Bald Mountain Fire

Long Term Fire Assessment – V1.0 9/24/12

Wallowa – Whitman National Forest

Preparers:

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Purpose

The purpose of this assessment is to answer a number of questions from the agency administrator and Fire Management staff.

What are the risks to the following points of concern:

- Wilderness boundary
- Forest Boundary
- Minam Lodge and Red's Horse Ranch
- Private Lands in Catherine Creek
- Lostine River "cherry stem"
- Probability of the fire establishing itself in the bottom of the Minam River

Bald Mountain – Quick Information/ Background

The Bald Mountain Fire is burning in the Eagle Cap Wilderness on the Wallowa – Whitman National Forest from a thunderstorm lightning strike.

- Fire Start – September 18, 2012
- Current size – 1000 ac. (Map 1)
- Fire Danger indices are setting new record highs
- Point Prom RAWS received approximately 0.1 inch of rain in the past 24 hours (mostly on 9/23/2012). The next week is forecasted to be under a high pressure system with mild, dry conditions (Figure 1)
- New ignitions may start with increased lightning risk
- Vegetation – subalpine fir, open grassy areas, and mixed conifer forest with a pine and white fir component
- Fire is spreading as a surface fire and group torching with short range (< .25 mile) spotting
- Nearest improvement to the fire are Red's Horse Ranch/Minam Lodge – 5 miles west north/west

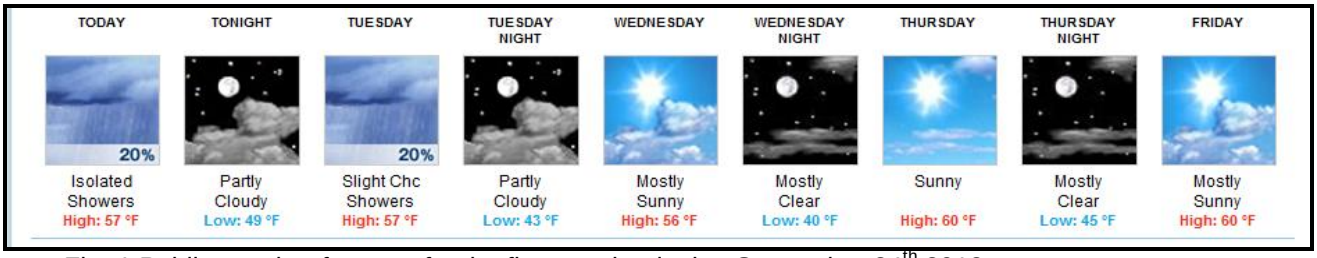
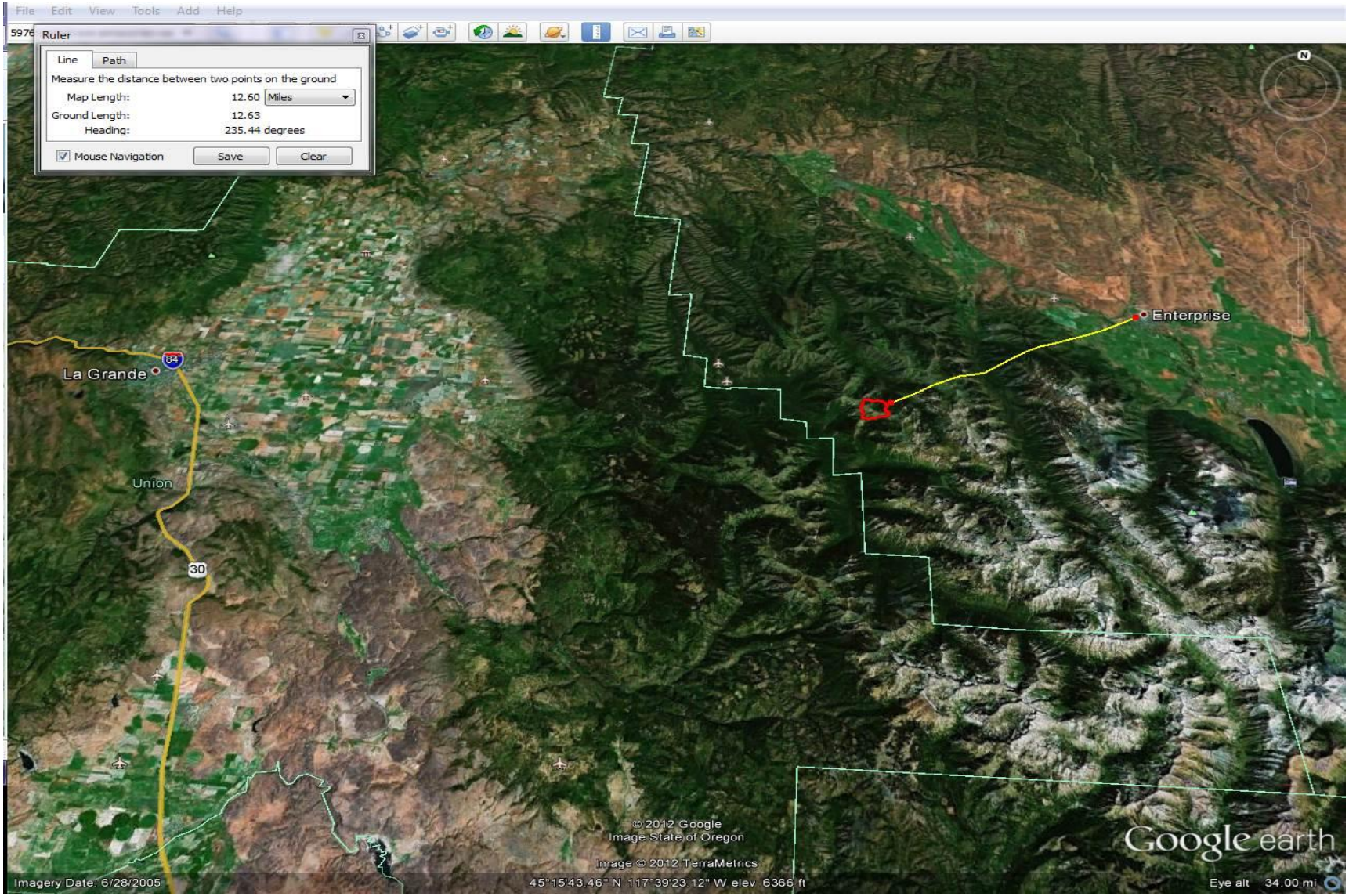


Fig- 1 Public weather forecast for the fire area beginning September 24th 2012



Map 1 – Fire Location

Fire Danger and Fire Weather

2012 Fire Danger

Fire danger this year remained at or below normal until the middle of August. Typically, during August there is a short period of moderating conditions with occasional precipitation. This year the short reprieve did not occur and conditions became hotter and drier. Currently, most of the Remote Automatic Weather Stations (RAWS) in the area are setting new historic high indices (Figure 2).

Because conditions are well above the normal climatological pattern, some of the common tools used to predict future patterns may not be applicable.

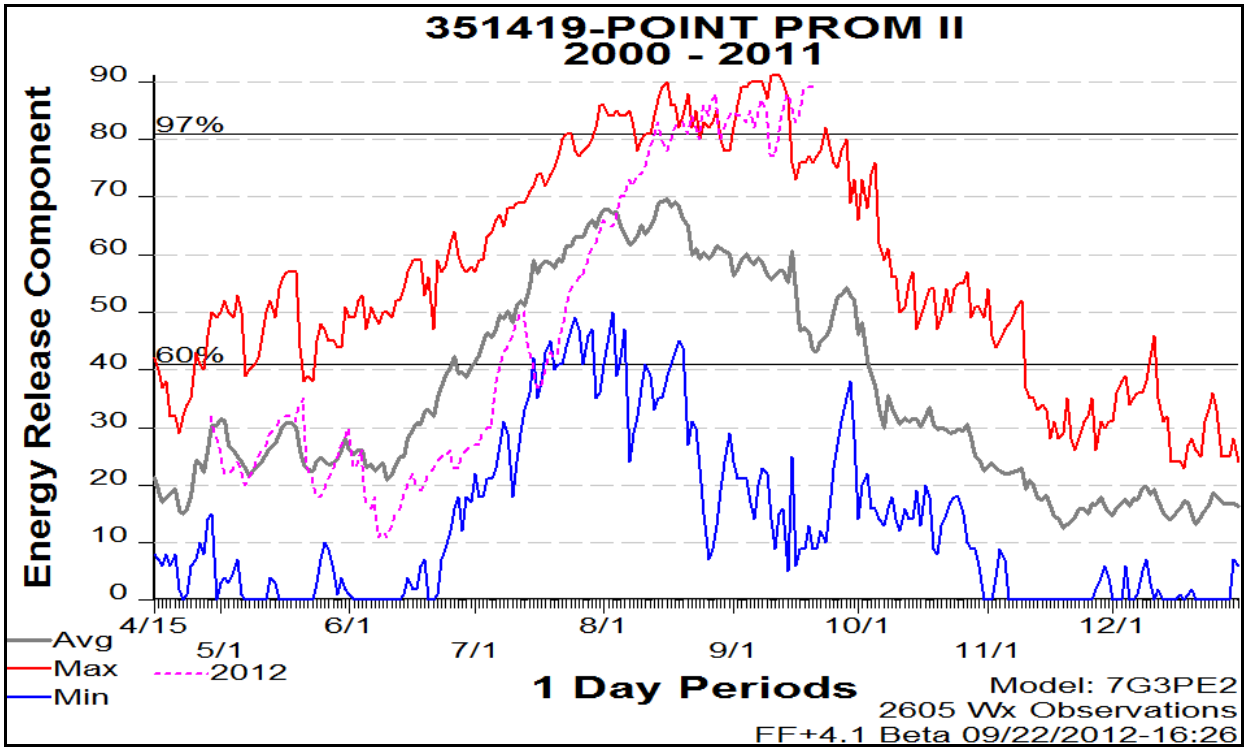
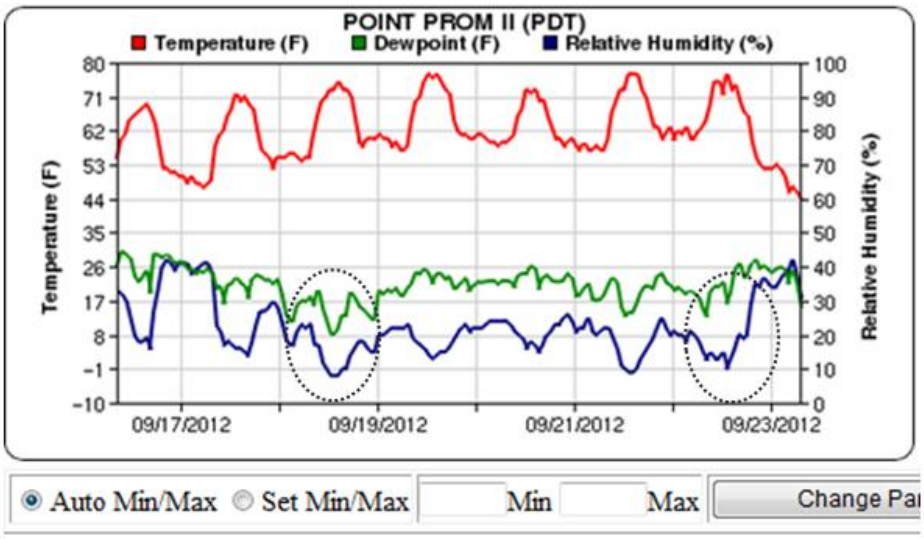


Fig 2 - Fire Danger displayed by Energy Release Component

Fire Weather Conditions

a)



b)

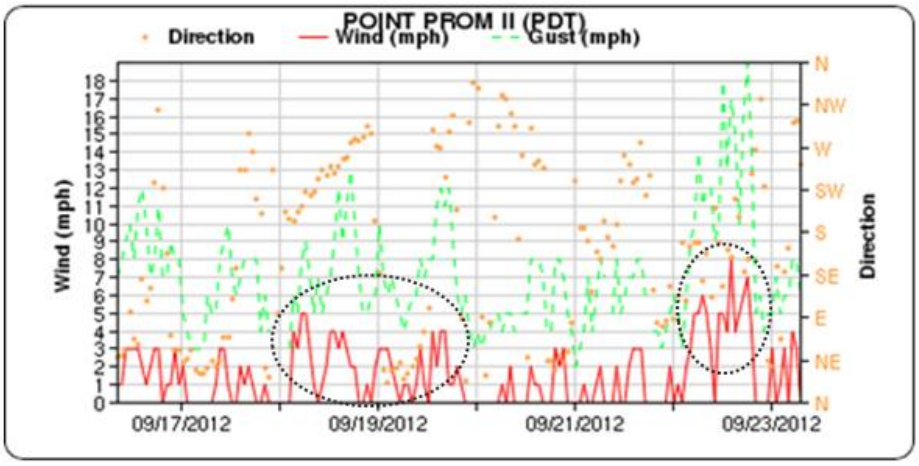


Fig 3 – a) Weather and b) wind conditions during fire growth periods

Active fire behavior occurred on September 19th and 22, under warm, dry and breezy conditions (Figure 3).

Winds have been generally light and variable (measured at the Point Prom RAWS) throughout the life of the fire. This suggests that weather was not the sole driver of fire growth. There is a very subtle trigger point, or there are unresolved local effects.

Weather and Climate Outlook

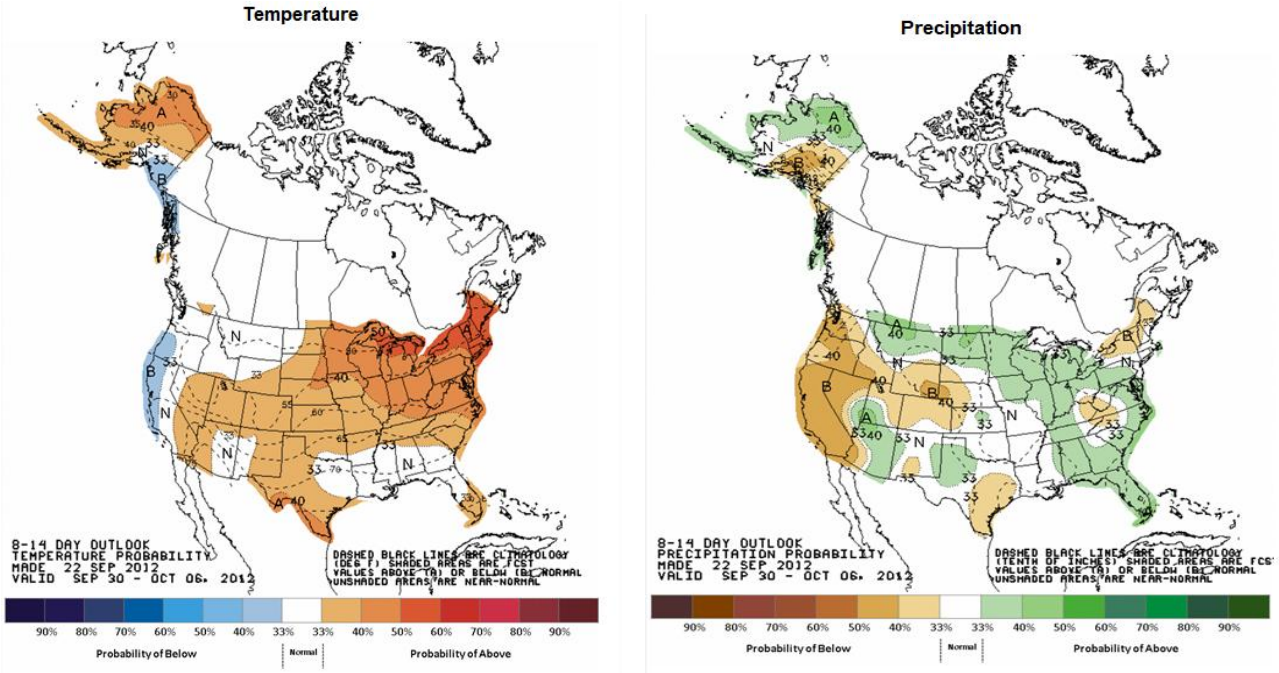


Fig 4 - 8 to 14 day outlook for temperature and precipitation

If the temperature and precipitation outlooks are correct (Figure 4), temperature should be near average but precipitation will be below average for northeastern Oregon.

Meso Climate of the Fire Site – localized fire behavior effects

There are no RAWS near the fire. The most representative RAWS include Point Prom II for fuels conditions and a variety of stations to represent fire site wind conditions.

The fire is (currently) far enough above the largest river drainage to apparently not be significantly affected by wind patterns within the river corridor. As the fire moves to the west, the Minam River drainage will influence fire direction and spread. Generally winds intensify and become more diurnal with an upstream flow during the heat of the day and downstream flow at night and early morning

Because the terrain is steep and has a variety of aspects and slopes, winds are very site specific, with wind sheltering, funneling and eddying. The effects on fire behavior are quickly and surprisingly intensified by changes in wind speed and direction. A variety of wind directions and speeds were analyzed across the terrain in the fire area using the software WindNinja (refer to www.firemodels.org). Figure 5 illustrates some of the complex wind patterns in the area affecting the fire.

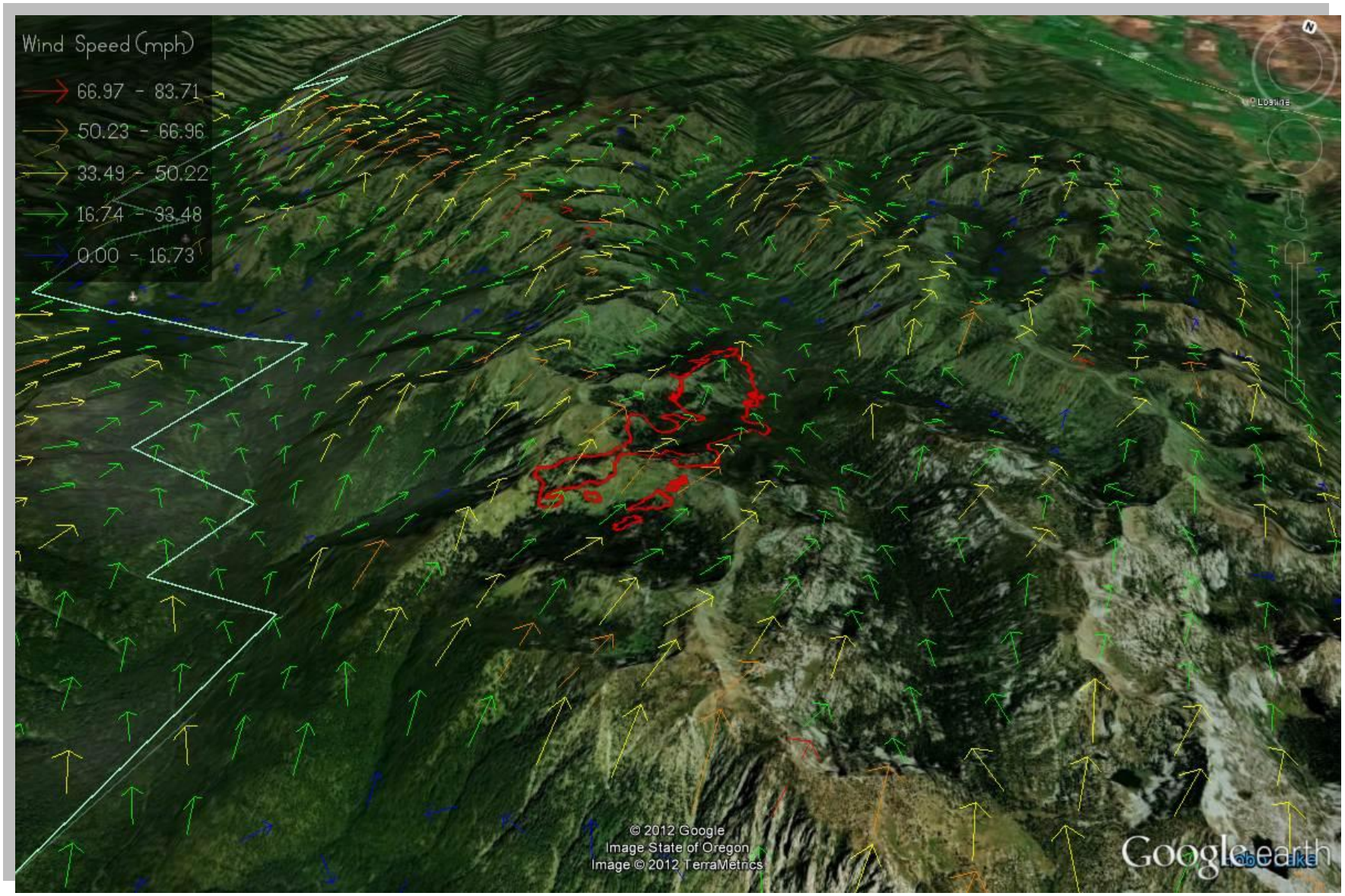


Fig 5 – Wind direction influenced by terrain for a 30-mph wind speed from the south over the fire site (red perimeter).

Predicted Fire Behavior and Progression

General fire progression modeling

Over the next 6 days the fire is expected to grow comparably to the previous 5 days (Figure 6). Near Term Fire Behavior model was used to depict this condition.

NAME	VALUE
Incident Name	Bald Mountain
Analysis Name	NT_6D_9_23_sp.07_PoinP_rock_Precp_+1%FFM
Analyst	Fay, Brett
Near Term Size	4,376 acres

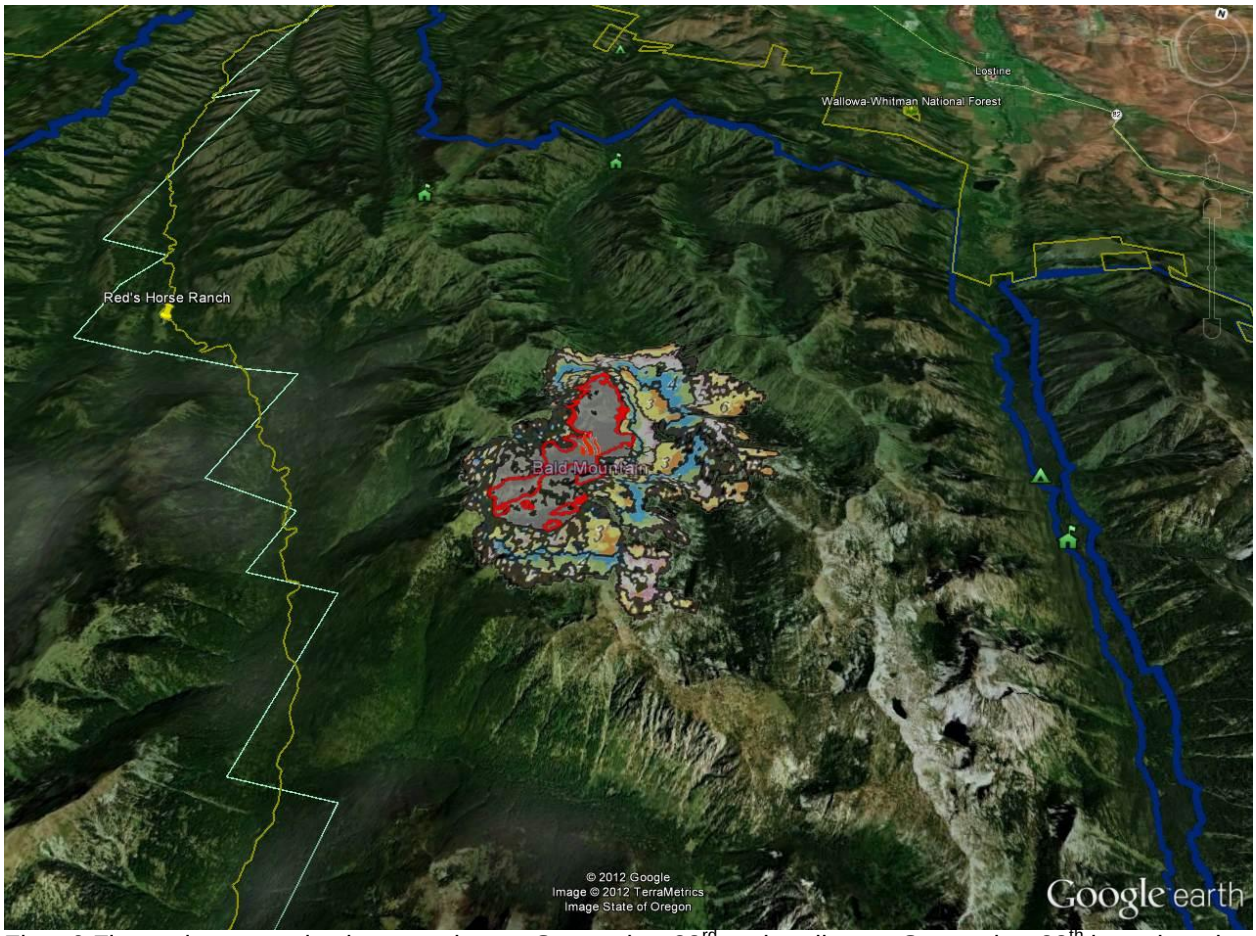


Fig – 6 Fire perimeter projections starting on September 23rd and ending on September 28th based on the 9/22/12 infrared flight perimeter. The analysis assumes no delaying or holding actions.

Will the fire reach points of interest?

The fire progression assessment in the previous section was used to determine if the fire would reach points of concern. The results of that assessment were based on National Weather Service gridded forecast weather for 6 days; the results are displayed in Table 1. These results were determined using forecast weather and perimeter growth simulated in Near Team Fire Behavior in the Wildland Fire Decision Support System (WFDSS).

Point of interest	Distance from fire	Impacted in 6 days?
Wilderness boundary	East 4 miles	Unlikely
Forest Boundary	North 5 miles	Unlikely
Minam Lodge and Reds Horse Ranch	Northwest 5.5 miles	Unlikely
Private Lands in Catherine Creek	Southwest 7 miles	Unlikely
Lostine River “cherry stem”	East 4 miles	Unlikely
Fire establishing itself in the bottom of Minam creek	Southwest 1.5 miles	Unlikely

Table 1 – Projection of fire impacting points of interest over the next 6 days beginning on 9/23/12

Points of interest simulation – common spread and cold front spread conditions

Four scenarios were analyzed to evaluate predicted fire growth towards values of interest previously identified. The first scenario evaluated fire growth and fire behavior in the Bear Creek drainage using forecasted weather for the period. The second scenario fabricated strong south wind generally associated with a cold front. Scenario 3 predicts fire growth towards the Minam River with forecast wind and weather whereas Scenario 4 compares growth that may occur with sustained 30-mph winds associated with a cold front. The Near Term Fire Behavior Analysis in WFDSS was used to assess potential perimeters for these scenarios.

Scenario 1: Bear Creek – Forecasted Winds

The first scenario shows potential fire spread in Bear Creek over the next few days if the weather is consistent with the forecast for the next six days (Figure 7).

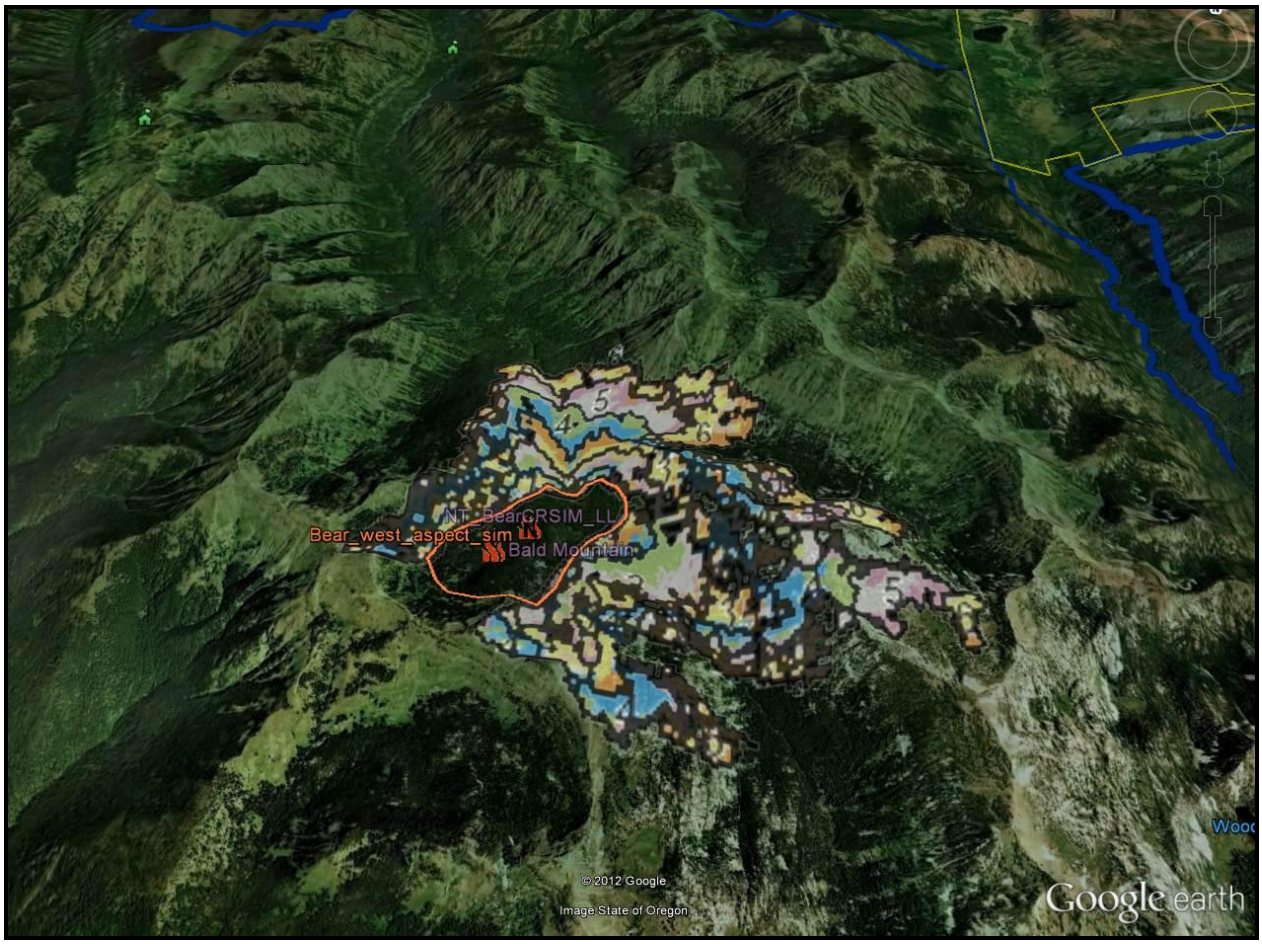


Fig – 7 Simulated fire growth if the fire moves into the Bear Creek drainage under forecast weather and wind conditions.

Scenario 2: Bear Creek – Cold Front Passage

The second scenario evaluates potential fire spread in Bear Creek over the next few days under forecast weather (Figure 8). Forecast winds were used for five of the six days of the simulation and a strong cold front with winds above 30 MPH for 10 hours was simulated on the third day.

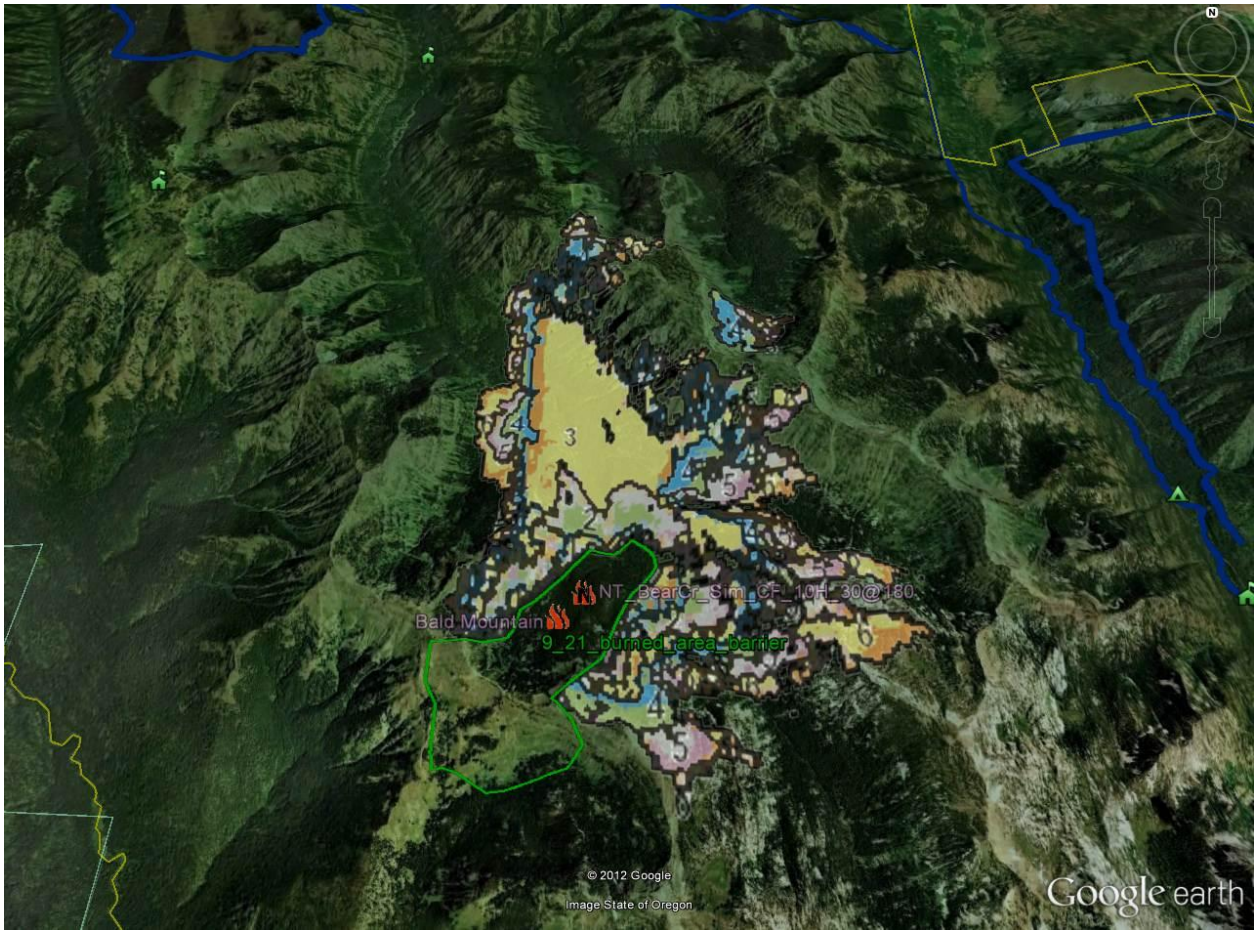


Fig – 8 Simulated fire growth in the Bear Creek drainage under a 30 MPH south wind for 10 hours for 1 day and forecast winds for the other five days.

Scenario 3: Minam River – Forecasted Winds

The third scenario evaluates fire spread west into Minam River over the next few days assuming the fire weather remains as forecast for the next six days (Figure 9).

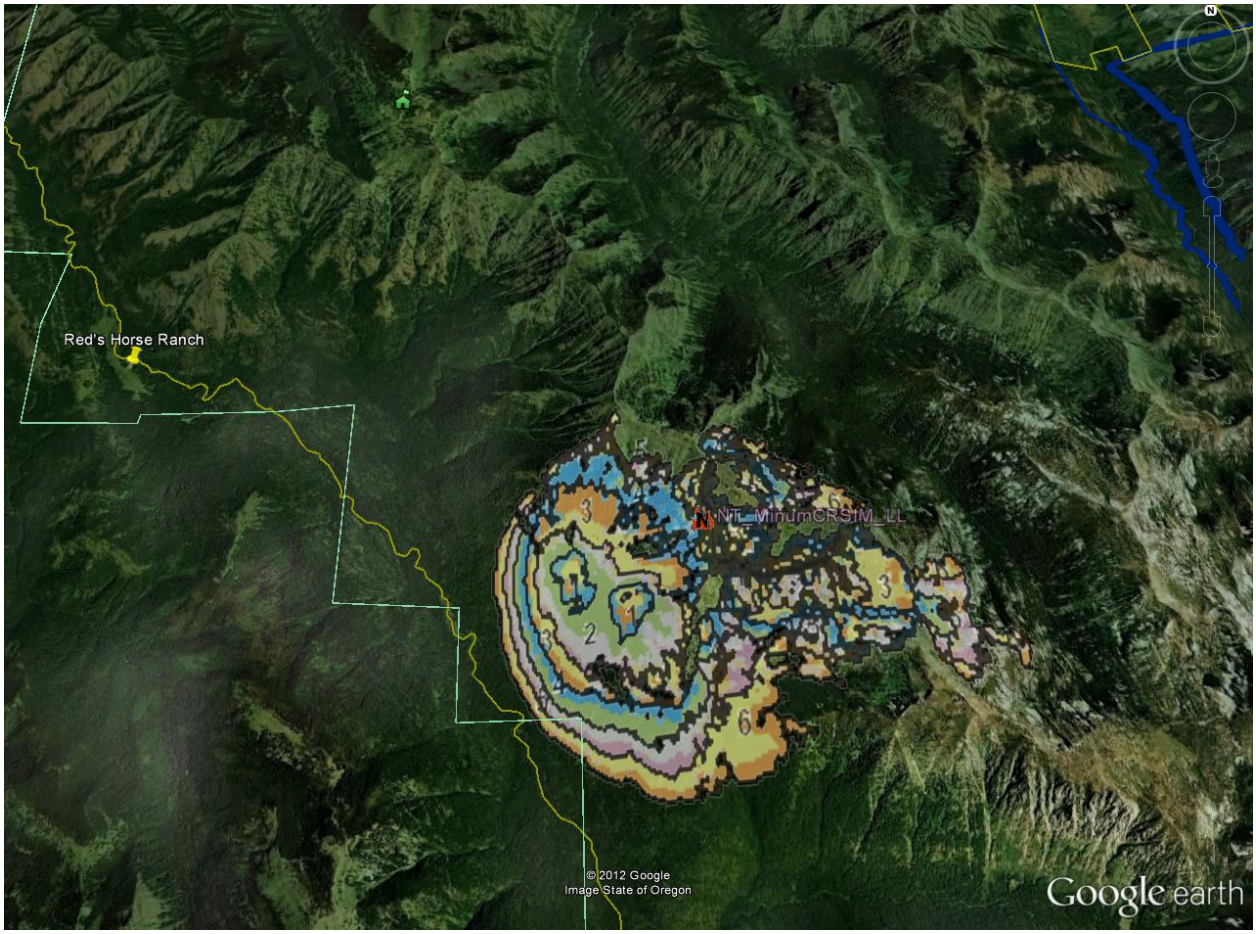


Fig – 9 Simulated fire growth into the Minam River drainage using forecast weather conditions.

Scenario 4: Minam River – Cold Front Passage

The fourth scenario displays fire spread in the Minam River drainage over the next few days (Figure 10). Forecast winds were used for five of the six days of the simulation and a strong cold front with winds above 30 MPH for 10 hours was simulated on the third day.

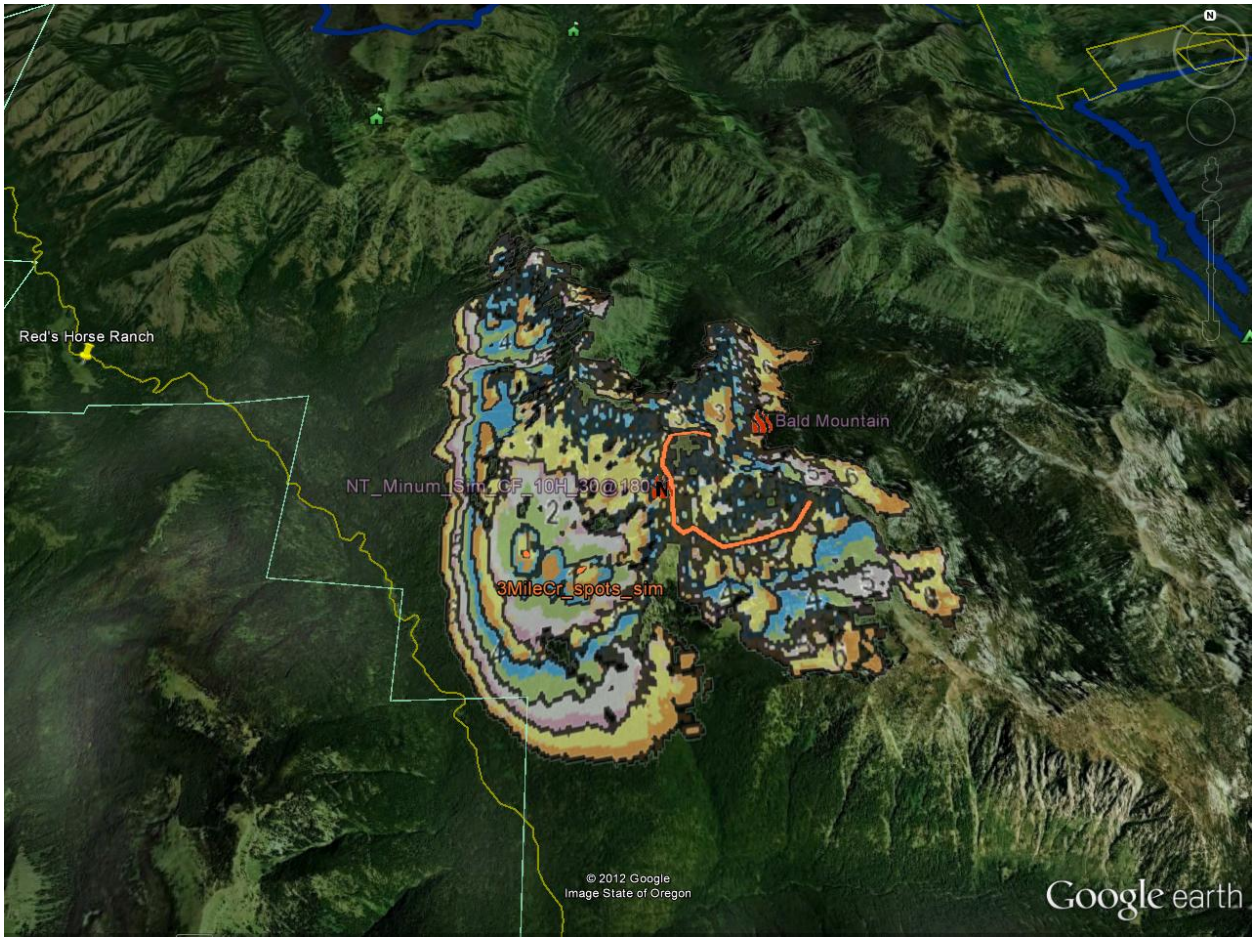


Fig – 10 Simulated fire growth if the fire moves into the Minam River drainage under a 30 MPH south wind for 10 hours.

Outlook – Fire Season Ending Event Assessment

A number of previous long term fire assessments were reviewed to understand potential fire season-ending event dates. Chart 1 illustrates those assessments.

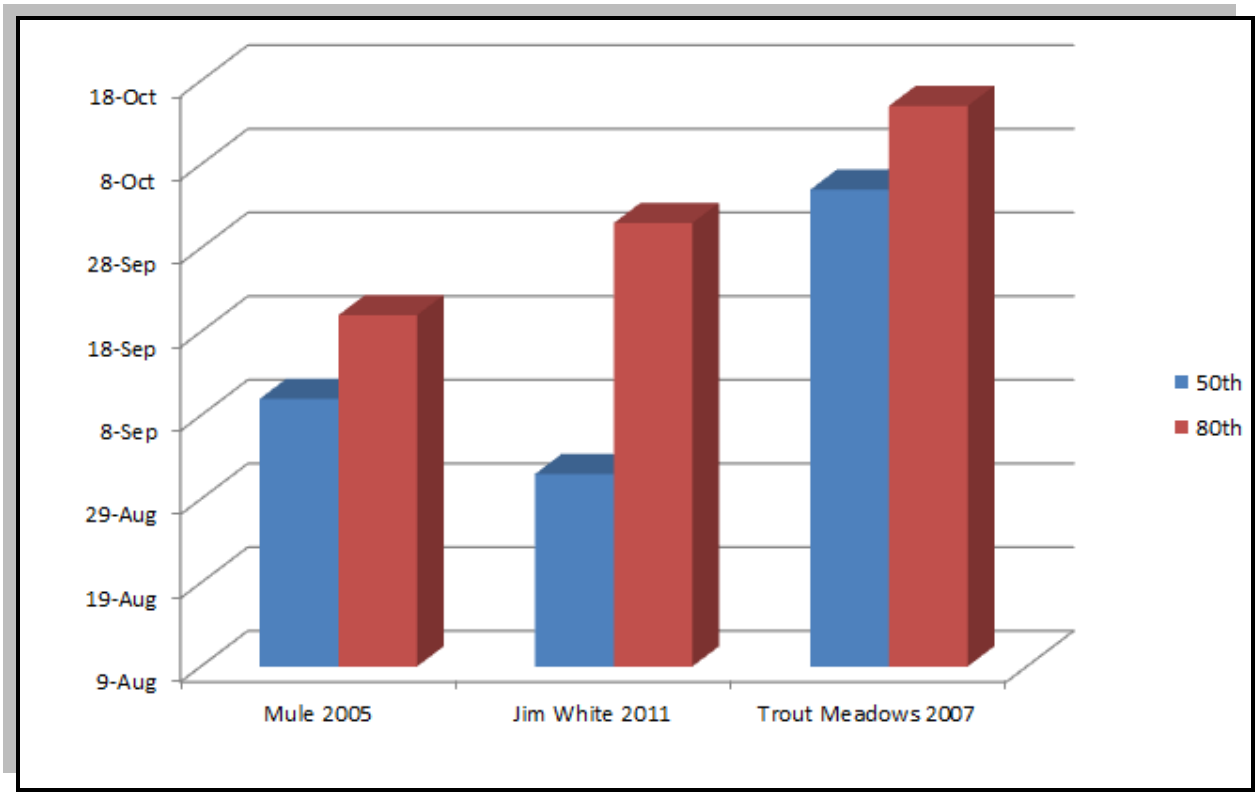


Chart 1 – Season-ending event information from previous assessments. Blue bar represents a 50% chance of a season ending event and accordingly the red bar indicates a 80% probability

The conditions this year are more severe than previous years (section on fire danger). But a basic analysis of previous years that also had high fire danger indices combined with the previous assessments identity a high probability of a fire season ending event occurring within the next two weeks.

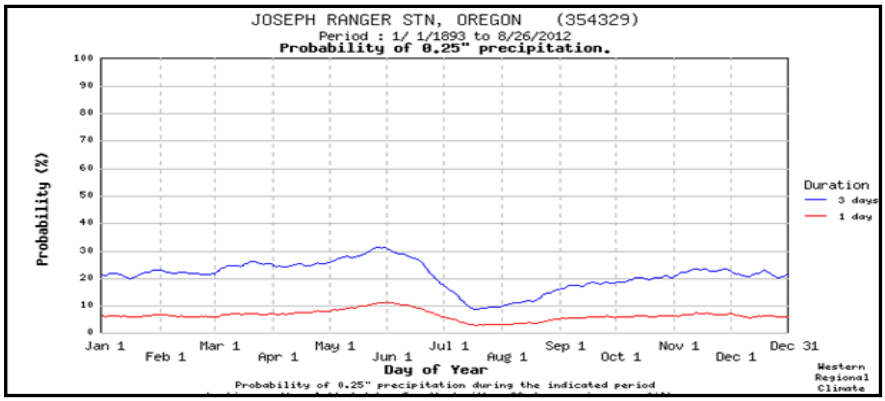


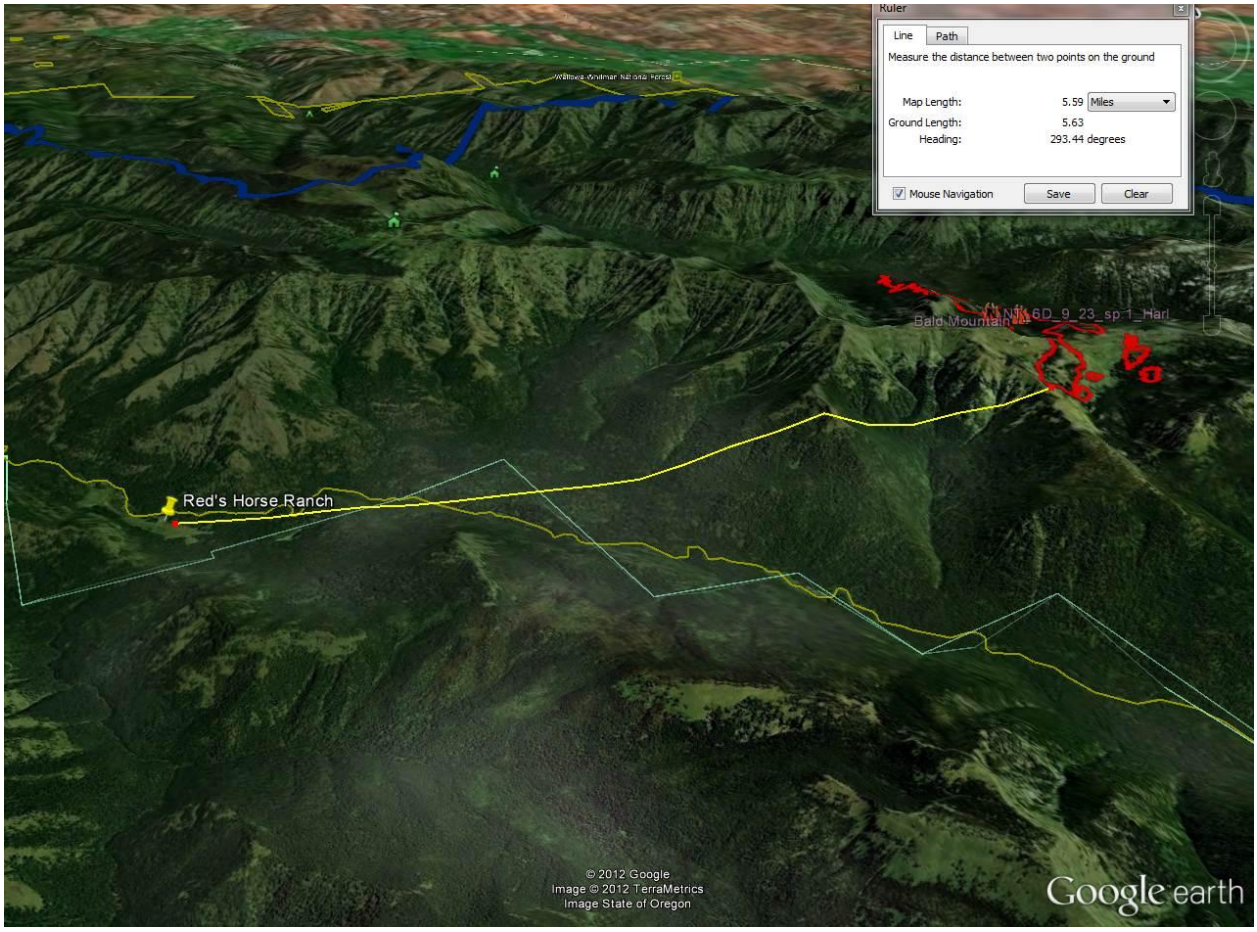
Chart 2 – The cooperative weather station in Joseph shows a steady climb in probability of .25" of rain in 3 days into the middle of October

Management Action Points

Two management action points were constructed to assist in identifying potential fire behavior effects to the areas of interest. In addition a potential arrival time of the fire was constructed to assist in planning efforts.

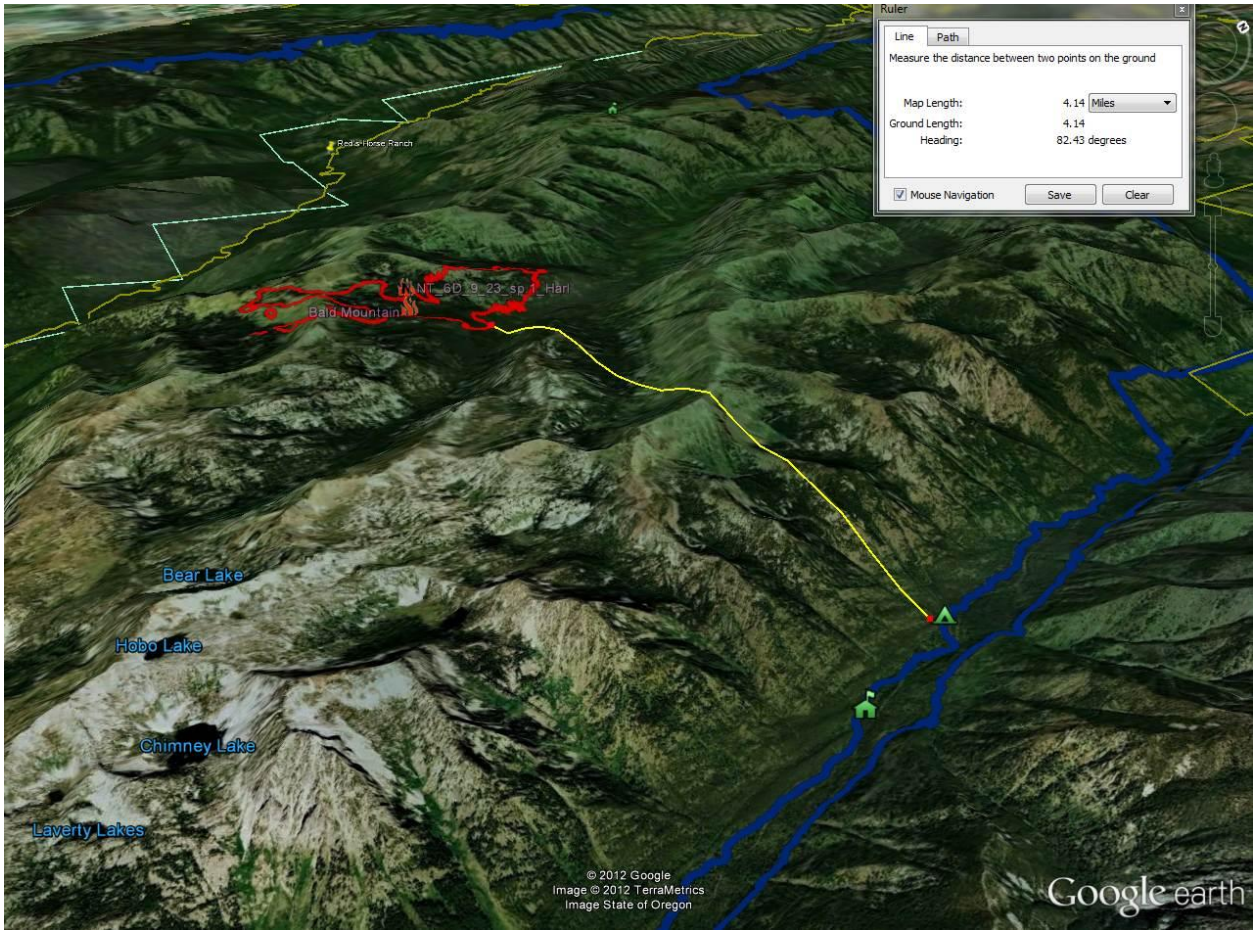
Photo 1 – Fire behavior on the Bald Mountain Fire looking North on 9/19/2012

Name of Management Action Point – Reds Horse Ranch and Minam Lodge Associated Action Points –	**Completed & Date** Yes/No, _____



Intent		Point protection for the structures in and around the Reds Horse Ranch and Minam Lodge
Relative Location		The Ranch area is approximately 5.5 mile NNW of the active fire perimeter.
Description of Values		
Likelihood of reaching this MAP		Site Fire Behavior Notes Although there is a low likelihood of fire reaching this site. The possible threat direction to this location would likely come from the south within the bottom of the drainage where the fuels are the densest. Spotting will be an issue, with individual and group tree torching. The river drainage environment can cause unusual wind patterns and resulting unpredictable fire behavior.
Days		
6	Low	
15	Low	
Potential Management Actions		
Resources Recommended		
Estimate time to complete (days)		
Estimated Costs		$200,000

Name of Management Action Point – Wilderness boundary and Lostine Creek “cherry stem” Associated Action Points –	**Completed & Date** Yes/No, _____



Intent	Delay and point protection
Relative Location	The Wildness boundary and Lostine Creek “cherry stem” is approximately 4 miles east of the active fire perimeter.
Description of Values	
Likelihood of reaching this MAP	Site Fire Behavior Notes The area between the fire perimeter and the Wilderness boundary has areas of discontinuous fuels that will limit surface fire spread. The possible threat direction to this location would likely come from the west, primarily from spotting. The relatively narrow nature of the Lostine creek drainage in the area could cause spotting across the drainage in the unlikely event the fire established is on the west side of the drainage.
Days / **6** Low / **15** Low	
Potential Management Actions	
Resources Recommended	
Estimate time to complete (days)	
Estimated Costs	

Summary

Due to the very high fire danger indices, the Bald Mountain Fire will likely continue to have low to moderate fire growth over the next two weeks. The fire is currently positioned in a location that limits direct fuel pathways to any of the points of concern.

As the moves east and west into Bear Creek and Minam River, respectively, those pathways become more available as fire paths as the fuels are more continuous. Limiting the risk to these points of concern include: continuously decreasing day length, cooler fall temperatures, and lower sun angle that will lead to lower opportunities for the fire to progress the 4 to 5 miles needed to threaten identified values.

Factors that could change this outlook include:

- An extended period of drying followed by a wind event that funnels the fire toward points of concern after the fire is established in the drainage bottom.
- Long range spotting, positioning the fire in receptive fuels with the wind aligned that would push the fire toward points of concern.

Overall, based on the analyses conducted in this report there appears to be little risk to the identified points of concern over the life of the fire.

Appendix A. Fire Behavior Prediction Models

The appropriate fire behavior analysis tools used in this assessment were determined by considering current season conditions, complexity of the terrain and available weather station information.

FSPro – tested but not used, as the current conditions were far outside of the climatological record. Under “normal” fire season conditions, the Bald Mountain Fire would be extinguished after the forecast weather inputs end and climatology is used for weather. In addition, at this time, terrain influenced wind conditions are not reflected in the FSPro outputs.

Near Term Fire Behavior – This analysis tool was used, generally using the maximum 6-day analysis period and forecast weather. NTFB is quite useful as it shows progression over time; however, gridded winds are not available at this time which can decrease accuracy in complex terrain.

FARSITE – This fire growth system was used to be able to include gridded winds from WindNinja. FARSITE was predominantly used to determine the time it may take for a fire to reach values given certain weather and wind conditions.