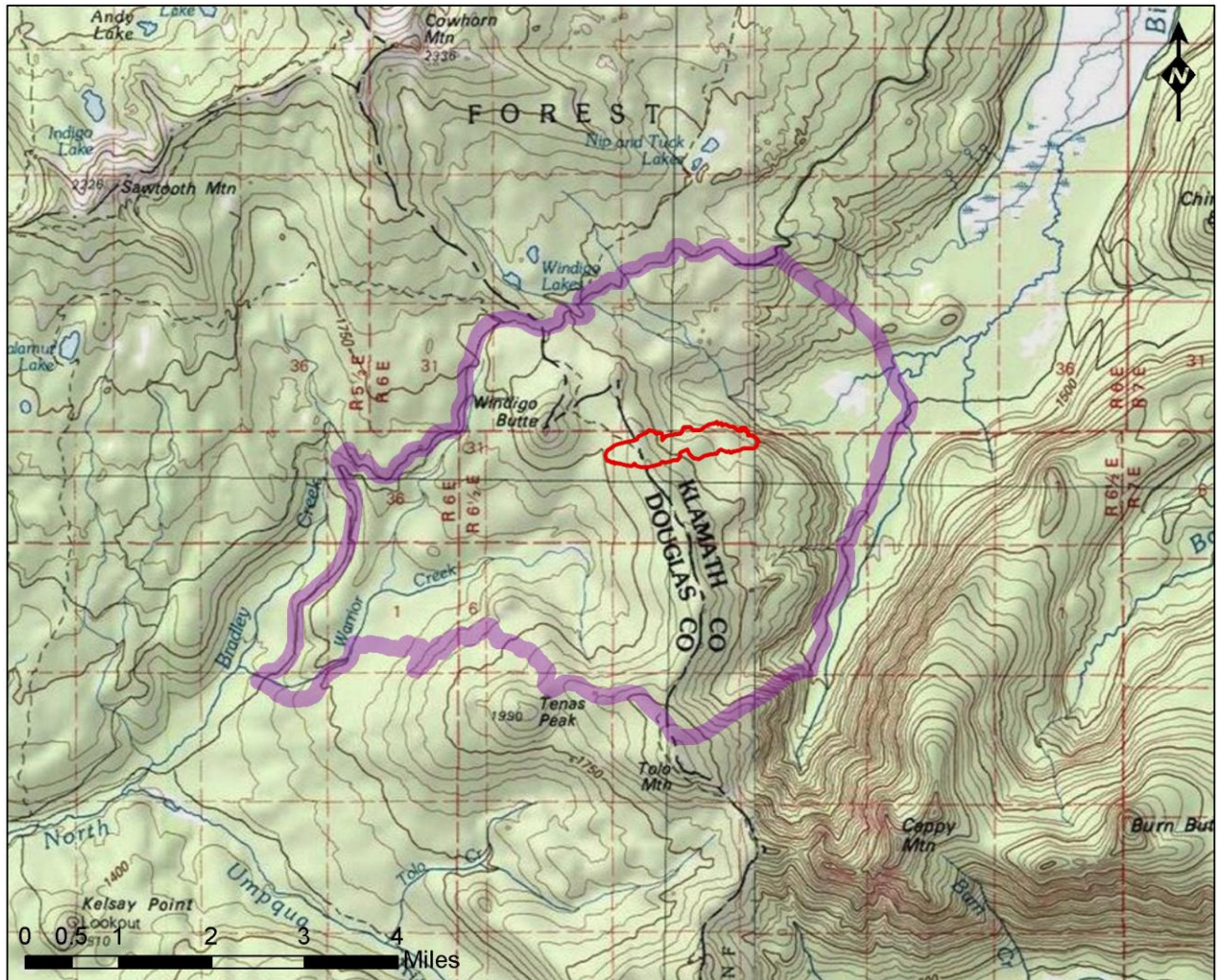


Figure 2: Butte Fire perimeter as of 8/19/12 (red) and the initial containment objective perimeter (purple) given to type 2 Incident Management Team.

Objectives and Risk Assessment

The Long Term Assessment Team was given the following objectives for their work on the Butte Fire. Specific objectives were:

1. Provide for firefighter and public safety by recommending appropriate actions and strategies, implementing appropriate LCES, and managing fatigue
2. Develop a long term assessment, including projection of fire growth, a risk assessment, estimate of costs, and recommendations for future actions and their associated triggers
3. Make recommendations that consider priorities for firefighter and public safety, managing costs appropriate to the values at risk, recognizing and respecting the values of neighbors and partner agencies, and resource availability. Base recommendations on probability of success.
4. Work with the IMT and local unit to help protect cultural, historic, developed, and other resource values as identified in the Umpqua and Deschutes NF Land Management Plans and Fire Management Plans or as identified by agency personnel

Over the course of the assignment, the team also identified several “key questions” through discussions with line officers and staff: Those key questions are:

- What is the risk to the Two Rivers subdivision?
- What is the risk to spotted owl nest habitat?
- What are the threats to the NEPA planning area?
- What is the risk of the fire moving west towards Lemolo Lake and Diamond Lake resorts and improvements?

Risk Assessment Considerations

For the purposes of the long-term fire assessment, the local units identified the following values at risk in the fire vicinity:

- Two Rivers Subdivision, located 9 miles west of the fire location
- Lemolo Lake Resort and power production facilities, located 6 miles west/southwest of the fire
- Spotted owl nesting habitat located south of the fire
- Ranger District planning team investments into project planning in the immediate vicinity.

Fire Behavior

The Butte Fire was first reported on 15:30, Tuesday, August 14, 2012.

The fire started on a west aspect within the top third of the Cascade Divide, at an elevation of 5,900'. Slope: 30%. Fuels consist of multi-cohort stands of mostly mountain hemlock and true firs and lodgepole pine. At the time of discovery the Cinnamon RAWS was reporting a temperature of 90°F, RH of 11% and winds at 4 mph with gusts to 13 mph from the West. 10-hr fuels: 5%; 100-hr fuels: 10%; 1,000-hr fuels: 12%. The fire progressed to the top of the Cascade Divide primarily by spotting and single and group-tree torching. Average rate of spread (ROS): 8 to 12 chains/hour during a typical 6-hour burning period. Potential 30 mph thunderstorm gusts could accelerate the ROS up to 80 chains/hour with spotting up to 1,000 feet.

On Wednesday, August 15th the fire crossed the Cascade Divide and progressed down the east slope driven by 5 to 13 mph winds from the west. Maximum temperature: 93° F, minimum RH: 12%, minimum 10-hr fuels: 5%. Maximum RH recovery: 68%, minimum temperature: 45° F.

By Friday, August 17th the fire had grown to an estimated size of 140 acres. Fuels, fire behavior, winds, RH and temperatures were relatively unchanged.

By Saturday, August 18th due to a combination of direct suppression action, higher RH's, and lower temperatures fire activity had decreased to creeping and smoldering with isolated single/group-tree torching and spotting.

Topography

The west side of the Cascade Divide is steep and highly dissected. The east side of the Cascade Crest is moderately dissected and punctuated by cinder cone buttes varying in height between 500' and

2,500' above the surrounding landscape. Rolling terrain and broad, flat basins typify the landscape in and around the communities of Two Rivers, Crescent, Chemult and La Pine.

Weather

The climate of the Crescent Ranger District is relatively arid, yet incorporates a variable rain gradient extending from the crest of the Oregon Cascades to the Ponderosa Pine/Juniper-shrub land habitats of its eastern boundary. Winters are dominated by moist maritime air masses, with occasional continental influences, and at the upper elevations precipitation falls as snow. Summers are influenced by dry continental air masses. Summers display long periods of fair dry weather interrupted by thunderstorms. Annual precipitation can reach upwards of 75-85" (Windigo Pass) at the higher elevations to 15" and below on the eastern edges of the district. The fire area quickly transitions (west to east) from a wetter moist climate to one considerably drier. Peak fire season generally begins in mid-July to early August. Typical fire season averages are; maximum temperatures 78-84°, minimum relative humidity 18 to 20%, and wind speed 4 to 6 mph.

The fire is in fire weather forecast ORZ 611 (NE Oregon SE Washington), in the Pendleton, Oregon forecast area. Weather forecasts and outlooks specific to the management of wildland fires are available at <http://www.wrh.noaa.gov/firewx/?wfo=pdf>. Our analysis primarily uses Black Rock and Cinnamon RAWS, which best represent conditions (current and potential) for the fire area.

STATION	RAWS NUMBER	ELEVATION	DISTANCE
Black Rock	353342	4880	16.2
Cinnamon	353031	4834	8.8

Table 1 RAWS used in analysis.

Fuels and Potential Fire Behavior

Fuels within the immediate burn area and up to ¼ mile away consist of multi-cohort stands of mostly mountain hemlock and Douglas-fir, true firs, lodgepole pine and spruce; Fuel Model TL3 (moderate load conifer litter) with pockets of TU5 (high load, timber-shrub). Crown base heights (CBH) are relatively low with highly variable crown bulk densities (CBD). The fire area is located within Fire Regime V, Condition Class I: infrequent, mixed to high severity fire regime with 200 years+ fire return interval.

Weather, 3-5 day outlook:

Wednesday through Friday: Mostly clear with lows 32° to 40° F, highs 73° to 80° F. West winds 2 to 7 MPH. Warming trend towards the end of the week. Extended 7-day outlook: Near normal temperature and below normal precipitation.

Potential fire behavior, 3-5 day outlook:

Creeping/smoldering with isolated single/group-tree torching and spotting. Rate of spread (ROS): 8 to 12 chs/hr. Potential 30 MPH thunderstorm gusts could accelerate ROS to 80 ch/hr with spotting potential to 1,000 feet.

Fuels within the Big Marsh drainage and basin, ¼ to 3 miles north and west of the burn area, consist of open meadow and single and multi-cohort stands of mostly lodgepole pine; Fuel Model GR2, TL1 and TL3 (low to moderate load, conifer litter). Crown Base Heights (CBH) are moderate to high with

variable Crown Bulk Densities (CBD). Fire Regime III (mixed severity fire regime), Condition Class 2.

Potential fire behavior, 3-5 day outlook:

Creeping/smoldering with isolated single/group-tree torching and spotting. ROS: 6 to 8 chs/hr. Potential 30 MPH T-storm gusts could accelerate ROS to 50 ch/hr with spotting potential to 1,000 feet.

Fuels between the boundary of the Oregon Cascades Recreation Area (OCRA) and Two Rivers subdivision, 3 to 8 miles west of the burn area consist of primarily single cohort stands of the lodgepole pine (flat topography), ponderosa pine (south slopes) and mixed conifers (north slopes); Fuel Model TL1 and TL3 (low to moderate load, conifer litter) with pockets of TU1 (low load timber-shrub) and SH5 (high load, shrub).

Fire History

Recent wildfire events near the Butte Fire include:

- The 2003 Davis Fire which started on June 28 and burned 21,000 acres of forest. This fire was pushed by high winds with maximum ROS of 2-3 miles/hr. Flame length; 50'. Conifer mortality exceeded 80%.
- The 2009 Tumblebug Complex which started on September 12 and burned 14,570 acres of timberlands. This fire was also wind driven with winds in excess of 35 MPH reported.
- The 2000 Mutton Chop Fire which burned close to the 2-Rivers subdivision. This fire burned 71 acres of forest with the majority of the active fire behavior occurring within one operational period. Conifer mortality on this fire exceeded 80%, particularly on the upper 1/3 of the mountain with slopes exceeding 40%.

Fire Behavior Growth Events

Typically, large fires in western forests gain most of their growth on relatively few days during the life of the fire with more modest or even minimal fire growth on most days. Specific conditions associated with large fire growth days on the Crescent Ranger District include poor overnight humidity recovery, high winds, low 1000 hour fuel moistures, and ERC values above 60 (using Black Rock RAWS).

The team evaluated two recent large fires on the Crescent Ranger District in similar fuel types as the Butte fire in an attempt to demonstrate how local weather events are associated with fire growth days, and then evaluated historical weather records to estimate how many similar growth events can be expected before the end of the season.

The Davis Fire of 2003 started in late June and grew rapidly for the next few days. Table 2 displays fire weather conditions during this period; what should be noted are the low 1000 hour fuel moistures, poor overnight humidity recovery, and high ERC values. These conditions were accompanied by a Haines Index of 5 or 6.

Attribute	6/28	6/29-6/30
1000hr fuel moisture	10%	10%
ERC	71	69
Overnight humidity	45%	60%
Wind Speed	range 3 to 6, gust 15	range 6 to 12, gust 33

Table 2: Fire weather conditions during periods of rapid fire growth, Davis Fire, 2003.

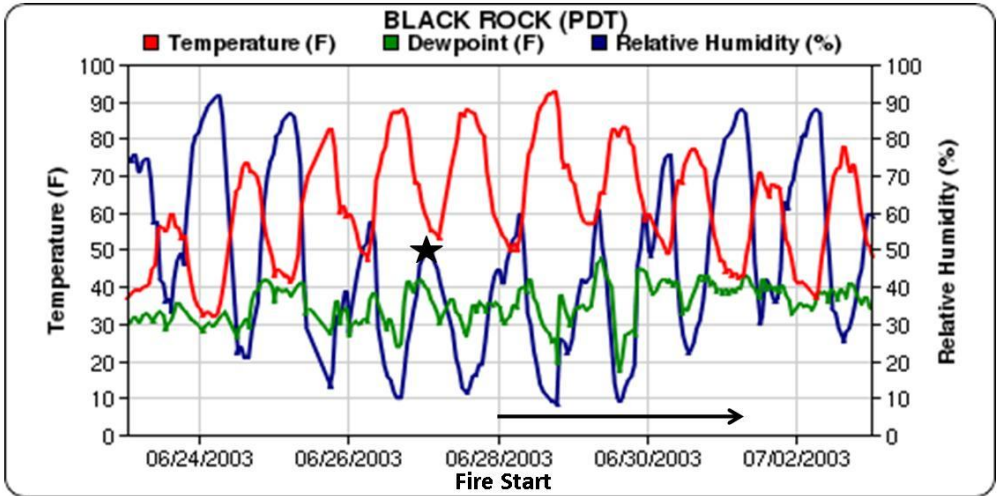


Figure 4: Temp and RH trace during Davis Fire, notice poor RH recoveries prior to and during large fire growth.

Figures 4 and 5 show temperature and relative humidity traces for the Black Rock RAWS site during periods of fire growth for the Davis Fire and the Butte Fire, note that nighttime relative humidity recovery was poor immediately prior to and during the periods of fire growth. Low overnight humidity recovery indicates a warm, dry airmass over the area resulting in reduced in live and dead fuel moistures. When coupled with high winds, the likelihood of rapid fire progression as a result of crown fire initiation and spotting is increased – this type of fire behavior was observed on the the Davis Fire. Another eastside fire that exhibited rapid fire growth following poor nighttime humidity recovery was the Royce Butte Fire.

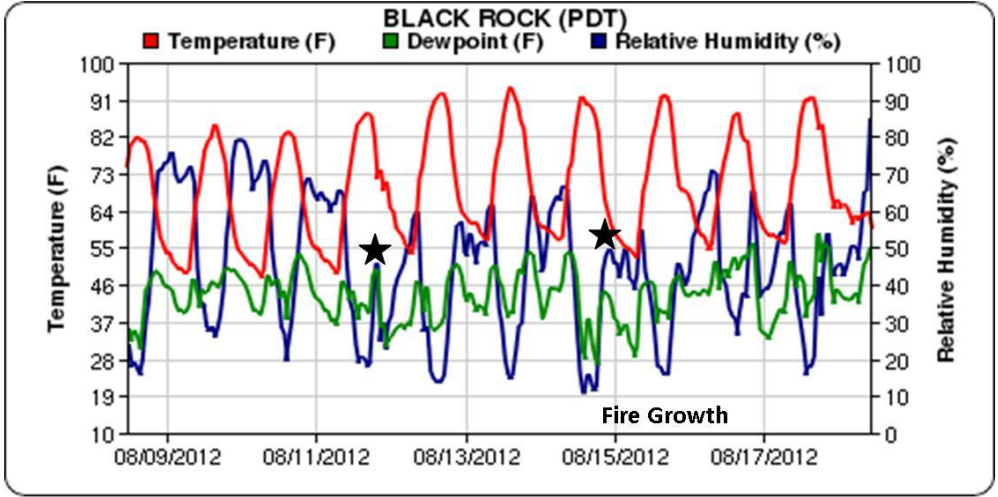


Figure 5: Comparative temp and RH trace for the Butte Fire, stars highlight poor overnight recoveries.

The Shadow Lake Fire of 2011 was examined in order to develop key large scale drivers associated with east to west fire spread over the crest of the Cascades, an untypical yet highly relevant phenomenon associated with the Butte Fire. Figure 6 again shows a strong correlation with low night

time humidity recoveries. Shadow Lake fire growth was associated with a thermal trough and easterly winds as discussed below.

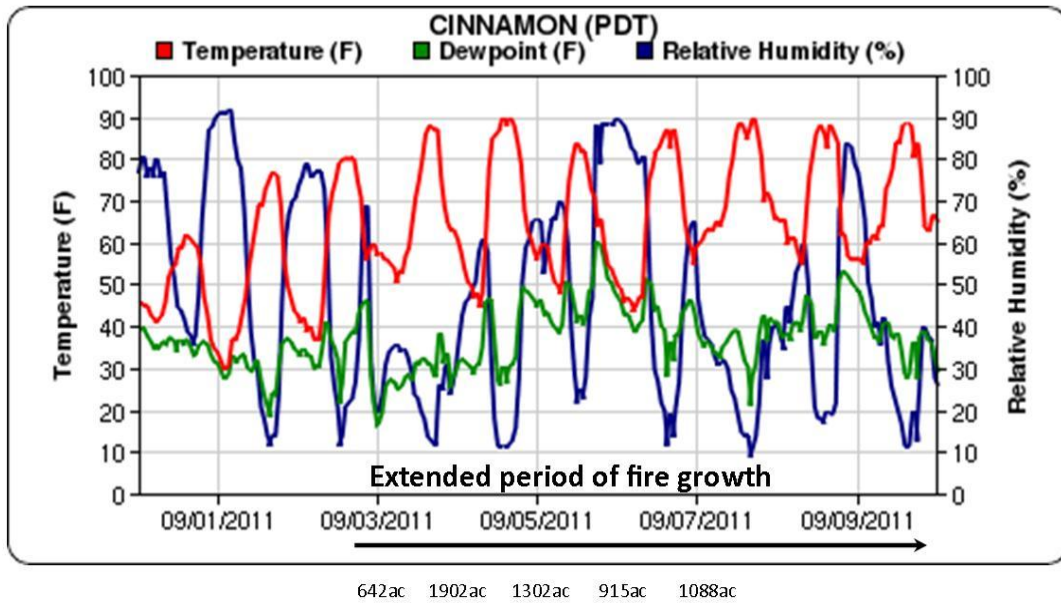


Figure 6: Cinnamon RAWS trace, a west side station, and associated Shadow fire growth. The daily growth is indicated below the graph by date for a five-day period

High wind events, both east and west, are of concern as associated with the Butte Fire. Figure 7 shows windroses filtered wind directions and speed for relevant RAWS stations both east and west side. Easterly winds, as shown below are rare events in the analysis area, however they do occur and can be problematic for west side fires. Managers should watch for indicators of such late season events such as thermal troughs in the fire weather forecast discussion.

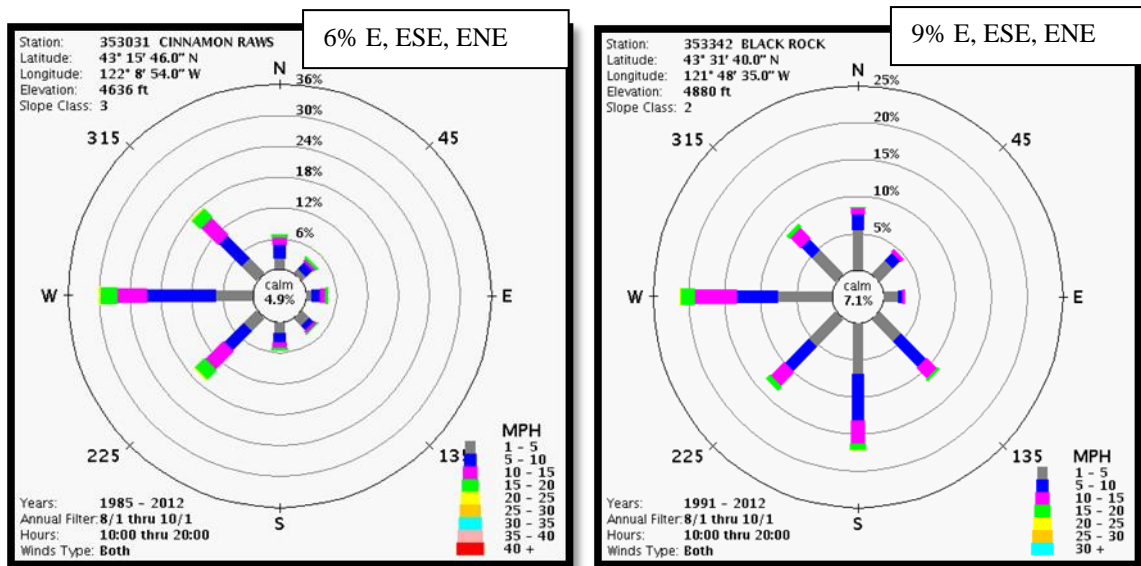


Figure 7: Windrose data showing dominant winds on both east and west sides of the crest for the late August-October daytime burn periods.

The analysis of the historic weather data searched for weather associated with historic large fire growth days. The analysis used a nighttime maximum humidity threshold of 50% RH for the eastside

(Blackrock RAWs) and 60% RH for the westside (Cinnamon RAWs). The analysis also used ERC thresholds of 60 eastside and 55 westside. The two thresholds were used together in the final analysis.

The length of analysis was August 12 to October 28. Fire Family Plus was used to search the weather data for two consecutive days meeting or exceeding the threshold value; this is called the 2-day period. Areas east of the Cascade crest represented by Black Rock RAWs could expect 7.5% of the days to have a nighttime humidity maximum below 50%; only 5.7% of the days left in the season would meet the combined threshold of ERC and MaxRH. Only 1.7% of the days would be expected to have the severe conditions persist for two consecutive days. Since both variables are predicted by Predictive Services at the Northwest Coordination Center (NWCC), fire managers and agency administrators have a predictive tool to use both tactically and for strategic decisions. Tables 3 and 4 show days and percentage of days meeting or exceeding the threshold values for the remainder of the fire season based on historic weather analysis.

Black Rock RAWs

Threshold	2 Day Period	1 Day Period
ERC \geq 65	6 (8.7%)	13 (17.7%)
MaxRH \leq 50%	2 (2.3%)	6 (7.5%)
Combined (ERC, MaxRH)	1 (1.7%)	4 (5.7%)

Table 3: Anticipated remaining number of days of weather associated with large fire growth (August 12-October 28) – east side conditions, using weather from Black Rock RAWs

Cinnamon RAWs

Threshold	2 Day Period	1 Day Period
ERC \geq 55	5 (6.2%)	10 (13.3%)
MaxRH \leq 60	2 (1.9%)	5 (6.2%)
Combined (ERC, MaxRH)	1 (1.4%)	3 (3.9%)

Table 4: Anticipated remaining number of days of weather associated with large fire growth (August 12-October 28) – west side conditions, using weather from Cinnamon RAWs

Containment Prospects

Containment Prospects (potential containment line) were identified by the team to contain the Butte Fire as well as future fires within the area. Each Prospect includes:

- an objective
- conditions that may be present during the action
- activities to be implemented
- probability of success of the actions
- resources needed to implement the actions
- cost
- consequences of not implementing the action

All of the listed Prospects have a burnout component to increase the probability of success. Each Prospect can either be implemented in its entirety or a section at a time. This decision should be based on fire behavior and projected time for fire to reach Prospect line. Cost estimates are based on the operational cost of the Prospect, not including support costs. An assumption of 6 hours per burn period is built into the fire spread projections. (1 day equals 6 hours of burn time).

Prospect Descriptions

Nine containment opportunities were developed by the LTAT in response to the issues identified by the host Forests. The prospects were developed for both Forests assuming fire spread in any direction from the current location.

Deschutes Prospect 1- 60 Road

From Windigo Pass follow the 60 Road NE to the an old road in Section 22 (on the 60 rd. approx. 3 miles).

Deschutes Prospect 2- Big Marsh

From the old road in Section 22 on the 60 Road, across to the 6030 Road and from the 6030 Road to a tributary of Big Marsh Creek. The line is then picked up again at the end of the 200 spur off of the 5826 and is completed to the 5826 road. This will leave a small section of handline in between the two tributaries to complete if deemed necessary.

Deschutes Prospect 3 - 5826 Road

This is the area from the junction of the 5826-200 spur along the 5826 road past the open section of the road following the old road bed to its terminus. The line would then continue from the road up the ridge to Tolo Mountain.

Deschutes Prospect 4 - PCT

From Tolo Mountain to the fire edge in the area along the Pacific Crest Trail to the current fire perimeter.

Deschutes Prospect 5- Cappy

From Tolo Mountain to Cappy Mountain following the ridgeline and continuing down the ridge from Cappy Mountain to the 5826 road. This prospect would be a secondary option if unsuccessful with Deschutes Prospect 4.

Umpqua Prospect 1 - Bradley Creek

From Windigo Pass follow the 60 Road to Bradley Creek. Then begin following the 1412 trail (Old Windigo Road) to the 1445 trail. Then follow the 1445 trail (Warrior Creek) continue to Tolo Mountain.

Umpqua Prospect 2 - North Umpqua

From Windigo Pass follow the 60 Road to NF Umpqua Trail 1414 continue to Trail 1466 to Mount Thielsen Wilderness boundary and ultimately connecting to the PCT.

Umpqua Prospect 3 - Cinnamon

From Kelsey Valley Horse Camp follow the 60 Road to Hwy. 138, continue to Road 4793 next to Trail 1472 to Mount Thielsen Wilderness boundary at Tipsoo Peak.

Umpqua Prospect 4 – Thielsen

From the Trail 1472 junction and the PCT, follow the PCT north to Tolo Mountain.

Long Term Outlook

The long term outlook and seasonal severity prognosis is based on weather records at the Cinnamon and Black Rock Remote Area Weather Stations, as well as several sources of climatological information including but not limited to the Climate Prediction Center, the Western Regional Climate Center, Natural Resources Conservation Service, and the National Climate Data Center. We also used several evaluation tools including Fire Family Plus and analysis tools in the Wildland Fire Decision Support System (near term and short term fire behavior and FS-Pro, the Fire Spread Probability model).

Seasonal Severity Indicators

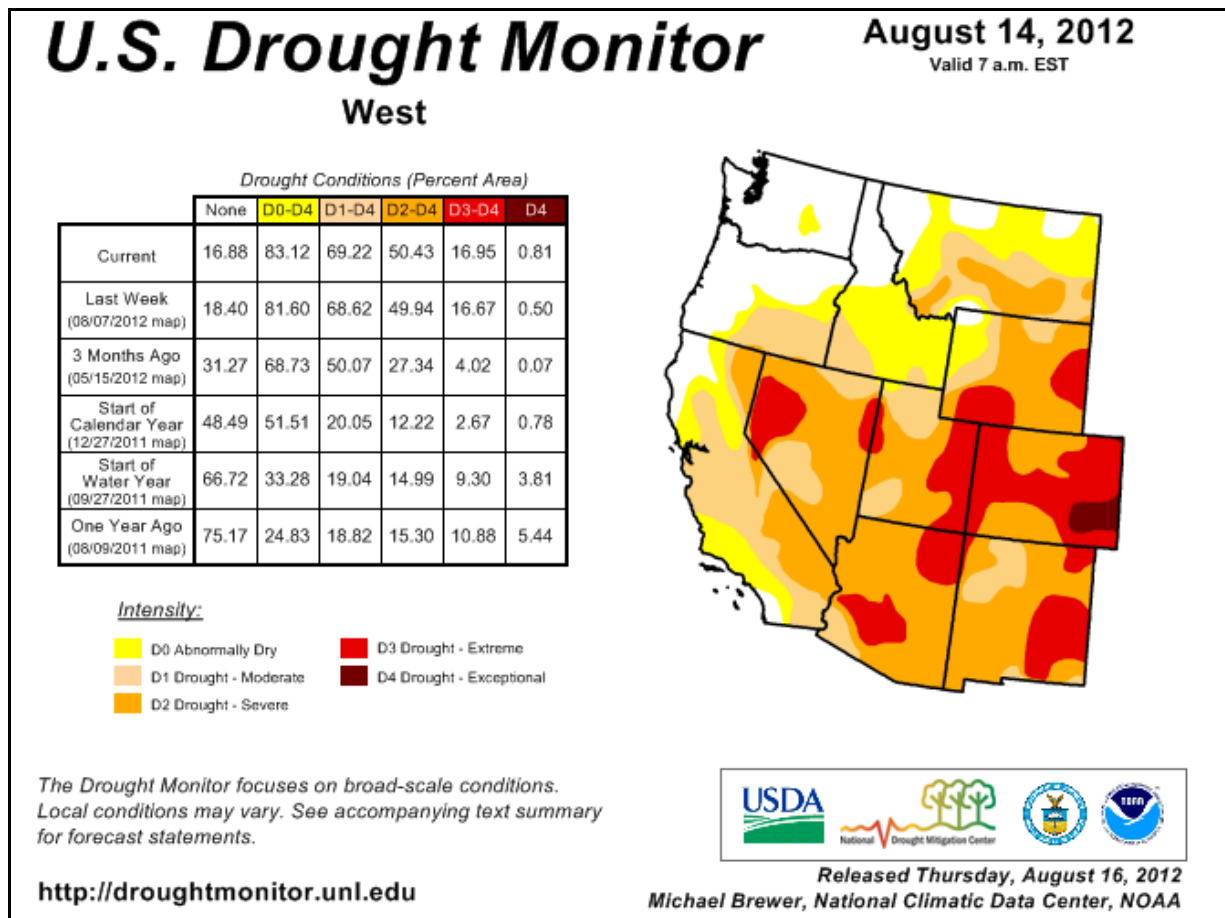


Figure 8: Drought conditions for the western United States

Evaluation of drought conditions produced for the week of August 14, 2012 shows some moderate drought in southeast Oregon (Figure 8). Abnormally dry conditions are present in the central basin of Washington; the remainder of Pacific Northwest, including the fire vicinity, have normal moisture conditions.

Looking forward, Figure 9 shows that drought/moisture conditions are predicted to remain the same or worsen slightly as the next 30 and 90 day periods are indicating below normal precipitation. The temperature outlook for the 90 day period is for normal conditions, and the 30 day outlook is for below

normal temperatures. This outlook supports maintaining conditions favorable for fire growth well into the fall.

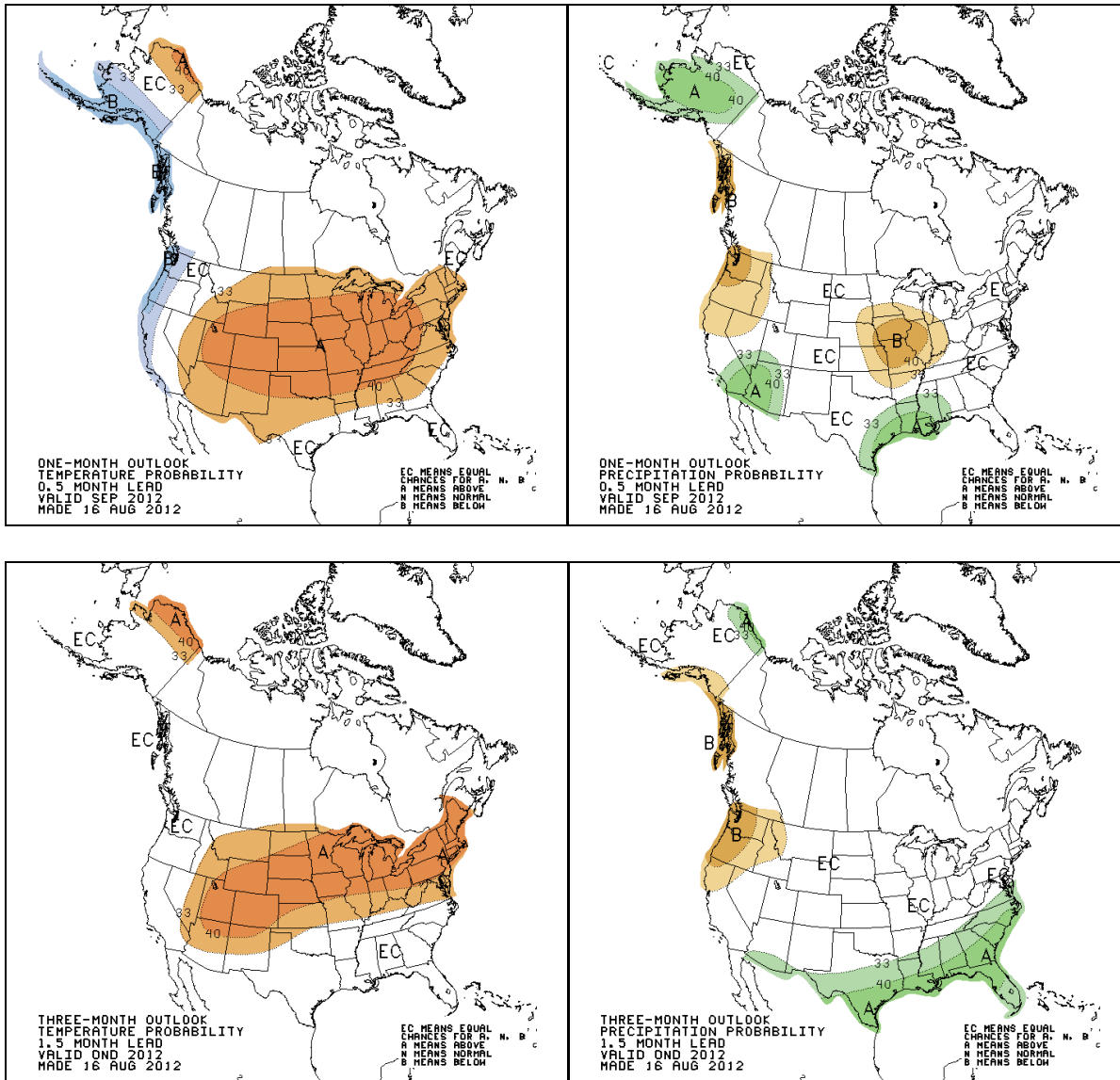


Figure 9 – Top row: One-month (August) outlook for temperature (left) and precipitation (right). Bottom row: Three month (September-November) outlook for temperatures (left) and precipitation (right), from Climate Prediction Center/NOAA

Energy Release Component

One of the most commonly used outputs of the National Fire Danger Rating System (NFDRS) is ERC. Nationally and especially in the Pacific Northwest NFDRS fuel model G , timber litter with a heavy dead down fuel element, is used as a good indicator of fire season severity. Analysis of the Butte Fire used Fire Family Plus comparing current year ERC values to the historic record. RAWS data from Cinnamon and Black Rock were used extensively in the analysis.

Typically ERC values approach the seasonal maximum around the middle of August, (see the trailing figures) tailing off gradually into early September. While there have been years when mid-October ERCs remained near the 90th percentile, in most years the ERC drops as a result of cooler conditions, precipitation, lower sun angle, and shorter day length. Both Black Rock and Cinnamon were used in analysis to compare east and west side conditions conducive to fire growth.

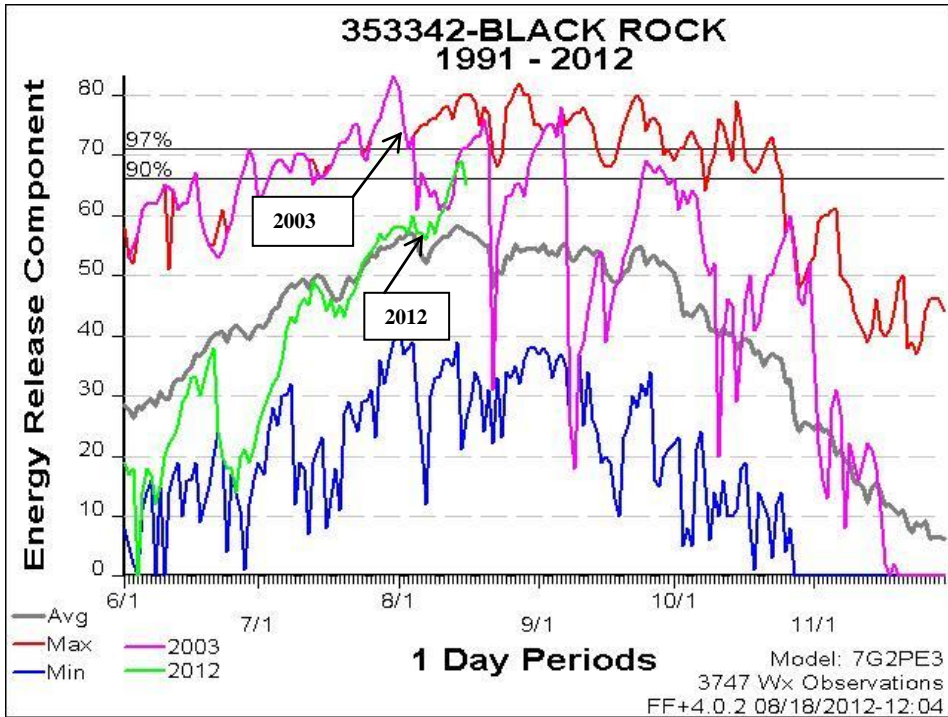


Figure 10: ERC graph for the Black Rock RAWS. Plots of 2012 to date and 2003 (Davis Fire) were added to the typical ERC display of average, maximum, and minimum daily values.

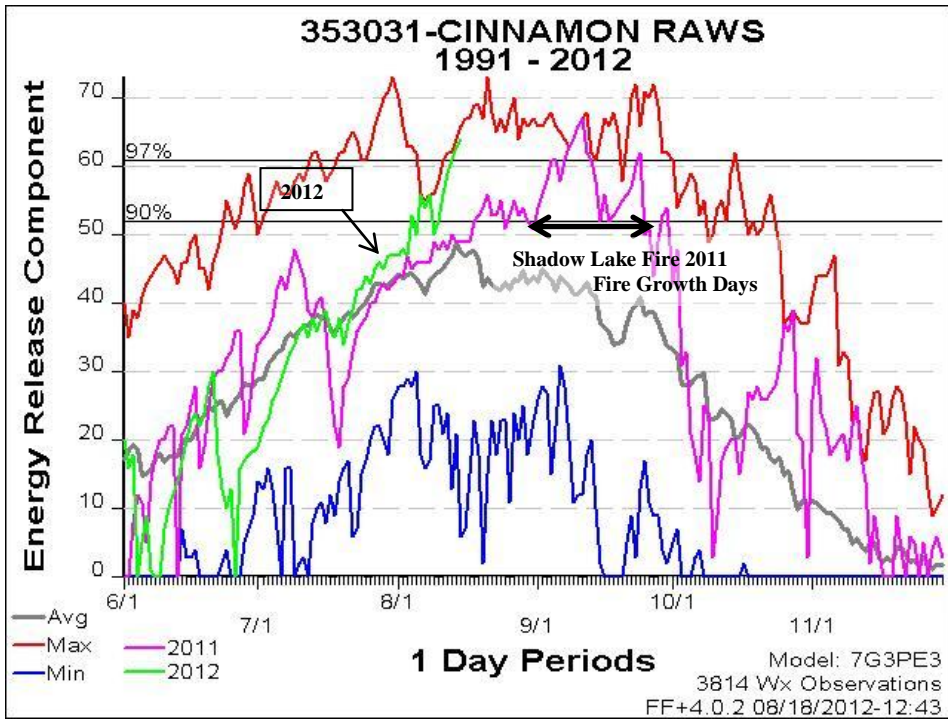


Figure 11: ERC graph for the westside representative Cinnamon RAWS. Again the current year 2012 and a significant fire year 2011 (Shadow Fire) were added to the typical display.

Forecasted values for Predicted Service Areas of interest (as shown below in Figures 12 and 13) show continued rise toward and within the 90th and 97th percentile range, one element indicative of large fire growth.

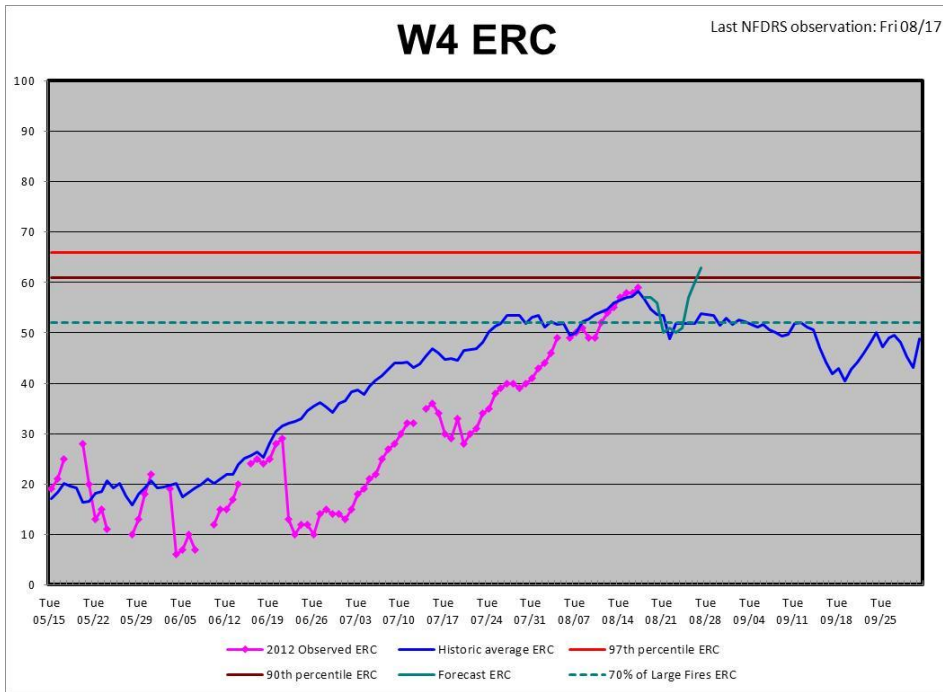


Figure 12

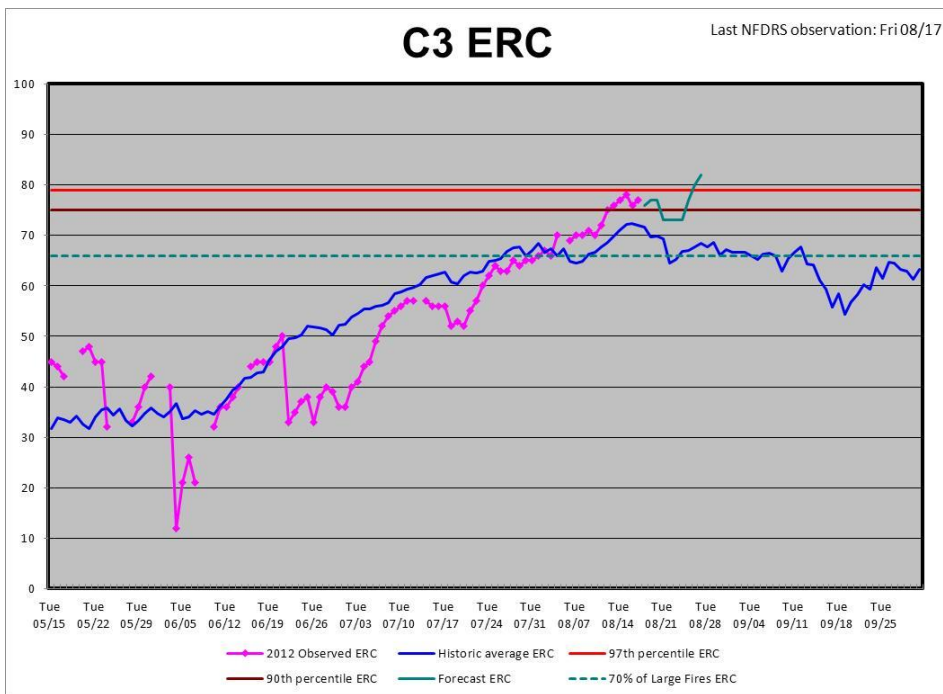


Figure 13

Longer Range Projected Fire Activity

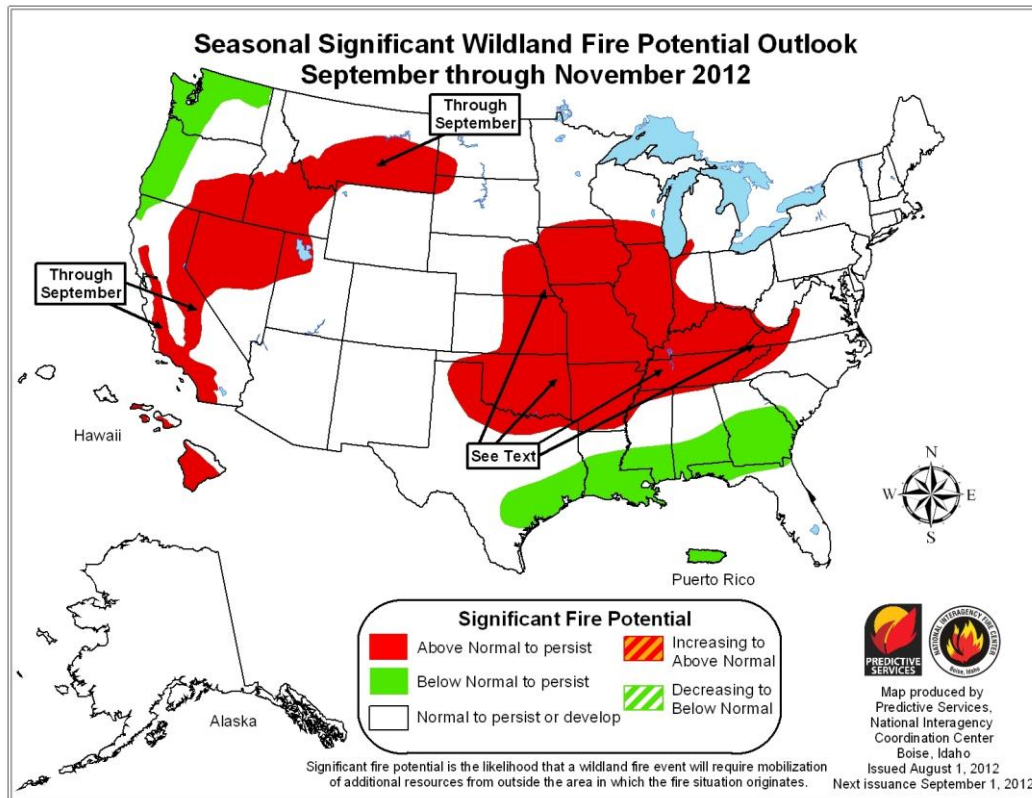


Figure 14: Significant Fire Potential Outlook

Predictive Services analysis indicates above normal conditions to persist in southeast Oregon, and current fire potential to remain in the Butte Fire area.

Season Slowing Events

Typical summers include periods of little to no fire growth, often as a result of precipitation that temporarily slows fires. Fire managers recognize that even substantial rainfall in midsummer does not necessarily mean an end to fire season, as drying in late summer and early fall is common. As we move later into the fire season within Central Oregon, fire activity does tend to slow with shorter daily burn periods, higher RH recoveries, reduced solar radiation, and reduced temperatures, even without rainfall.

Season Ending Events

The potential length of the fire season is important to operational and other management decisions, as the number of burn days left in the season have a direct effect on the likelihood that a free-burning fire will reach any point of concern. Local observations indicate that large fire growth is uncommon starting around the middle to late September.

Season ending dates were developed by NWCC for each predictive service area (PSA). For this assessment, the end of season for each year is the first date in late summer/early fall when the probability of a large fire is <1% for 3 consecutive days, followed by no more than one day of elevated risk (3-5% probability of a large fire) before end of season.

For the Butte Fire area, two PSAs are relevant: C3 (south central Oregon) and W4 (Southwest Oregon)

	PSA C3	PSA W4
Median	9/29	9/26
90 th	10/8	10/3
99 th	10/15	10/5

Table 5: Estimated Season-Ending Dates for PSAs C3 and W4.

For example in Table 5 Sept. 29th is the midpoint; for PSA C3, meaning that 50% of the fire seasons have ended by this date in central Oregon. The LTAT also evaluated season ending dates using historic weather data from Cinnamon and Black Rock RAWS, but ultimately chose the PSA analysis from Predictive Services NWCC.

Risk Assessment

The Fire Spread Probability (FSPro) was used to evaluate fire spread potential. FSPro is a spatial model that calculates the probability of fire spread in all directions from a current fire perimeter or ignition point. FSPro models fire spread of hundreds or thousands of weather scenarios based on local climatological records to determine the probability of a fire spreading through an area over a given time period. FSPro can be used to identify the probability that areas of concern could see fire. The outputs are helpful for developing priorities and analyzing risk to identified values. There are important assumptions in the FSPro analysis: 1) the fire is free-burning and 2) there is no suppression action constraining fire growth.

Fire Growth Projections

An initial 14-day FSPro run was provided by NWCC Predictive Services. The LTAT made adjustments to burn period and live and dead fuel moisture based on field intelligence. A hypothetical spot fire was used as an ignition, just outside the fire perimeter to the NE. Two FSPro runs were conducted: a 45-day starting August 19 and a 30-day starting Sept. 1, with no suppression actions. The end date of these two simulations coincides with the median season end date.

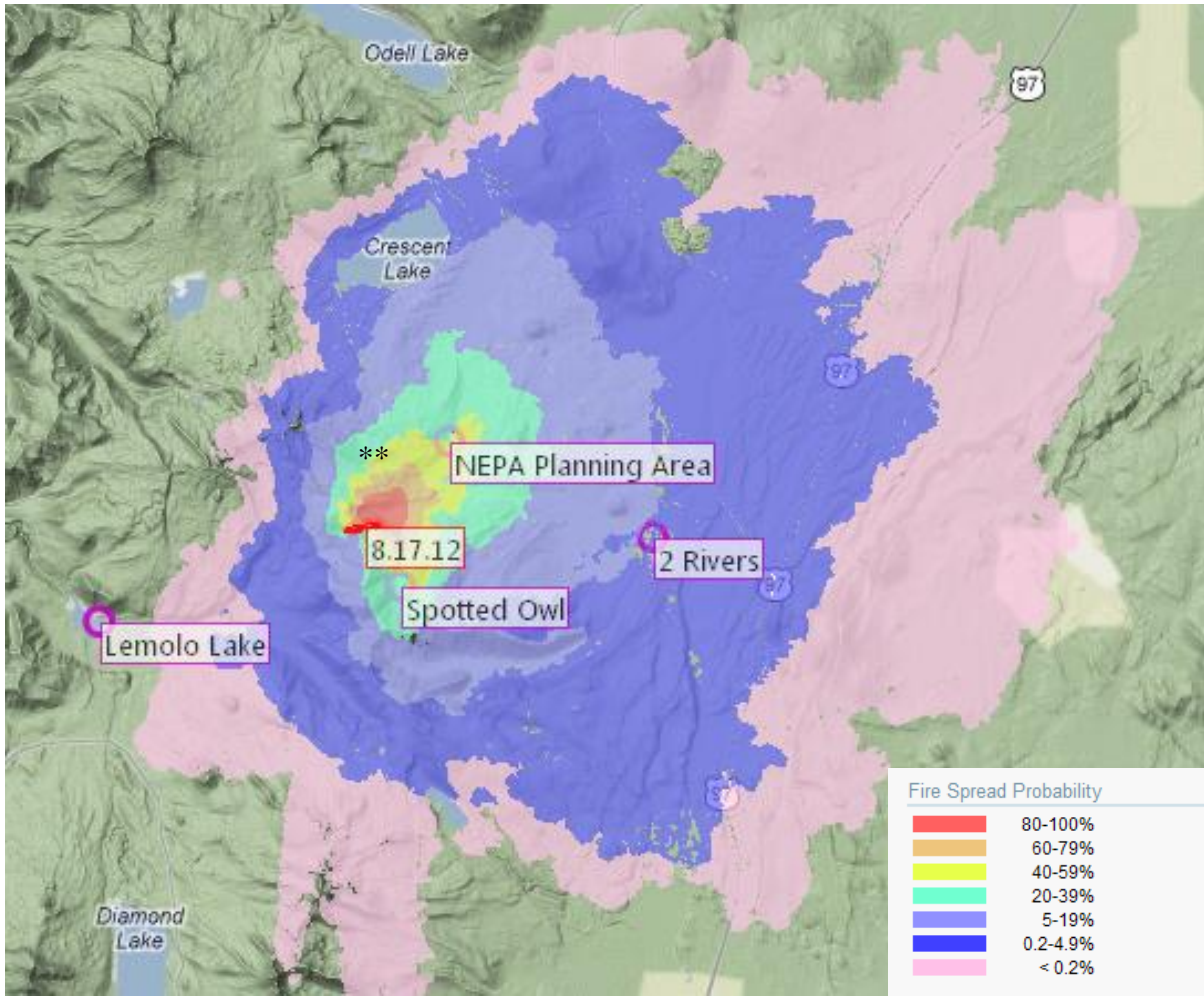


Figure 15: 45 Day FSPro run.

A risk assessment for 4 points of concern (Little Deschutes Canyon/Two Rivers Subdivision, spotted owl habitat, Lemolo Lake, and the designated planning area to the east) was completed under the scenario of an escape outside containment lines. Figure 15, 16 and Table 6

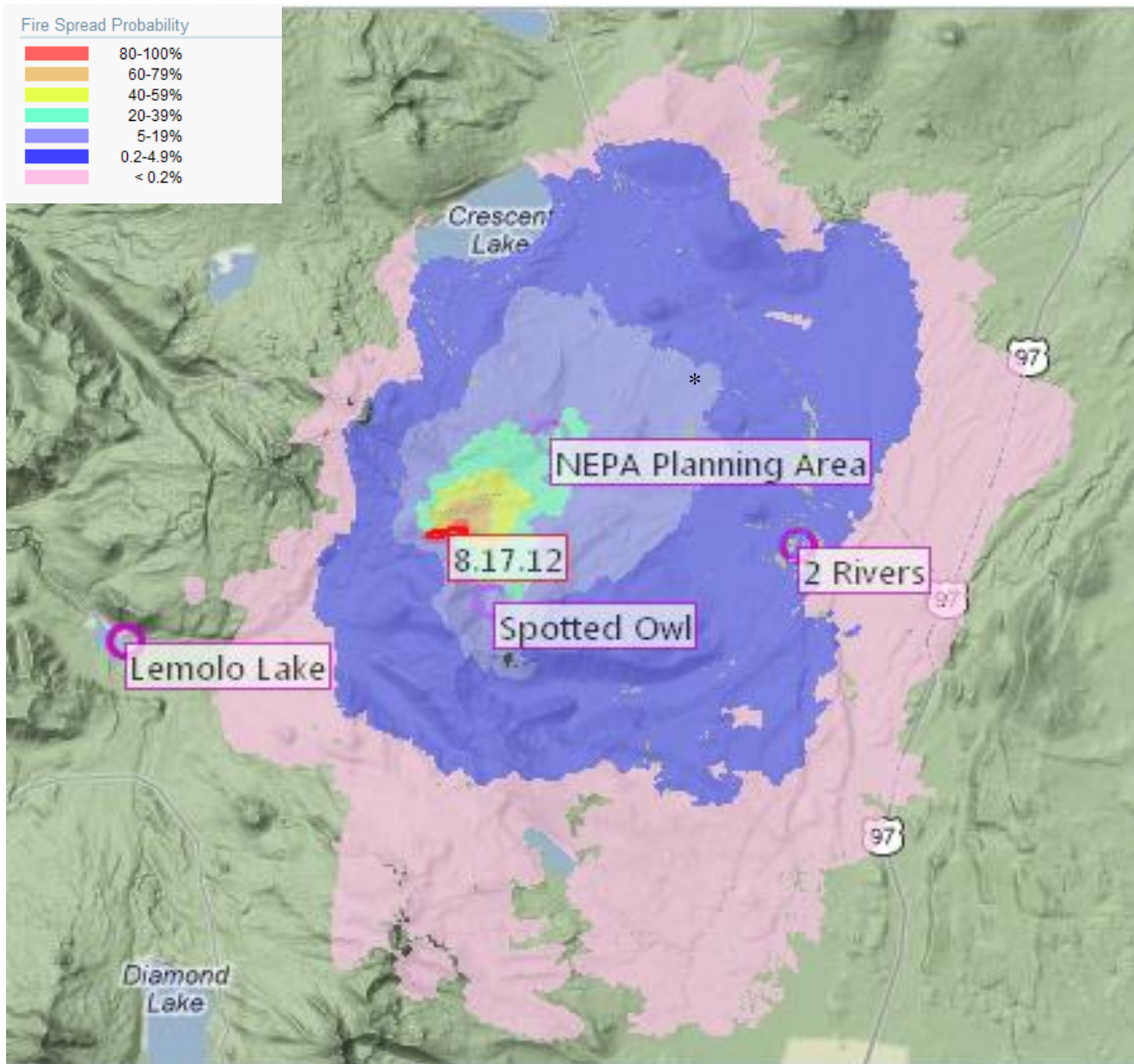


Figure 16: 30 Day FSPro run.

Point of Concern	45 Day Spread Probability (Escape 08/19)	30 Day Spread Probability (Escape 9/01)
Little Deschutes Canyon	5-19% (H)	5-19% (M-L)
Spotted Owl	20-39% (H)	5-19% (M)
Planning Area	40-59% (M)	20-39% (M)
Lemolo Lake	0%	0%

Table 6: Probability of fire reaching points of interest.

(H) designates high end of probability range. (M) middle of probability range. (L) low end of probability range.

There are a few subtle differences between the two runs and several take-home messages.

1. Because the 45-day includes the last couple weeks of August, there is more spread in the higher probability bands that extend into the head of Big Marsh (spotted owl nest sites) and the NEPA planning area. In other words, if there was a spot outside the line, these two areas have the greatest probability of being affected.
2. Due to the NW winds and terrain, the fire has a tendency to wrap around the slope and into Big Marsh Canyon. Although low (30-day) to moderate (45-day) probability, a run in this box canyon would result in spots into Little Deschutes Canyon and possibly threaten Two Rivers (*).
3. The 45-day does confirm the local units concern that if the fire gets established in upper Little Deschutes Canyon, the fire “likes” to move down the canyon (**).
4. Both runs show rare events (pink and dark blue) primarily to the NE, east, and south—a reflection of the wind record.
5. Spread to the west and SW is negligible.

Smoke Management

Smoke sensitive areas have been identified for visibility protection and protection of human health. These areas are provided the highest level of protection under the Oregon Smoke Management Plan. The closest Smoke Sensitive Receptor Areas (SSRA) are communities that are designated for air quality monitoring and protection.

- Klamath Falls, Non-attainment Area, 45miles SW
- Oakridge, Non-attainment Area, 31 miles NW
- Bend, SSRA, 55 miles NE
- Roseburg, SSRA, 65 W.

The Diamond Peak Wilderness and Crater Lake National Park are Class 1 airsheds requiring visibility protection, and are located 8 miles north and 18 miles south of the fire area, respectively. Smoke from wildfires is classified as a natural event, and have an exemption from the visibility protection standards.

National smoke dispersion guidance (<http://cefa.dri.edu>) for the next seven days shows light transport winds dominated by a westerly flow with poor to moderate ventilation which could cause air quality concerns in the event of fire growth.

In the event of a long term event nearby areas may experience smoke intrusions. Real time air quality monitoring data is available on the web at <http://www.deq.state.or.us/lab/aqm/airMonitoring.htm>.

Portable smoke monitoring kits are also available through the National Cache if needed.

No impacts to these airsheds from the Butte Fire have yet been identified, and none are likely given the distance from the fire to the SSRAs.

Recommended Monitoring Actions

The following monitoring actions are recommended for the duration of this season.

- Monitoring weather – low overnight RH, often associated with thermal troughs over the Cascades, resulting in extended daily burn periods and hot/dry conditions. When combined with high ERC (>65 for Black Rock RAWS, 55 for Cinnamon RAWS)
- Smoke – utilize WDFSS smoke forecasting function to anticipate smoke movement toward, and accumulation in, communities in the area.

Conclusions and Recommendations:

- The Butte Fire has been contained, and given short term weather forecasts, it is likely that mopup standards will be met within the next few days. Still, the fire won't be extinguished until the end of the season. For at least the next few weeks, continue to patrol, monitor, and extinguish fire within the perimeter that is threatening to spread to unburned fuels (ground or aerial). New fire growth outside the perimeter should receive an aggressive response to avoid the expense and exposure of managing a long term fire within this area this year.
- If a spreading fire should occur in the immediate vicinity of the Butte Fire, the Long Term Assessment includes a set of actions that can be implemented to contain the fire before it reaches any of the values at risk identified by the local units.
- A spreading fire in late August can be treated differently than a fire later in the season. The FS-Pro assessment indicates that even a September 1 fire start places less risk on important resources than a August 20th start. The later in the season, the better the chance that a free-burning fire will not reach any points of concern before the end of the season. A new FS-Pro run initiated with new fire spread will better inform the fire management decisions at that point.
- Preparation - part of being prepared for a predicted weather pattern that could support large fire growth should be a plan for extra patrols of the current fire perimeter before the challenging weather arrives. Watch for forecasts of low overnight humidity recovery coupled with ERCs above 65 at the Black Rock RAWS and 55 at Cinnamon RAWS.
- Of the four values at risk specifically identified by the local units, the threats are greatest to those values closest to the fire perimeter – the NEPA project planning area, the spotted owl nest areas, Two Rivers subdivision, and Lemolo Lake and Diamond Lake areas, respectively. The Two Rivers subdivision is well buffered with managed, roaded, and relatively gentle land between the fire and the subdivision.
- The team recommends a reassessment in 14 days if the fire is still active, in order to refresh the assessment with current weather and forecasts.
- Anticipate active fire behavior (and smoke) days with fire weather forecasts and monitoring fire danger indices. Plan to communicate effectively to the public these anticipated periods of fire activity.

Appendix A - Glossary

[Source: NWCG Glossary of Wildland Fire Terminology – July 2012](#)

Division/Group Supervisor (DIVS)

The ICS position responsible for supervising equipment and personnel assigned to a division or group. Reports to a Branch Director or Operations Section Chief. see also: Division see also: Group

Energy Release Component (ERC)

The computed total heat release per unit area (British thermal units per square foot) within the flaming front at the head of a moving fire.

Haines Index

An atmospheric index used to indicate the potential for wildfire growth by measuring the stability and dryness of the air over a fire.

LCES

Lookouts, Communications, Escape Routes, and Safety Zones

National Fire Danger Rating System (NFDRS)

A uniform fire danger rating system that focuses on the environmental factors that control the moisture content of fuels. see also: Fire Danger Rating System

Relative Humidity (RH)

The ratio of the amount of moisture in the air, to the maximum amount of moisture that air would contain if it were saturated. The ratio of the actual vapor pressure to the saturated vapor pressure.

Remote Automatic Weather Station (RAWS)

A weather station that transmits weather observations via GOES satellite to the Wildland Fire Management Information system.

Strike Team Leader (STCR, STDZ, STEN or STPL)

The ICS position responsible for supervising a strike team. Reports to a Division/Group Supervisor or Operations Section Chief. This position may supervise a strike team of engines (STEN), crews (STCR), dozers (STDZ), or tractor/plows (STPL). see also: Strike Team

Task Force Leader (TFLD)

The ICS position responsible for supervising a task force. Reports to a Division/Group Supervisor or Operations Section Chief. see also: Task Force

Appendix B - Behave Summary

Butte Fire Escape Fire Scenario:

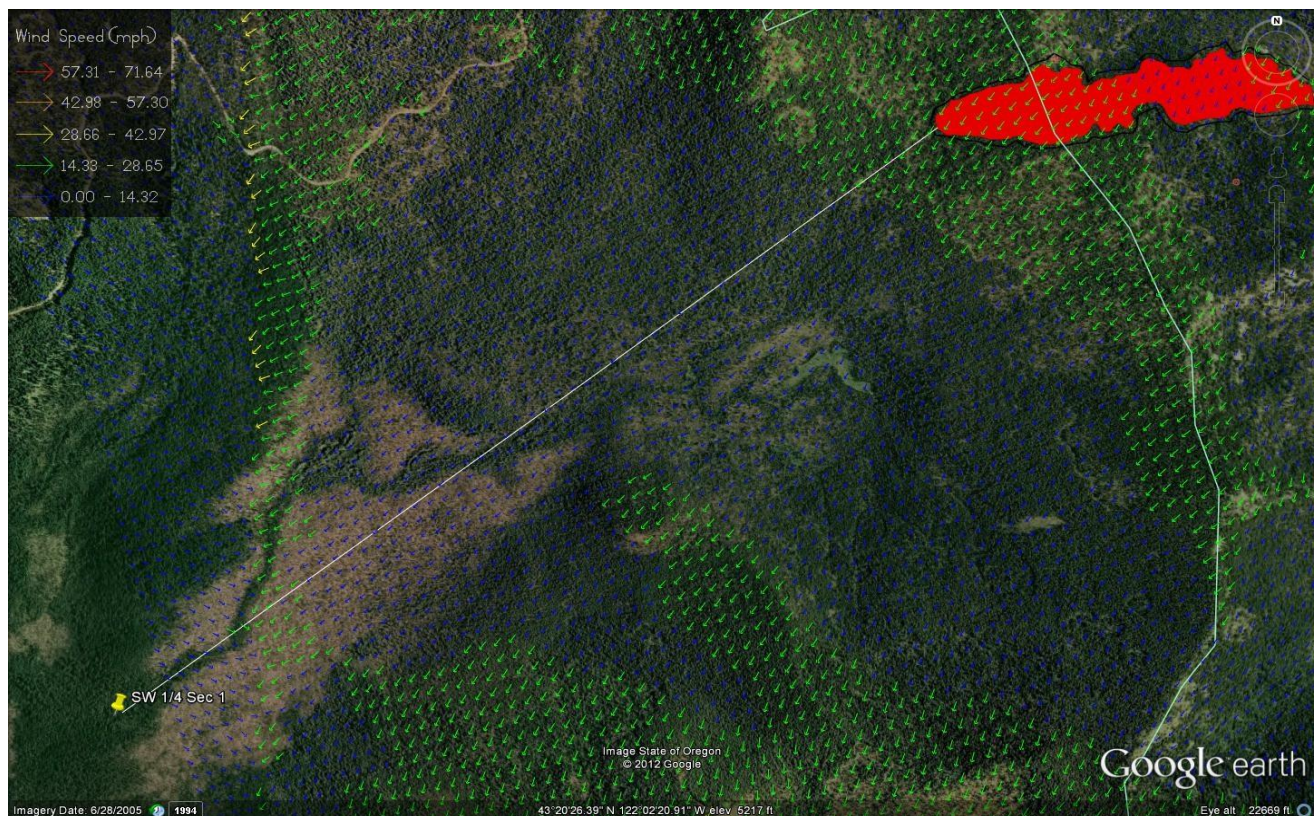
Potential fire spread given **northeast** winds:

- A) Fire escapes due to T-storm downdrafts – torching and spotting to the **southwest**
Weather: 30 MPH winds for 1/2 hour duration from the **northeast**.
Fuels: TL3 (moderate load conifer litter) with pockets of TU5 (high load, timber-shrub).
Topography: **W** aspect @ 30% slope
Ave ROS: 50 ch/hr.
Fire Behavior: Single and group-tree torching with spotting up to 1,000'
Fire Spread: 25 chains (1,600')
- B) Weather: 12 MPH winds from the **northeast** for the duration of the burning period. Burning period is approx. 6 hours/day.
Fuels: 120 chains of TL3 w/pockets of TU5 and 96 chains of TL1/TL3 (low to moderate load conifer litter).
Topography: **W** aspect @ 10-30% slope
Ave ROS: 10 ch/hr for 120 chains; 6 ch/hr for 96 chains.
Fire Behavior: Single and group-tree torching with spotting up to 800'
Fire Spread: 12 hours to burn through TL3/TU5 and 16 hours to burn through TL1/TL3 or 28 hours to reach SW¼ Section 1

The SW¼ Sec 1 is 3 miles southwest of the fire. Fire runs 1,600' southwest within first ½ hour of T-storm event; then takes 28 hours to cover the remaining 14,240' to Section 1 or 4½ to 5 days to reach this area.

Eric Trimble – FBAN(T)

August 18, 2012



Butte Fire Escape Fire Scenario:

Potential fire spread given southwest winds:

- A) Fire escapes due to T-storm downdrafts – torching and spotting to the northeast
Weather: 30 MPH winds for 1/2 hour duration from the southwest.
Fuels: TL3 (moderate load conifer litter) with pockets of TU5 (high load, timber-shrub).
Topography: E aspect @ 40% slope
Ave ROS: 50 ch/hr.

Fire Behavior: Single and group-tree torching with spotting up to 1,000'
Fire Spread: 25 chains (1,600')

- B) Weather: 12 MPH winds from the southwest for the duration of the burning period. Burning period is approx. 6 hours/day.

Fuels: TL1/TL3 (low to moderate load conifer litter).
Topography: E aspect @ 5-20% slope
Ave ROS: 8 ch/hr.

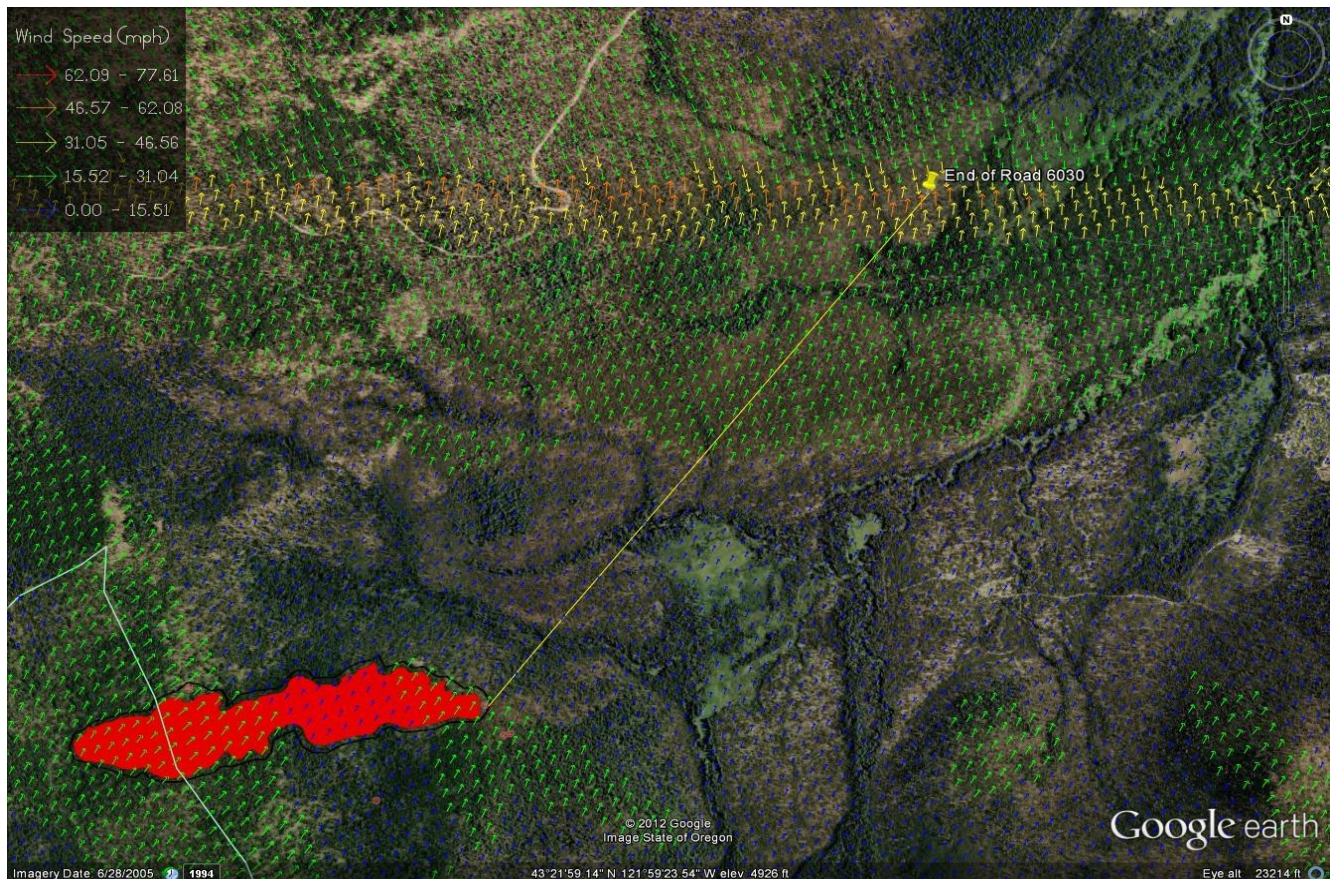
Fire Behavior: Single and group-tree torching with spotting up to 800'

Fire Spread: 144 chains (9,500') to Road 6030 or 18 hours to reach Road 6030

Road 6030 is 2.1 miles northeast of fire. Fire runs 1,600' northeast within first 1/2 hour of T-storm event; then takes 18 hours to cover the remaining 9,500' to Rd 6030 or 3 to 3 1/2 days to reach Road 6030.

Eric Trimble – FBAN(T)

August 18, 2012



Butte Fire Escape Fire Scenario:

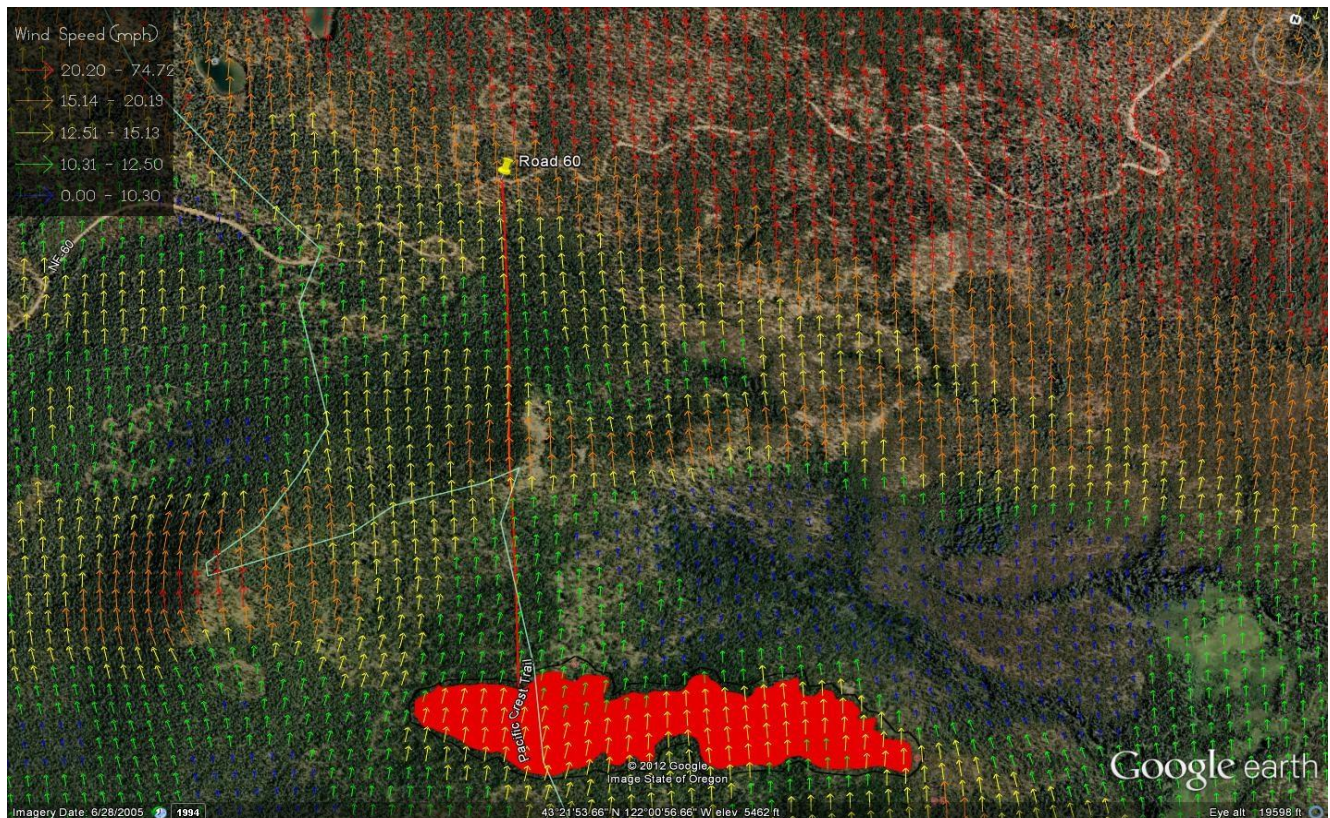
Potential fire spread given south winds:

- A) Fire escapes due to T-storm downdrafts – torching and spotting to the north
Weather: 30 MPH winds for 1/2 hour duration from the south.
Fuels: TL3 (moderate load conifer litter) with pockets of TU5 (high load, timber-shrub).
Topography: E aspect @ 20% slope
Ave ROS: 50 ch/hr.
Fire Behavior: Single and group-tree torching with spotting up to 1,000'
Fire Spread: 25 chains (1,600')
- B) Weather: 12 MPH winds from the south for the duration of the burning period. Burning period is approx. 6 hours/day.
Fuels: TL1/TL3 (low to moderate load conifer litter) with pockets of TU1/TU5 (moderate load, timber-shrub).
Topography: E aspect @ 20% slope
Ave ROS: 10 ch/hr.
Fire Behavior: Single and group-tree torching with spotting up to 800'
Fire Spread: 74 chains (4,900') to Road 60 or 8 hours to reach Road 60

Road 60 is 1.2 miles north of fire. Fire runs 1,600' north within first ½ hour of T-storm event; then takes 8 hours to cover the remaining 4,900' to Rd 5826 or 2 days to reach Road 60.

Eric Trimble – FBAN (T)

August 18, 2012



Butte Fire Escape Fire Scenario:

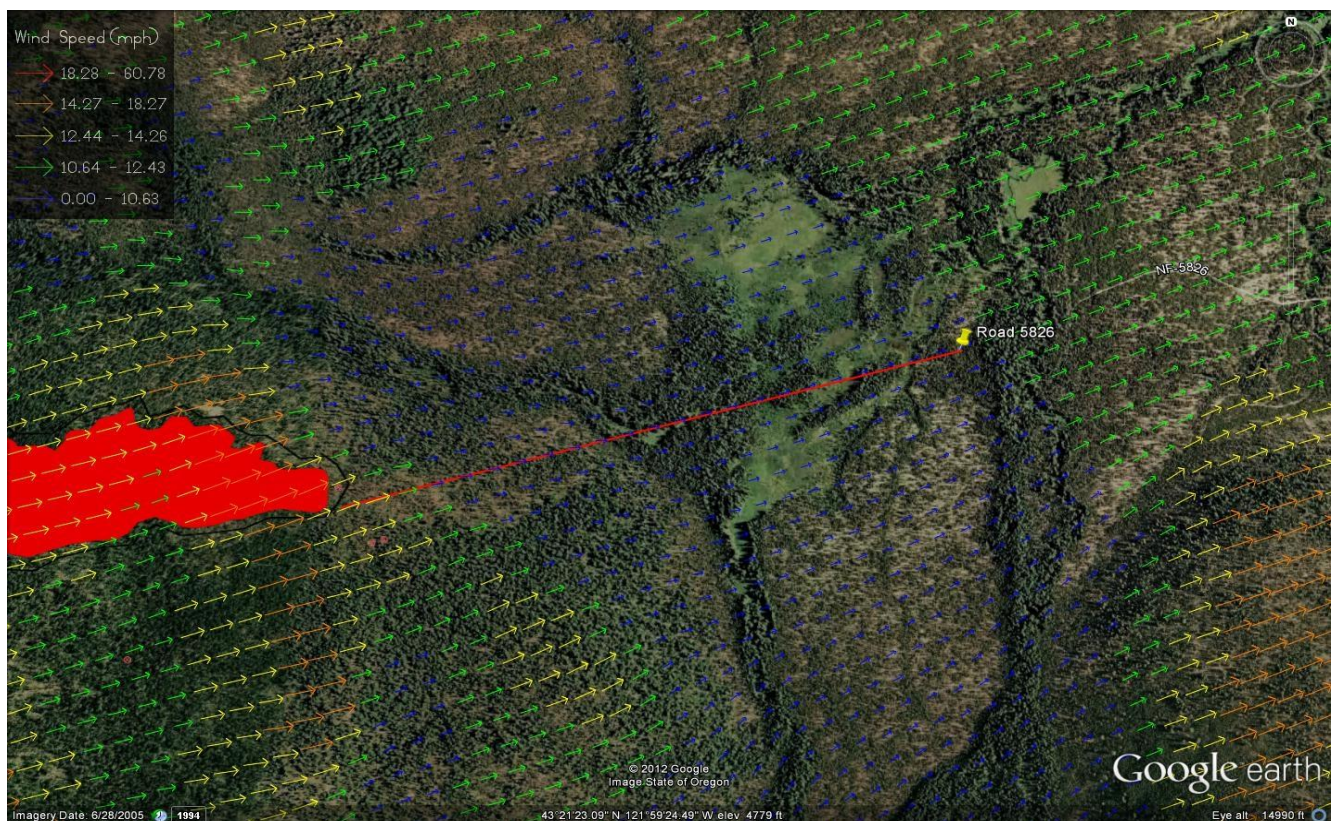
Potential fire spread given west winds:

- A) Fire escapes due to T-storm downdrafts – torching and spotting to the east
Weather: 30 MPH winds for 1/2 hour duration from the west.
Fuels: TL3 (moderate load conifer litter) with pockets of TU5 (high load, timber-shrub).
Topography: NE aspect @ 40% slope
Ave ROS: 50 ch/hr.
Fire Behavior: Single and group-tree torching with spotting up to 1,000'
Fire Spread: 25 chains (1,600')
- B) Weather: 12 MPH winds from the west for the duration of the burning period. Burning period is approx. 6 hours/day.
Fuels: TL1/TL3 (low to moderate load conifer litter) with pockets of TU1/TU5 (moderate load, timber-shrub).
Topography: NE aspect @ 5-20% slope
Ave ROS: 6 ch/hr.
Fire Behavior: Single and group-tree torching with spotting up to 500'
Fire Spread: 64 chains (4,200') to Road 5826. 11 hours to reach Road 5826

Road 5826 is 1.1 miles east of fire. Fire runs 1,600' east within first ½ hour of T-storm event; then takes 11 hours to cover the remaining 4,200' to Rd 5826 or 2 to 2½ days to reach Road 5826.

Eric Trimble – FBAN(T)

August 18, 2012



Appendix C – Containment Prospects Table

Prospect #	Objectives/Conditions	Actions	Resources Needed Cost
DES 1-60 Road	<p>Objective: Keep fire Southeast of 60 Road. Includes Division A.</p> <p>Conditions: The 60 Road is a main arterial road with a 30 foot road bed and prism. The fuels along the 60 Road are timber and brush. The crown base height needs to be raised and the canopy closure needs to be opened up in order to hold a burnout.</p>	<p>Decision Point: When the fire breaches the current control lines and the fire is not contained within the first shift.</p> <p>Action: Prep the 60 Road for holding and potential burnout. Fire out as needed along road to keep up with fire spread to the Northeast. Firing should only commence when and where specific areas of the line are threatened.</p> <p>Probability of Success: High</p>	<p>1 DIVS, 1 TFLD, 2 STCR, 4 Type 2 crews, 1 Type 1 crew, 1 STEN and strike team of engines, 1 Water tender, 1 Type 2 Helo for 4 days, 4 misc overhead. (Prep/Burn)</p> <p>Cost: \$324,000</p> <p>Exposure Hours: 5856 (assumes 12 hour days)</p>
<p>Risk of Implementation: There are risks in the preparation actions of this prospect, including chainsaw work, felling of trees, driving, etc. Firefighter exposure to smoke while holding the line and total overall exposure are all expected risks if the burn out is attempted. Additionally, aerial operations expose pilots and ground crews to aviation based risks.</p> <p>Consequences of not implementing: Not implementing a holding action increases the probability of fire spotting across the 60 Road and if not contained the fire may ultimately threaten the Crescent Lake area and managed lands to the East. The fire will spread primarily through “torch and spot” mechanisms. (Passive crown fire) Some fire spread will occur in surface fuels, with low to moderate spread rates. An active crown fire would be based on a rare event.</p> <p>Recommendation: The estimated time of the fire reaching the closest point on the 60 Road is 2 days after breaching the existing control lines and assuming no suppression efforts. This assumes 6 hours of burn time per day. If the fire escapes the current containment lines and is not contained within the first shift then prep along the 60 Road should commence immediately due to the length of time needed to implement action. The District/IC should consider initiating burn out actions when the threat the fire reaching the 60 Road is imminent.</p>			

Prospect #	Objectives/Conditions	Actions	Resources Needed Cost
DES 2- Big Marsh	<p>Objective: Keep fire West of Big Marsh. Includes Division E.</p> <p>Condition: The proposed containment line will utilize a narrow overgrown roadbed originating on the 60 Road at the Div A/E break. The 5826-200 spur has a 20 foot road bed and prism. Fuels along these roads and across this prospect have a heavy dead and down component with a lodgepole to mixed conifer overstory. The crown base height needs to be raised and the canopy closure needs to be opened up in order to hold a burnout.</p>	<p>Decision Point: When the fire breaches the current control lines and the fire is not contained within the first shift.</p> <p>Action: Construct dozer line from the 60 Road following an existing road bed, then overland to the terminus of the 6030 Road and tie into Big Marsh Creek. Handline will need to be constructed between the two forks of Big Marsh Creek. The dozer line and road improvement will then continue on the 5826-200 road and continue to the 5826 road.</p> <p>Probability of Success: High</p>	<p>2 DIVS, 2 TFLD, 2 STCR, 4 Type 2 crews, 2 DOZB, 4 Dozers. 2 Type 1 crew, 1 STEN and strike team of engines, 2 Water tenders, 1 Type 2 Helo for 4 days, 4 misc overhead.(Prep/Burn)</p> <p>Cost: \$ 388,000</p> <p>Exposure hrs:7056 (Assumes 12 hr days)</p>
<p>Risk of Implementation: There are inherent risks in the preparation actions of this prospect, including chainsaw work, machinery, felling of trees, driving, etc. Firefighter exposure to smoke while holding the line and total overall exposure are all expected risks if the burn out is attempted. Additionally, aerial operations expose pilots and ground crews to aviation based risks.</p> <p>Consequences of not implementing: Not implementing a holding action increases the probability of fire spotting into the Big Marsh area and past the incident control objective lines. If not contained the fire may ultimately threaten previously managed stands and the current planning area to the East. The fire will spread primarily through “torch and spot” mechanisms. (Passive crown fire) Some fire spread will occur in surface fuels, with low to moderate spread rates. An active crown fire would be based on a rare event.</p> <p>Recommendation: The estimated time of the fire reaching the closest point on the 6030 Road is 3 days after breaching the existing control lines and assuming no suppression efforts. This assumes 6 hours of burn time per day. If the fire escapes the current containment lines and is not contained within the first shift then prep along the prospect line should commence immediately due to the length of time needed to implement action. The District/IC should consider initiating burn out actions when the threat the fire reaching the prospect is imminent.</p>			

Prospect #	Objectives/Conditions	Actions	Resources Needed Cost
DES 3-5826 Rd.	<p>Objective: Keep fire West of 5826 Road. Includes Division K.</p> <p>Condition: The 5826 road has a 20 foot road bed and prism with continuous fuels on both sides. Fuels along the road and across this prospect have a heavy dead and down component with a lodgepole to mixed conifer overstory. The crown base height needs to be raised and the canopy closure needs to be opened up in order to hold a burnout.</p>	<p>Decision Point: When the fire breaches the current control lines and the fire is not contained within the first shift.</p> <p>Action: Improve existing roadbed from junction of the 5826-200 road to the terminus of the 5826 road. From the end of the road, continue dozer line as terrain permits up the ridge in Section 3, finish by constructing handline to the end of prospect on the PCT near Tolo Mtn.</p> <p>Probability of Success: Mod-on roaded section, Low-Mod on handline section.</p>	<p>2 DIVS, 2 TFLD, 2 STCR, 4 Type 2 crews, 2 DOZB, 4 Dozers. 2 Type 1 crew, 1 STEN and strike team of engines, 2 Water tenders, 2 Type 2 Helo for 6 days, 4 misc overhead.(Prep/Burn)</p> <p>Cost: \$ 706,800</p> <p>Exposure hrs:7248 (Assumes 12 hr days)</p>
<p>Risk of Implementation: There are inherent risks in the preparation actions of this prospect, including chainsaw work, machinery, felling of trees, driving, etc. Firefighter exposure to smoke while holding the line and total overall exposure are all expected risks if the burn out is attempted. Additionally, aerial operations expose pilots and ground crews to aviation based risks.</p> <p>Consequences of not implementing: Not implementing a holding action increases the probability of fire spotting beyond the incident objective line into an area that has limited opportunities for containment. If not contained the fire may ultimately threaten previously managed stands and the current planning area to the East. The fire will spread primarily through “torch and spot” mechanisms. (Passive crown fire) Some fire spread will occur in surface fuels, with low to moderate spread rates. An active crown fire would be based on a rare event.</p> <p>Recommendation: The estimated time of the fire reaching the closest point on the 5826 Road is 2 days after breaching the existing control lines and assuming no suppression efforts. This assumes 6 hours of burn time per day. If the fire escapes the current containment lines and is not contained within the first shift then prep along the prospect line should commence immediately due to the length of time needed to implement action. The District/IC should consider initiating burn out actions when the threat the fire reaching the prospect is imminent. The likelihood of success on the 5826 Prospect is less than desirable due to the flatness of the ground, spotting potential as well as the fuel loading and density.</p>			

Prospect #	Objectives/Conditions	Actions	Resources Needed Cost
DES 4-PCT	<p>Objective: Keep fire East of the PCT.</p> <p>Condition: Trail has a 3 foot scrape and 5 foot brushout. Fuels along this prospect have a heavy dead and down component with a lodgepole to mixed conifer overstory. The crown base height needs to be raised and the canopy closure needs to be opened up in order to hold a burnout.</p>	<p>Decision Point: When the fire breaches the current control lines and the fire is not contained within the first shift.</p> <p>Action: Improve existing trail and increase trail prism width from the 60 Road at Windigo Pass to the Tolo Mtn. area and tie into the 5826 Prospect.</p> <p>Probability of Success: Mod to High</p>	<p>2 DIVS, 2 TFLD, 2 STCR, 4 T2 crews for 4 days, 2 Type 1 crew, 2 type 2 Helos for 4 days, 4 misc overhead. (Prep/Burn)</p> <p>Cost: \$ 416,800</p> <p>Exposure hrs:6336 (Assumes 12 hr days)</p>
<p>Risk of Implementation: There are inherent risks in the preparation actions of this prospect, including chainsaw work, felling of trees, driving, etc. Firefighter exposure to smoke while holding the line and total overall exposure are all expected risks if the burn out is attempted. Additionally, aerial operations expose pilots and ground crews to aviation based risks.</p> <p>Consequences of not implementing: Not implementing a holding action on Prospect 4 increases the probability of fire spotting onto the Umpqua NF and into an area that has limited containment features. If not contained the fire may ultimately threaten values at risk to the West. The fire will spread primarily through “torch and spot” mechanisms. (Passive crown fire) Some fire spread will occur in surface fuels, with low to moderate spread rates. An active crown fire would be based on a rare event.</p> <p>Recommendation: The estimated time of the fire reaching the closest point on the PCT is 1 day after breaching the existing control lines and assuming no suppression efforts. This assumes 6 hours of burn time per day. If the fire escapes the current containment lines and is not contained within the first shift, then prep along the prospect line should commence immediately due to the length of time needed to implement action. The District/IC should consider initiating burn out actions when the threat the fire reaching the prospect is imminent.</p>			

Prospect #	Objectives/Conditions	Actions	Resources Needed Cost
DES 5-Cappy	<p>Objective: Keep fire West of Basin Creek and Little Deschutes drainages. Includes Division E.</p> <p>Condition: Terrain along the top portion of the prospect is extreme. Fuels along this prospect have a heavy dead and down component with a lodgepole to mixed conifer overstory. The crown base height needs to be raised and the canopy closure needs to be opened up in order to hold a burnout.</p>	<p>Decision Point: If the fire crosses the 5826 Prospect, initiate action on this line.</p> <p>Action: Construct handline utilizing existing natural barriers line from the Tolo Mtn. area on the PCT to Cappy Mountain. From Cappy Mountain follow the ridgeline to the Northeast and intersect the 5825 Road and the Big Marsh Prospect. Where terrain permits utilize Dozers to complete the prospect.</p> <p>Probability of Success: Mod</p>	<p>3 DIVS, 3 TFLD, 3 STCR, 6 T2 crews for 5 days, 2 DOZB, 4 Dozers, 4 Type 1 crew, 2 type 2 Helos for 5 days, 4 misc overhead. (Prep/Burn)</p> <p>Cost: \$ 849,500</p> <p>Exposure hrs:12780 (Assumes 12 hr days)</p>
<p>Risk of Implementation: There are inherent risks in the preparation actions of this prospect, including chainsaw work, machinery, felling of trees, driving, etc. Firefighter exposure to smoke while holding the line and total overall exposure are all expected risks if the burn out is attempted. Additionally, aerial operations expose pilots and ground crews to aviation based risks.</p> <p>Consequences of not implementing: Not implementing a holding action increases the probability of fire spreading into the Basin Creek and Little Deschutes areas. If not contained the fire may ultimately threaten previously managed stands to the East. The fire will spread primarily through “torch and spot” mechanisms. (Passive crown fire) Some fire spread will occur in surface fuels, with low to moderate spread rates. An active crown fire would be based on a rare event.</p> <p>Recommendation: The estimated time of the fire reaching the closest point on the Cappy Prospect is 3 days after breaching the existing control lines and assuming no suppression efforts. If the fire escapes the current containment lines and/or the 5826 Prospect is not successful and the fire is not contained within the first shift then prep along the prospect line should commence immediately due to the length of time needed to implement action. The District/IC should consider initiating burn out actions when the threat the fire reaching the prospect is imminent.</p>			

Prospect #	Objectives/Conditions	Actions	Resources Needed Cost
UMP-1 Bradley Creek	<p>Objective: Keep fire East of the trails going to Tolo Mtn. Includes Division Z.</p> <p>Condition: Road and trail improvement. The 60 Road has a 50 foot road bed and prism. The trail is a main trail with an existing 3 foot scrape and 5 foot brush out. Fuels across this prospect have a heavy dead and down component with a mixed conifer overstory. The crown base height needs to be raised and the canopy closure needs to be opened up in order to hold a burnout.</p>	<p>Decision Point: When the fire breaches the PCT and the fire is not contained within the first shift.</p> <p>Action: Road improvement along the 60 Road to Bradley Creek and the 1412 Trail. Follow the 1412 trail to the 1445 trail and on to Tolo Mtn. Trail improvement as well as ground fuels and canopy closure need to be mitigated.</p> <p>Probability of Success: Low to Mod. This would increase a bit if dozers could be used on the old Windigo Road.</p>	<p>3 DIVS, 3 TFLD, 4 STCR, 6 T2 crews for 6 days, 6 Type 1 crews, 1 STEN, 3 T6 Engine, 2 Water tenders, 4 falling modules, 2 Type 2 Helos, 4 misc. overhead for 6 days.(Prep/Burn) (2 dozers and DOZB if dozers approved for Windigo road section.)</p> <p>Cost: \$ 885,840</p> <p>Exposure hrs: 18,720 (Assumes 12 hr. days)</p>
<p>Risk of Implementation: There are inherent risks in the preparation actions of this prospect, including chainsaw work, machinery, felling of trees, driving, etc. Firefighter exposure to smoke while holding the line and total overall exposure are all expected risks if the burn out is attempted. Additionally, aerial operations expose pilots and ground crews to aviation based risks.</p> <p>Consequences of not implementing: Not implementing a holding action increases the probability of fire spreading into the Lower Bradley Creek area and past the incident objective lines. If not contained the fire may ultimately threaten values at risk to the West. The fire will spread primarily through “torch and spot” mechanisms. (Passive crown fire) Some fire spread will occur in surface fuels, with low to moderate spread rates. An active crown fire would be based on a rare event.</p> <p>Recommendation: The probability of the fire reaching the closest point on the trail system is 4-5 days after breaching the existing control lines and assuming no suppression efforts. This assumes 6 hours of burn time per day. Initiate the Bradley Prospect, if the fire escapes the current containment lines and is not contained within the first shift and /or the PCT Prospect is unsuccessful. Prep along the prospect line should commence immediately due to the length of time needed to implement action. The District/IC should consider initiating burn out actions when the threat the fire reaching the prospect is imminent.</p>			

Prospect #	Objectives/Conditions	Actions	Resources Needed Cost
UMP-2 North Umpqua	<p>Objective: Keep fire North of North Fork Umpqua River. Includes Divisions T and O</p> <p>Condition: The 60 Road has a 50 foot road bed and prism. The trail along the river The trail has an existing 3 foot scrape and 5 foot brush out. Fuels along this prospect have a heavy dead and down component with a lodgepole to mixed conifer overstory. The crown base height needs to be raised and the canopy closure needs to be opened up to hold a burnout.</p>	<p>Decision Point: When the fire crosses or is expected to cross the incident objective line along Trails 1412 and 1445. (Bradley Creek Prospect)</p> <p>Action: Road improvement along the 60 Road to Kelsay Horse Camp. Improve existing Trail 1466 from the 60 Road and continue along the trail to the PCT, South of Tolo Mtn.</p> <p>Probability of Success: Roaded Section: High Unroaded Section: Low</p>	<p>3 DIVS, 3 TFLD, 4 STCR, 6 T2 crews, 4 Type 1 crew, 1 STEN and strike team of engines, 2 Water tender, 2 type 2 Helos, 4 misc. overhead for 4 days.(Prep/Burn)</p> <p>Cost: \$ 643,200</p> <p>Exposure hrs: 11,232 (Assumes 12 hr days)</p>
<p>Risk of Implementation: There are inherent risks in the preparation actions of this prospect, including chainsaw work, felling of trees, driving, etc. Firefighter exposure to smoke while holding the line and total overall exposure are all expected risks if the burn out is attempted. Additionally, aerial operations expose pilots and ground crews to aviation based risks.</p> <p>Consequences of not implementing: Not implementing a holding action increases the probability of fire spotting into the Thirsty Point area. If not contained the fire may ultimately threaten values to the West, including Lemolo Lake. The fire will spread primarily through “torch and spot” mechanisms. (Passive crown fire) Some fire spread will occur in surface fuels, with low to moderate spread rates. An active crown fire would be based on a rare event.</p> <p>Recommendation: If the Bradley Creek Prospect is unsuccessful and/or the fire is projected to spread to the West, then implement the North Umpqua prospect. Due to the length of time needed to implement the actions the timing of the decision is critical. The District/IC should consider initiating burn out actions when the threat the fire reaching the prospect is imminent.</p>			

Prospect #	Objectives/Conditions	Actions	Resources Needed Cost
UMP-3 Cinnamon	<p>Objective: Keep fire East of 60 Road and North of 4793 and Trail 1472.</p> <p>Condition: The 60 and 4793 roads have a 50 foot road bed and prism. The trail is a main trail with an existing 3 foot scrape and 5 foot brush out. Fuels across this prospect have a heavy dead and down component with a lodgepole to mixed conifer overstory. The crown base height needs to be raised and the canopy closure needs to be opened up to hold a burnout.</p>	<p>Decision Point: When the fire crosses or is expected to cross the North Umpqua Prospect.</p> <p>Action: Road improvement along the 60 Road from Kelsay Horse Camp to Hwy. 138. From Hwy 138 continue along to the 4793 road and 4793-100 road to the Trail 1472. Improve existing Trail 1472 and continue along trail to the PCT South of Tipso Mtn.</p> <p>Probability of Success: High</p>	<p>3 DIVS, 3 TFLD, 4 STCR, 6 T2 crews, 4 Type 1 crew, 1 STEN and strike team of engines, 2 Water tender, 2 type 2 Helos, misc. overhead for 4 days.(Prep/Burn)</p> <p>Cost: \$ 643,200</p> <p>Exposure hrs:11,232 (Assumes 12 hr days)</p>
<p>Risk of Implementation: There are inherent risks in the preparation actions of this prospect, including chainsaw work, felling of trees, driving, etc. Firefighter exposure to smoke while holding the line and total overall exposure are all expected risks if the burn out is attempted. Additionally, aerial operations expose pilots and ground crews to aviation based risks.</p> <p>Consequences of not implementing: Not implementing a holding action increases the probability of fire spreading across the 60 Road to the West and threatening the Lemolo Lake area and crossing Hwy 138 and impacting the Diamond Lake Area. The fire will spread primarily through “torch and spot” mechanisms. (Passive crown fire) Some fire spread will occur in surface fuels, with low to moderate spread rates. An active crown fire would be based on a rare event.</p> <p>Recommendation: If holding the fire at North Umpqua Prospect is unsuccessful and the fire is projected to spread to the West and South, then implement Cinnamon Prospect. Due to the length of time needed to implement the action the timing of the decision is critical. Structure protection on the Cinnamon Butte Lookout will need to be implemented. The District/IC should consider initiating burn out actions when the threat the fire reaching the prospect is imminent.</p>			

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