



Top of the World

October 14, 2024

DECLARED WILDFIRE REVIEW

Columbia River Gorge
National Scenic Area



Report Date: June 12, 2025



Forest Supervisor Delegation



Regional Forester Delegation

EXECUTIVE SUMMARY	3
SETTING.....	3
Social and Political setting – National and Regional.....	3
Project Area Location & Description	4
NARRATIVE	7
Background	7
The Operational Plan	8
What Happened	9
CONCLUSION	13
LESSONS LEARNED	14
Lessons Learned by The Participants.....	14
Lessons Learned by The Review Team Members.....	15
APPENDIX B: CONTRIBUTING FACTORS OR CONDITIONS.....	27
APPENDIX C: CHRONOLOGY	28
APPENDIX D: DELEGATION OF AUTHORITY AND EXPECTATIONS	31
APPENDIX E: REVIEW TEAM.....	35

EXECUTIVE SUMMARY

On Monday October 14th, 2024, the Columbia River Gorge National Scenic Area (CRGNSA), in Klickitat County Washington, began implementation of the Top of the World Prescribed Fire. The initial results of the test fire were favorable and burning continued into the early afternoon.

Around 1600 a sudden increase in winds led to an increase in fire behavior which resulted in multiple spot fires. The rates of spread in the new spot fires quickly outpaced the on-site resources' ability to contain them and the prescribed fire was declared a wildfire at 1625. With the support of additional resources, the Top of the World Fire was contained at 0323 the following morning at 171 acres, which included 45 acres of the planned prescribed burn unit. The fire was kept exclusively on NFS lands and impacts to the public were limited to smoke created by the fire.

The team analyzed planning, pre-implementation conditions, and implementation of the operation. This document includes the team's observations as well as thoughts and lessons shared by personnel which are related to these three categories.

SETTING

Social and Political setting – National and Regional

At the end of September 2024, the western United States was coming out of a long and busy fire season. The National Preparedness Level (PL) spent significant time at both levels 4 and 5, with the Northwest Geographic Area being at a PL 5 for 52 days. The CRGNSA had one large fire on the unit in 2024, the 1,314-acre Microwave Tower Fire, and its resources spent considerable time staffing for initial attack during periods of high fire danger and supporting regional and national fire suppression efforts.

Fiscal year 2024 was also a busy year for both the national and regional fuels programs. The region was able to exceed its fuels target for the year, including a significant jump in the amount of prescribed fire acres it had conducted compared to past averages. However, in the spring of 2024, two prescribed fires were declared wildfires within the region. While the region experienced prescribed fires that were declared wildfires in prior years, it is somewhat rare to have two instances of this occurring in the same year, which gave an early indication of how busy fire season was to be in the region in the months to come.

As conditions moderated in September, multiple units in region 6 began to implement prescribed fire projects in what looked to be an ideal burn window. On September 21st the CRGNSA implemented the Tracy Hill Prescribed Fire completing 40 acres before ignitions were stopped due to precipitation. Additional prescribed burning was planned for the following week, but local agriculturalists were concerned that the smoke may impact the quality and taste of their products. This led to a cessation of prescribed burning in the CRGNSA for the next couple weeks to address these concerns and ensure additional smoke monitoring protocols were in place.

In October the unit began to look for another window to implement the Top of the World prescribed fire. However, at this time the region was aware of an anomalous weather event that had been forecast throughout the west, leading to above average fire behavior compared to typical October conditions. Additionally, two prescribed fires were declared wildfires within the region during the first week of October and the National Preparedness Level went back up to PL 4.

Project Area Location & Description

The 4,100-acre project area is generally bound on the South by Atwood Road and eventually SR-14, on the North and East by a Bonnaville Power Administration (BPA) electric transmission line corridor and Catherine Creek, and Cooke Road to the West. There are private lands and homes immediately adjacent to some of the units along the northern and western perimeters of the project area. The primary travel route is up Snowden Road to Bates, then Bristol Road to its terminus. There are popular hiking trails just downhill from the project area.

The Top of the World unit totaled 144 acres and was broken up into multiple blocks for efficient management of smoke. Fuels were reduced along temporary hand lines and existing roads that formed the boundaries for the units.

Objectives for the Top of the World Prescribed Fire

The Top of the World prescribed fire project was developed to reintroduce fire within the Ponderosa pine and Douglas-fir stands and the Oak-Pine woodlands on the south aspects. The prescribed fire treatments would reduce fuel loads and focus on mortality of the smaller diameter Douglas-fir adjacent to values.

Vegetation and Fuels

Units within the project area had been mechanically thinned with the resulting material either scattered to be burned or piled for future pile burning. The Powerline Unit had a portion that had been previously pile burned in 2022 and a portion that was an unburned lop and scatter treatment. Fuel loadings ranged from 2 to 25 tons/acre within these areas and modeled within the burn plan as a SB1 fuel model. The open ponderosa pine stands were modeled as a TL8.

On Site	Fuel Model	TL8	SB1	Off Site	GR2	TL8
	Percentage	50%	50%			

Table 1. Fuel models identified in burn plan.

Top Of the World 2023 underburn

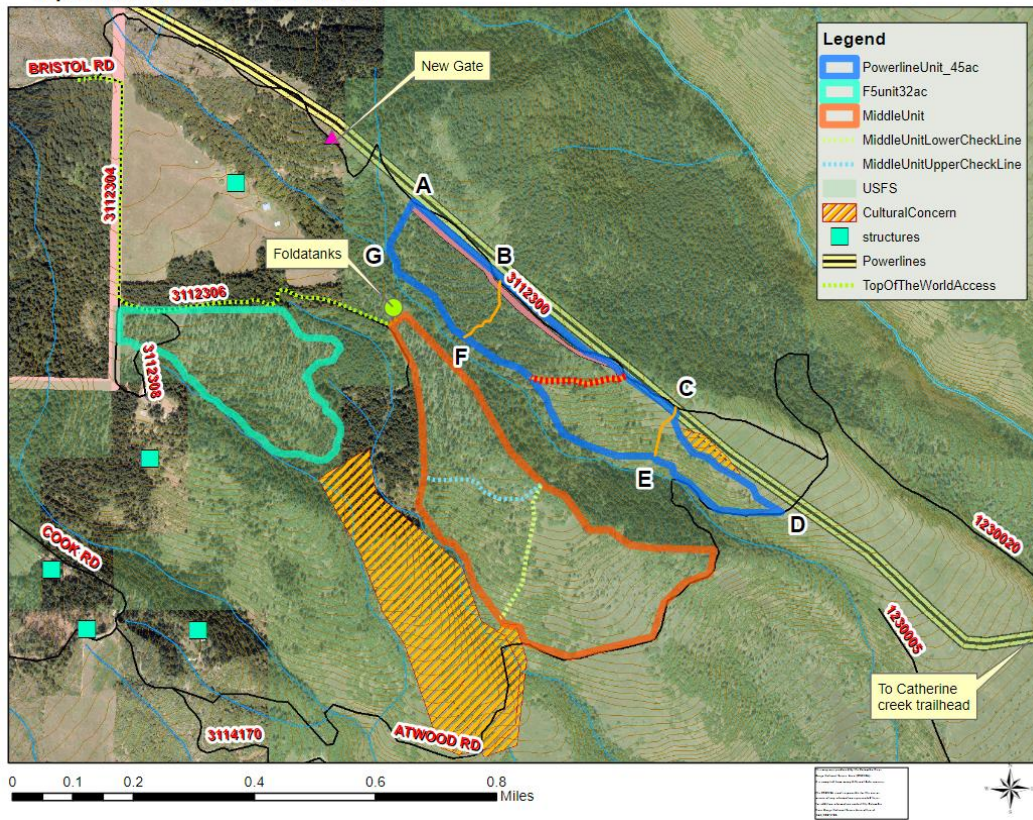


Figure 1. Top of the World Units

Environmental Conditions

Seasonal Severity

The Top of the World prescribed fire area experienced normal (90 – 110%) precipitation during the 2024 water year, though the month of September into early October was substantially drier at (30-60% of normal). In general fuel availability was declining seasonally due to shorter burn windows, lower sun angle, and good overnight relative humidity recovery though local personnel noted that there was still that summer feel to conditions.

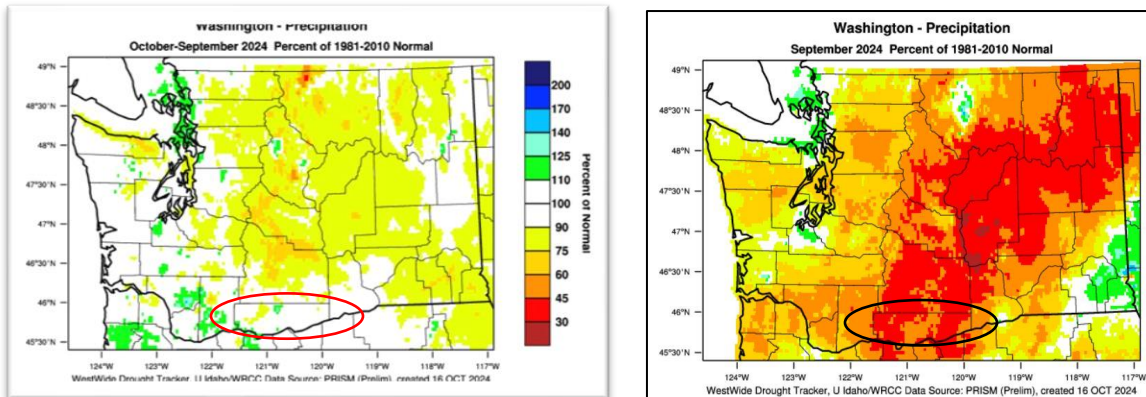


Figure 2. Mapped precipitation percentiles for Washington and Klickitat County, October 2023-September 2024, and September 2024

Drought

During summer of 2024, Klickitat County, WA vacillated between periods of no drought to “abnormally dry”. Over the planning and implementation timeframe (Figure 3) Klickitat County once again moved from a period of no drought to “abnormally dry”, although this rating wasn't released until after the prescribed fire had been implemented on October 14th.

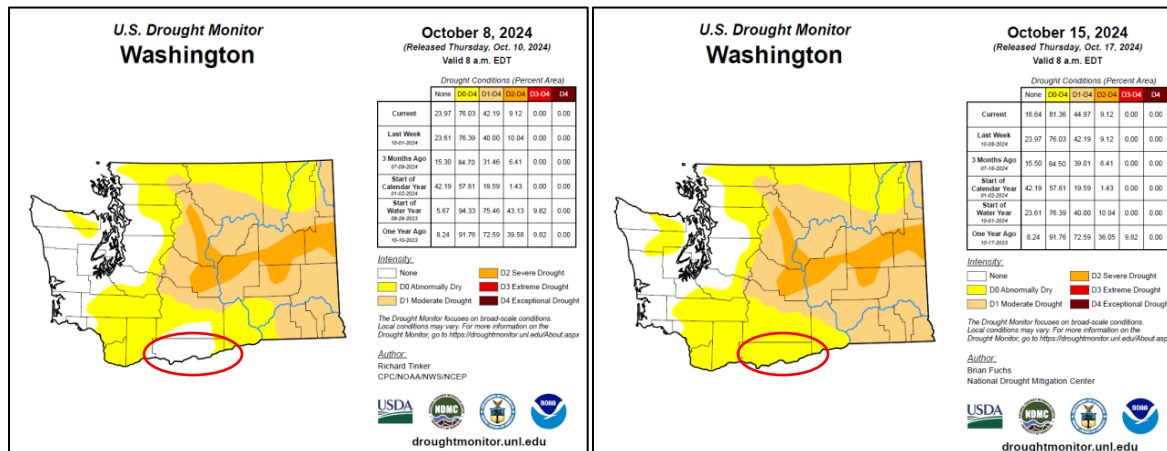


Figure 3. Klickitat County, Washington drought conditions October 8 – 15, 2024

Outlooks

On October 2nd the National Interagency Coordination Center Predictive Services (NICCPS) issued a letter describing the extremely anomalous fire environment across the US that was expected to continue through mid-October. Significant fire potential was predicted to remain above normal for the West with any wind events resulting in extreme fire behavior similar to August. This pattern was to result in above normal temperatures, likely to average 10 to 20 degrees above normal, with low relative humidities. The October 5th 8-14 Day Precipitation and Temperature Outlooks (for October 13-19) from the Climate Prediction Center predicted above normal temperatures and near normal to below normal precipitation (Figure 4).

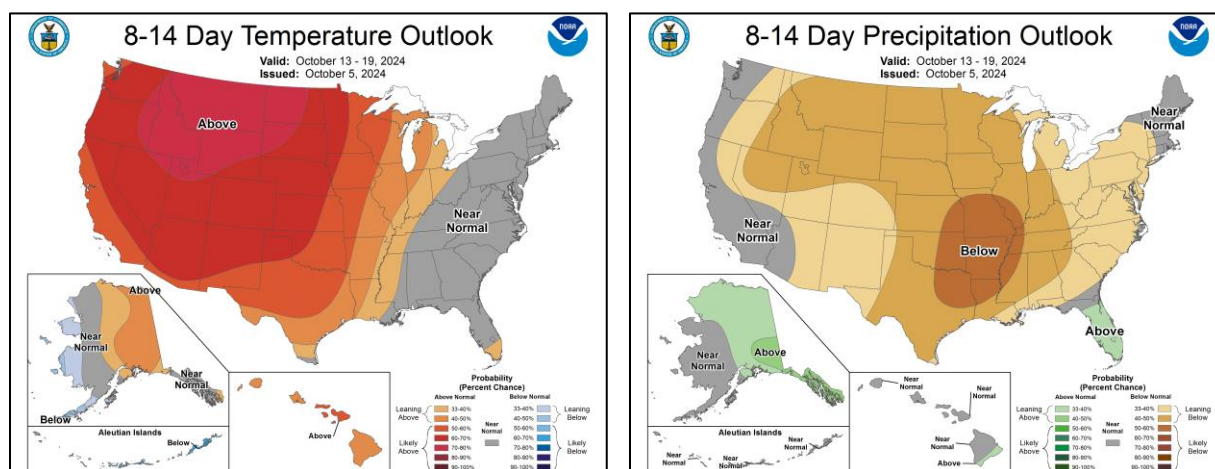


Figure 4. Climatic indicators that were available prior to ignitions.

NARRATIVE

Background

The CRGNSA is always looking for opportunities to implement fall prescribed burning, but weather and social complications make it extremely challenging. High levels of public interest and visibility, Interstate-84 and Highway 14 corridors, and smoke make burning a high stress environment. Smoke concerns are numerous, including considerations for grape growers, local communities, highways, and health concerns of individual residents. Good stewardship of the airshed is a key component of the prescribed fire program, and the details of smoke management require substantial time and energy. Wind is a key factor in smoke dispersal and can also have a major influence on fire behavior. However, weather forecasts, especially for wind, are not always reliable. Landscape features as well as powerline corridors, like the one on the proposed burn unit can funnel wind, which results in higher winds than forecasted or experienced elsewhere. In contrast, winds are also regularly over-predicted, especially east winds.

Burn windows for the CRGNSA had been scarce the past several years and emerging concern from agriculturalists aversion to burning threatened to further narrow already scarce opportunities. The ideal burn conditions include some wind to lift smoke and push it away from the Columbia River Gorge (locally

referred to as “the Gorge”) with wetting rain on subsequent days to reduce smoldering. Late September was setting up to have potential for good burn windows but a burn on Tracy Hill at the end of the month got rained out halfway through the day, and another potential burn window turned unfavorable due to poor smoke dispersal. An increase in the planning level to PL4 and an anomalous weather outlook from the National Weather Service caused additional complications and uncertainty regarding the best course of action. Finally, a potential burn window appeared for Columbus Day, October 14th. There had been wetting rain about ten days prior to planned ignition, and day-of burn conditions were forecast to be in the “moderate” scenario per the burn plan. Smoke dispersal appeared adequate and additional wetting rain was forecasted to follow. Resources were a bit difficult to secure because of the holiday and other staffing considerations, but managers were able to find sufficient resources to meet the needs of the organizational assessment.

The CRGNSA Fuels Specialist and an Engine Captain went through all the pre-burn prep the weekend before the planned burn. They relied on the spot weather forecast and NOAA websites to track winds and for smoke forecasts. The spot weather forecast for Sunday, October 13th, showed a dry day Sunday with rain possibly arriving mid-day on Monday the 14th. The spot weather forecast for Monday the 14th (issued Sunday night) showed some breezy winds around 1400, the possibility of showers in the afternoon, and RHs staying over 70%. Smoke forecasts indicated favorable conditions early in the day but that any burning after 1700 could result in smoke settling into the Gorge and along the Highway 14 corridor.

The decision was made to move forward with the planned burn on Monday, October 14th. The Deputy Forest Supervisor on the Mt. Hood National Forest would be the Prescribed Fire Agency Administrator (RXA2) and the detailed Forest Supervisor for the CRGNSA would be the local line officer and serve as the RXA2(t). The RXA2 was familiar with the area, having approved prior burns for the Scenic Area, including the Tracy Hill burn that occurred a couple weeks earlier. The RXA2 reviewed and updated the Top of the World burn plan prior to burn day.

The Operational Plan

The Fuels Specialist became a fully qualified Burn Boss Type 2 (RXB2) in March of 2024, and Top of the World would be their first assignment since qualification. The Engine Captain that had participated in the pre-burn prep the weekend before the burn day had overseen work in the project area for the past several years and would be the Burn Boss Type 2 trainee (RXB2(t)). Both are local unit resources and were familiar with the unit, as were the identified Holding Boss (HOLB) and Firing Boss (FIRB).

Environmental Prescription	Low	Moderate	High
1-Hr Fuel Moisture (%)	12	8	5
10-Hr Fuel Moisture (%)	14	10	7
Relative Humidity (%)	70	45	20
Temperature (F)	40	60	79
20 ft Winds (mph)	0	10	20

Table 2. Prescription parameters within burn plan.

Burn Day Schedule

0730- AA briefing, 2A review

0800- On-site resource briefing

0900- Initiate test burn and proceed into the first burn block if results are favorable. The unit is broken into blocks, separated by control lines.

1400- Check-in point for potential erratic wind development based on forecast.

1700- Latest time to complete ignitions to best prevent smoke settling into the Gorge.

What Happened

At 0730 on October 14, the RXB2, RXB2(t), and Fire Management Officer (FMO) had a TEAMS call with the RXA2 and RXA2(t) to review the 2A. Winds were forecast to be in the “high” prescription parameters that afternoon but with the predicted RH and temperatures in the “low” prescription parameters, all felt comfortable with the plan. The 2A briefing went slightly long, and it delayed the intended crew briefing time of 0800.

The FMO and RXB2 arrived at the briefing site near the unit at 0815. Due to their late arrival the RXB2 did not have an opportunity to pre-brief with the HOLB and FIRB prior to the operational briefing. Checking in with the RXB2(t) they had discussed appropriate details with HOLB and FIRB. Resources were briefed by 0915 but the 2A still had not been signed. The RXA2 was on days off and had to be contacted by phone to go back into the digital file system to sign the 2A, but by 1100 it was signed and the test fire initiated. The original plan was to initiate the test fire at 0900 but no threshold was identified for how late was too late to start.

The test fire was successful, fire effects were favorable, and no concerns were noted. The first burn block, which had been pile burned the previous year, was time-intensive, and a lot of fire was put on the ground to get it going.



Figure 5. The test fire displayed favorable smoke conditions with the first burn block progressing slowly with a lot of fuel required to get fire to carry and achieve desired effects.

From early to mid-afternoon burning continued into the second burn block which had not been pre-treated. The higher fuel loading led to an increase in fire activity which prompted a tactical pause to reconfigure ignitions to modify the fire intensity. The HOLB noted a change in wind where the dominant winds appeared to overtake the influence of slope winds. Others noted the smoke was not lifting quite as effectively as earlier in the day. Holding concerns increased, with some concerns surrounding the rate of water use and water availability but the RXB2, RXB2(t), HOLB, FIRB, and FMO confirmed they were okay with fire behavior and effects. The RXB2 secured a tender from a cooperator to refill fold-a-tanks later that day and the following day.

Time management constraints were noted while working through the second block as the wind was forecast to peak around 1400. The smoke lookout sent a photo that suggested smoke may start to settle into the Gorge. The decision was made to stop ignitions after the second block and not complete the entire burn unit.



Figure 6 & 7. Smoke lifting favorably at the beginning of the burn compared to mid-operations, smoke not lifting well and beginning to show potential to settle into the Gorge.

At 1600 the wind that had been relatively calm (2-5 mph with occasional gusts to 10 mph) suddenly picked up and started gusting, pushing hard downhill with downbursts in all directions. A group of trees within the unit began to torch, and a 40x40 spot fire was identified downhill, in the third burn block, in the area that they had recently decided not to burn. Within minutes of identifying the initial spot fire, other spots and a slopover were observed. Overhead resources developed an interim plan to try to hold the power line road and Atwood Road but found there were multiple spots spreading quickly across those roads and out of the proposed burn unit. Fire had blown out in three directions, all downhill of the burn unit.

The RXB2 called the FMO to discuss wildfire declaration. With the amount of fire spread and type of fire behavior observed, they knew they were going to need aircraft. Shortly after 1600 the FMO called the local line officer to advise they had fire outside the unit and made an additional call to dispatch to check on available resources. When the lack of resources became apparent, the FMO called 911 to page out local fire districts rather than calling each fire chief individually. By 1620 the FMO (DO) made the wildfire declaration based on resource needs and then spoke to the RXA2 and advised them of the decision. At that time the RXA2 mobilized to the incident to offer support.



Figure 8. Smoke from multiple spot fires downhill of the intended burn unit and pushing smoke into the Gorge.

The RXB2(t) initially assumed command of the incident as ICT3 and the other resources on site were re-assigned roles. The RXB2(t) was relieved about an hour later as another assumed the role of ICT3. In the early morning hours of October 15, the RXB2 assumed control of the incident as an ICT4 for the remainder of night shift.

The fire was contained at 171 acres with 45 of the burned acres being within the prescribed burn unit and 126 acres outside of the unit boundary.

CONCLUSION

The Top of the World Prescribed Fire had complexities representative of prescribed fire challenges on the Columbia River Gorge National Scenic Area. With population centers, recreation areas, and major transportation routes within the CRGNSA, smoke mitigation is a major concern and is the primary limiting factor in implementing prescribed fire. The CRGNSA is also situated within a large east to west oriented river canyon that is subject to frequent changes in wind speed and direction and is often difficult to predict. Prescribed fire implementation requires finding a balance between having enough wind movement to adequately disperse smoke, while not exceeding wind thresholds that will create fire behavior outside the ability of resources to manage.

Unsurprisingly, the most significant single element leading to the escape appeared to be wind. This potential had been considered prior to implementation, as it is on all burning in the Gorge, where selecting burn windows that should mitigate any smoke impacts to the public is a standard to which the unit holds themselves, as difficult as that can be. It was noted by the review team that the goal of keeping smoke from having any impacts, while also needing to ensure acceptable fire behavior and effects makes finding adequate burn windows very difficult.

When the Top of the World Prescribed Fire spotted outside of the unit and began to grow beyond the capabilities of the on-site resources to manage, resources and leadership quickly recognized the need to make the wildfire declaration and ordered additional resources. This probably limited the final size of the fire and established containment on the incident within the first operation shift. Had the decision been delayed or adequate resources not been made quickly available the outcome may have been different.

The work of prescribed fire is a complex and ever-changing science. There are many variables that contribute to the outcomes. In completing this report, we appreciated the earnest efforts of the CRGNSA and its fire management organization to embrace the concepts of a learning culture, be transparent and share their experiences openly and honestly, and understand that our goal is always to strive to be better at all that we do.

LESSONS LEARNED

Lessons Learned by The Participants

Pressure to Burn

There's a lot of pressure to burn. We need to create a culture where it's okay to burn less than planned and have that still approached as success rather than disappointment.

Complexity of Prescribed Fire in the Gorge

Meeting burn objectives and not having *any* negative smoke impacts is almost impossible. Some of the best days we have for burning and dispersion are those that pose the greatest likelihood of escape. Regulatory agency standards for smoke management are typically lower than local self-imposed standards that we place on ourselves for implementation. There is a need to build social license and understanding within the community for prescribed fire.

There are a few vocal stakeholders that are opposed to any prescribed fire smoke impacts. Responding to these concerns increases complexity and stress, creating a political part of prescribed fire planning that can be more difficult than the actual implementation.

Training and Prescribed Fire

There's a lot of pressure to have a trainee so others can be developed. We need to allow time for newly qualified individuals to gain more experience and comfort in a new role before expecting them to take on a trainee. There can still be opportunities for trainees in the planning process, but there is value in allowing a newly qualified burn boss to have several more assignments to gain additional experience and confidence.

Trainer/Trainee dynamics

- Allow newly qualified individuals to not have a trainee or to help determine the right size role for a trainee to play. The development of newly qualified individuals may be more important than focusing on getting another trainee signed off.
- Roles and responsibilities need to be clear- who is handling radio communication, briefing, etc.

Implementation

Two engines assigned to the prescribed burn had the Engine Bosses moved to roles within the burn organization to include RXB2(t) and Holding Boss. The two additional engines assigned lacked either the appropriate number of personnel or were available for local initial attack. As implemented the burn organization identified in the burn plan was not followed.

Wildfire Declaration and Transition

Having a small organization streamlined the wildfire declaration process. The FMO spoke directly to the AA and there was limited communication needed to convince people it was the right call. The AA was off-site, but the local line officer was present on the unit that day, which reflected positive engagement and support.

The local policy was that the RXB2 would not become the IC of a declared wildfire. However, with limited options available the RXB2 became a Taskforce Leader on the wildfire and then worked through that night and subsequent nights as IC due to a lack of resources. In hindsight, placing the RXB2 on night shift created a situation where they became the IC on the wildfire, and then also isolated them from the rest of their peers and support network. While the night IC role did not necessarily create a stressful wildfire assignment, it resulted in them having to process the events of the escape in isolation after the adrenaline of the suppression actions had faded. In future events units should consider building out an organization for the wildfire organization that ensures employees are given space from the incident if needed, but not isolated from the rest of the organization.

It is okay to be disappointed when things do not go as planned because we all want to be good at our jobs, and no one wants to feel like they failed. But prescribed fire carries risk, and part of taking that risk is that things can go differently than planned. That's not negligence or failure; it's part of doing business.

Lessons Learned by The Review Team Members

Public Stakeholder and Engagement

CRGNSA invests heavily in relationships and prioritizes two-way communication with its local stakeholders. They acknowledge the impacts of smoke on local entities and embrace their responsibility to minimize impacts from smoke to the greatest extent possible. These investments and their robust communication and public engagement paid dividends during the day of the declaration when the additional burning and smoke created by the fire did not result in any significant public interest or complaints.

Pressure to Burn

There's unspoken pressure to burn at all levels of the organization. Nationally we have identified the importance of prescribed burning to meet ecological objectives and protect values at risk. We associate burned acres with positive accomplishments and not to being able to execute the plan is frustrating both for leadership and the implementers who have a personal investment in these projects.

Issues with 2A and off-unit AA

Waiting for a signature can delay or shut down a burn, it is important to prioritize this process and have a system in place to streamline obtaining signatures if the RXAA is remote.

Burn Plan and Resources

The National Prescribed Fire Review (2022) identified areas within burn plans whereas an agency there is a consistent lack of clarity or do not meet policy. Some of these same areas were identified within the Top of the World Prescribed Fire Burn Plan:

- Not all values were identified within the Complexity Analysis or Element 4: Description of the Prescribed Fire Area.
- It is often the nature of fire program managers to accept things that can be highly complex as normal. In this situation the major transportation corridors, communities and recreation areas, and constant public scrutiny are part of the daily suppression environment in the CRGNSA and

could almost be construed as a routine part of their jobs. With these considerations the review team felt the organization underestimates the risk and complexity of their project; and that they may have normalized many of the constraints and considerations they face as routine when deciding to burn and developing their burn plans.

- Not all fuel models were identified therefore not all fire behavior characteristics were considered during burn plan development (TU5).
- Inconsistencies existed between the resources identified within Element 11 – Organization and Equipment and the contingency resources required and identified within Element 17: Contingency Plan.

During prescribed fire planning utilize the appropriate policy to guide burn plan development to include the PMS484, the FS Burn Plan Template – Dec 2022, and the FS Post Pause Quality Assurance Checklist.

Human Factors

Support from all levels within the program and across the unit was strong following the declaration. Nearly everyone conveyed they were more worried about how others were doing following the events than how they were doing themselves. While this shows a supportive culture, it could also be a blind spot to how individuals are doing and what they need.

Weather

It was noted that weather forecast inconsistencies have been problematic throughout the season and receiving a reliable forecast is particularly difficult due to highly influential topographic features. It is recommended to give feedback to NWS on spot forecasts. Knowing the weather forecast is often inaccurate, consider the placement of a portable RAWS several weeks or a month in advance of implementation to capture local trends and burn unit conditions to inform whether prescription parameters are met.

APPENDIX A: ANALYSES AND ASSESSMENTS

The **NWCG Standards for Prescribed Fire Planning and Implementation (PMS 484)** requires the following analyses and assessments be made as part of any declared wildfire review:

1. *An analysis of the seasonal severity, weather events, and on-site conditions leading up to the wildfire declaration.*
2. *An analysis of the prescribed fire plan for consistency with agency policy and guidance related to prescribed fire planning and implementation.*
3. *An analysis of prescribed fire implementation for consistency with the prescription, actions, and procedures in the prescribed fire plan.*
4. *The approving agency administrator's qualifications, experience, and involvement.*
5. *The qualifications and experience of key personnel involved."*

#1: Analysis of seasonal severity, weather events, and on-site conditions.

The following is a summary of fire season conditions for the Top of the World prescribed fire project area into October 2024. The year's severity indices are compared to seasonal trends from previous years. Predictive services and climate prediction outlooks are included. Observed weather, fuels, and expected fire behavior are summarized.

Seasonal Severity

The Top of the World prescribed fire project area is situated in Klickitat County, Washington along the Columbia River in the south-central part of the state in the Lower Yakima Fire Danger Rating Area (FDRA). The Eastern Washington Fire Danger Operating Plan (FDOP) for the area identifies Fuel Model X (brush) for tracking fire danger indices at Remote Automated Weather Stations (RAWS) within the FDRA.

The closest permanent RAWS to the project area is Wasco Butte (WIMS ID: 350919) located at an elevation of 2,336 feet, 8 miles to the southeast of the burn unit in Oregon. The RAWS are used here to show how 2024 fire danger indices track with average, maximum, and minimum values from the past 10 years.

The Top of the World prescribed fire area experienced normal (90 – 110%) precipitation during the 2024 water year, though the month of September into early October was substantially drier at (30-60% of normal) (Figure 9). During the months of August and September the Wasco Butte RAWS recorded approximately 0.94 inches and 0.03 inches of precipitation respectively and early October saw 0.18 inches of precipitation. In general fuels across the area were declining seasonally due to shorter burn windows, lower sun angle, and good overnight relative humidity recovery though local personnel noted that there was still that summer feel to conditions. Periods of increased flammability were still possible where winds, fuels, and slope align but typically these were expected to be short-lived and limited to a single burn period.

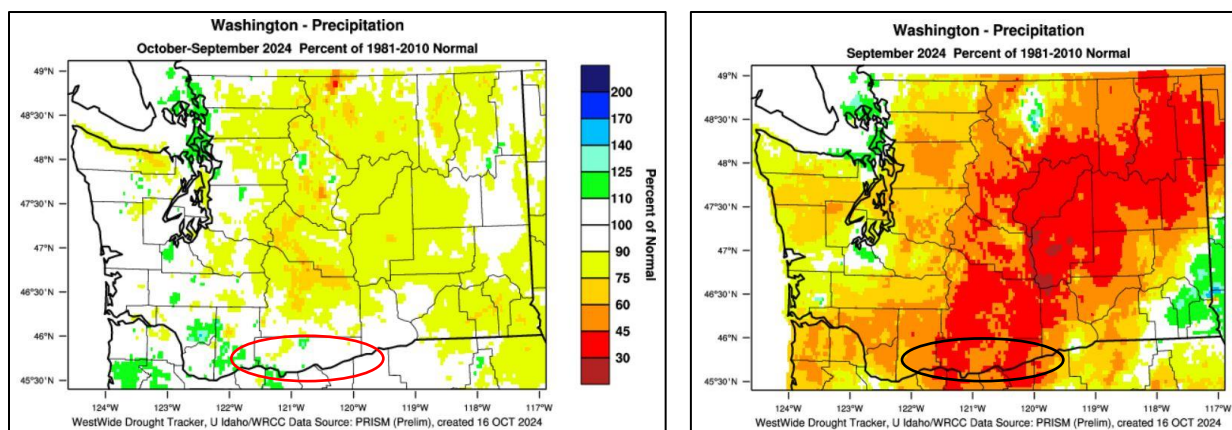


Figure 9. Mapped precipitation percentiles for Washington and Klickitat County, October 2023-September 2024, and September 2024

Drought

During summer of 2024, Klickitat County, WA vacillated between periods of no drought to “abnormally dry”. Over the planning and implementation timeframe (Figure 10) Klickitat County once again moved from a period of no drought to “abnormally dry”.

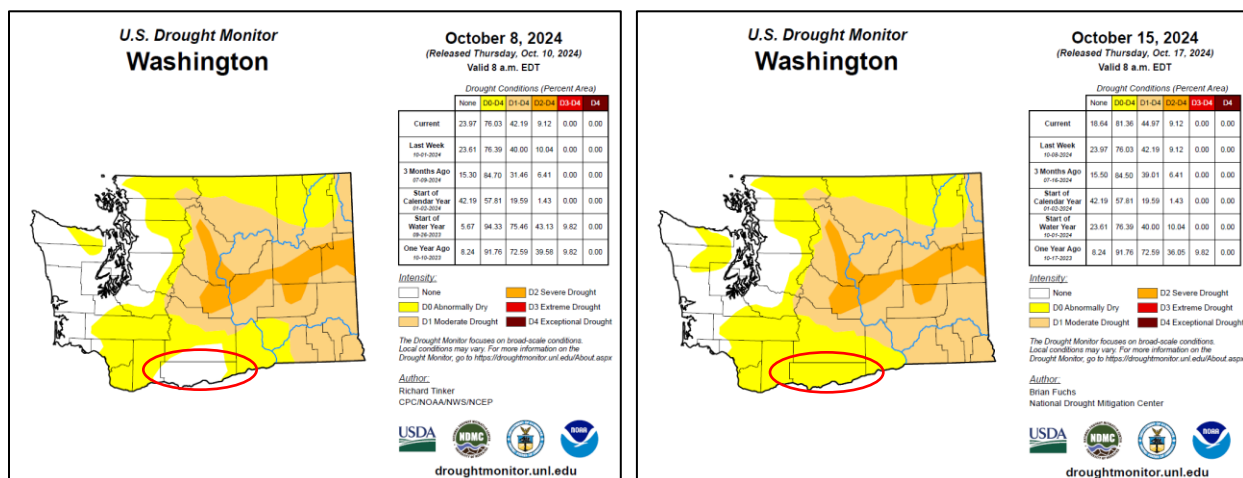


Figure 10. Klickitat County, Washington drought conditions October 8 – 15, 2024.

The NRCS Snow Water Equivalent data indicates the Top of the World prescribed fire area received 150% of the median 1991-2020 snowpack by May 1, 2024.

The Energy Release Component (ERC) is often used to evaluate the general severity of the fire season. It shows the effects of seasonal drying related to potential fire behavior. The 2024 trend line (dashed pink) displays sharp “spikes” in late August, early September, and early October where ERC values approached or equaled maximum values (Figure 11).

The Burning Index (BI) incorporates daily wind speed and relates to the contribution of fire behavior to the effort of containing a fire, in essence, how fast a fire will spread and how much energy will be produced. The 2024 above average “spikes” in the BI coincide with those shown in the ERC charts. On October 14th the BI and ERC values were at or below average for time of year (Figure 11).

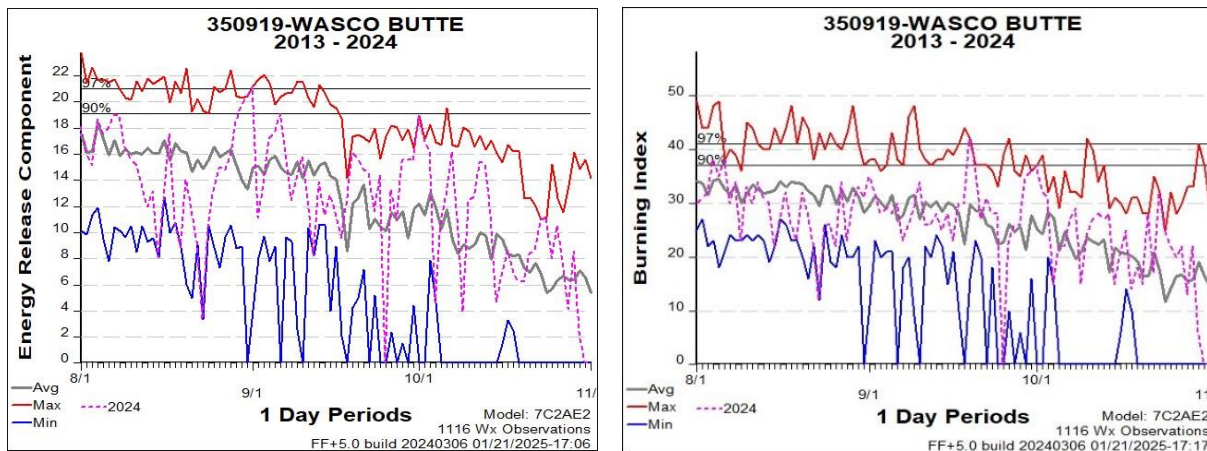


Figure 11. ERC and BI trends from August 1 – November 1, 2013-2024.

Outlooks

On October 2nd the National Interagency Coordination Center Predictive Services (NICCPS) issued a letter describing the extremely anomalous fire environment across the US that was expected to continue through mid-October. Significant fire potential was predicted to remain above normal for the West with any wind events resulting in extreme fire behavior similar to August. This pattern was to result in above normal temperatures, likely to average 10 to 20 degrees above normal, with low relative humidities. The October 5th 8-14 Day Precipitation and Temperature Outlooks (for October 13-19) from the Climate Prediction Center predicted above normal temperatures and near normal to below normal precipitation (Figure 12).

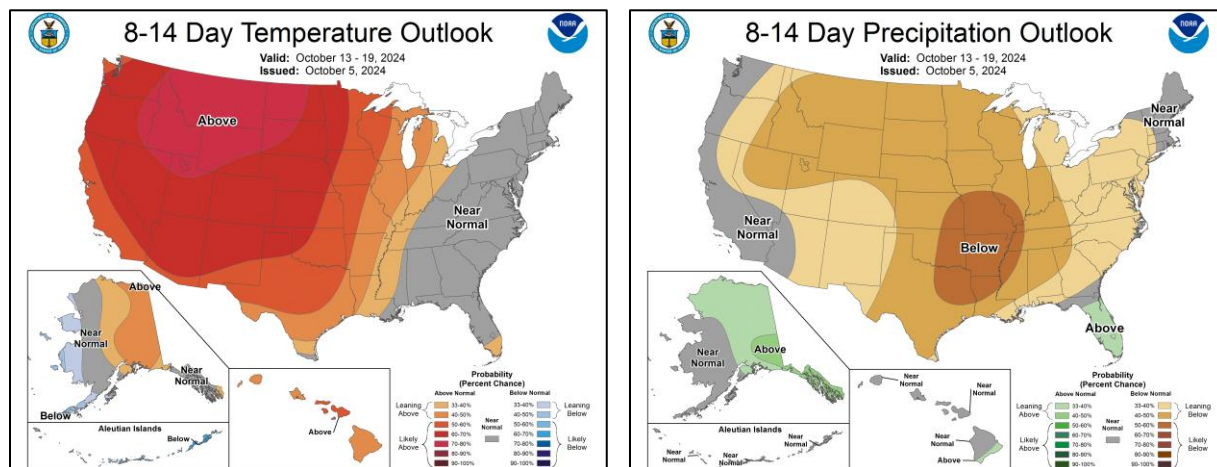


Figure 12. Climatic indicators that were available prior to ignitions.

Weather

Spot weather forecasts were obtained from the National Weather Service, and the discussion noted an approaching frontal passage during the afternoon of October 14th, predicting breezy winds with potential for gusts around 10-25 mph (20-foot windspeeds). Minimum relative humidities were predicted to 65-70%.

Weather observations prior to and during implementation were taken from the burn unit, Figure 5. During the burn period, winds consistently averaged below 3 mph with occasional gusts around 10 mph.

A substantial wind event occurred around 1530 to 1600 resulting in a wind shift out of the north, and burn personnel noting estimated eyelevel winds of 20 mph. These gusts were not captured on the Wasco Butte RAWs. Note that wind gusts over 20 mph are not uncommon between August 1 and November 1 according to the Wasco Butte RAWs records. This has occurred, 18% of the time, over the past 10 years. Relative humidities reached lows of 43% at 1500.

Ignition Day WX Observed – October 14							
Time	0930	1030	1100	1200	1300	1400	1500
Temperature	57	62	64	65	67	70	73
Relative Humidity	61		61	57	58	52	43
Windspeed (eye level)	2/ G10	1-2/ G10	1-2/ G3	1-3/ G10	1-2/ G7	1-2/ G5	2-3/ G9
Wind Direction	West	West	West	West	West	Southwest	West
Spot Weather - Predicted (20-foot) Winds		W 8/ G10		W 12/G 17		W 14/ G23	

Table 4. Weather observations taken during day of prescribed fire implementation, October 14, 2024.

Fuel Models

Fuel models are used as inputs to fire behavior calculations (such as BehavePlus) along with weather and topography data to predict fire spread rates, flame length, and spotting (as well as other parameters). They often align with certain vegetation types. Fuel models for the entire US have been mapped by LANDFIRE and are available for use in geospatial fire behavior models such as ITFDSS, WFDSS, and FlamMap. The LANDFIRE fuel models and associated vegetation types for the Top of the World project area are shown in Figure 6 below with highest percentage of weighted fuel models identified. Fuel model selections often need to be adjusted for time of year and calibrated using observed fire behavior.

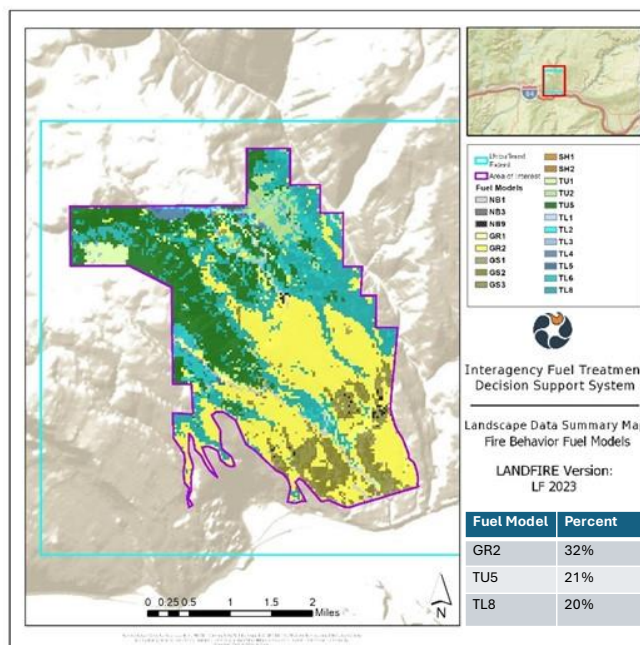


Figure 13. LANDFIRE 2023 suggested fuel models distributed across the Top of the World project.

#2: Analysis of the prescribed fire plan for consistency with agency policy.

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

This table includes both ANALYSIS #2 – CONSISTENCY OF PRESCRIBED FIRE PLAN WITH POLICY and ANALYSIS #3 – CONSISTENCY OF IMPLEMENTATION WITH THE APPROVED PLAN

Analysis #2 – Consistency of the Prescribed Fire Plan with Policy				Analysis #3 – Consistency of Implementation with the Approved Plan		
Prescribed Fire Plan Element	Plan Consistent with Policy	Comments	Contributing Factor	Implementation Consistent with Prescription, Actions, and Procedures in the Plan?	Comments	Contributing Factor
1 Signature Page	Yes	Meets Policy	No	Yes	Meets Plan	No
2a Agency Administrator Ignition Authorization	No	Incorrect version of 2A. Required to utilize USFS Prescribed Fire Plan Template – December 2022	No	No	Signed 2A is missing Line Officer signature.	No
2b Go/No-Go	No	Incorrect version of 2B. Required to utilize USFS Prescribed Fire Plan Template – December 2022	No	Yes	Meets Plan	No
3 Complexity Analysis	Yes	Ratings lacked site specific information, and	No	Yes	Meets Plan	No

Summary and Final Complexity		underrated the complexity of the prescribed burn.				
4 Description of Prescribed Fire Area	No	Not all fuel models were identified. Not all values identified within the Complexity Analysis were carried over into the burn plan.	No	Yes	Meets Plan	No
5 Objectives	Yes	Meets Policy	No	Yes	Meets Plan	No
6 Funding	Yes	Meets Policy	No	Yes	Meets Plan	No
7 Prescription	No	Per PMS 484, "Fire behavior characteristics for fuel models within the maximum spotting distance or adjacent to the project boundaries (or both) must be considered and modeled." TU5 and SB1 were not modelled.	No	Yes	Meets Plan	No
8 Scheduling	Yes	Meets Policy	No	Yes	Meets Plan	No
9 Preburn Considerations and Weather	No	Policy: Does not meet Post Pause Quality Assurance Checklist requirements	No	Yes	Meets Plan	No
10 Briefing	Yes	Meets Policy	No	Yes	Meets Plan	No

11 Minimum Organization and Equipment	Yes	Meets Policy - To be quantified as an engine, it must meet standards if performing on a FS burn, and one of those standards is a qualified ENGB. If production rates and resource typing was not specific to engines, an individual may take on a different role, but if production rates include engines, then standards must be met at all times.	No	No	Under moderate prescription parameters the burn plan requires RXB2, FIRB, Holding Boss (SRB), 3-ignitors, 20-holding resources, 1-PIO, 3-engines (with 3), and 1-water tender. Four engines were on scene with the ENGBs from two engines serving as RXB2(t) and Holding Boss within the burn organization. One engine was identified as initial attack and the other lacked the appropriate number of personnel as required by the burn plan. No water tender was on scene. Ignition and holding resources, combined, should have totaled 23 but only 19 personnel were present.	Yes
12 Communication	Yes	Meets Policy	No	Yes	Meets Plan	No
13 Public and Personnel Safety and Medical	Yes	Meets Policy	No	Yes	Meets Plan	No
14 Test Fire	No	Provisions for a test fire are required in the plan per PMS 484 (page 23).	No	Yes	Meets Plan	No
15 Ignition Plan	Yes	Meets Policy	No	Yes	Meets Plan	No
16 Holding Plan	No	Required to utilize USFS Prescribed Fire Plan	No	No	Resources on site during implementation do not meet the	Yes

		Template – December 2022.			minimum organization identified in the burn plan.	
17 Contingency Plan	Yes	Meets Policy but needs clarity within the burn plan to note if contingency engines are included in the minimum organization within Element 11 of the burn plan.	No	No	Contingency resources identified in burn plan were not on scene. The burn plan requires two contingency engines of unknown type on site and two additional contingency engines, 2-hours out.	Yes
18 Declaration	No	Per PMS 484. Criteria for wildfire declaration is lacking.	No	Yes	Meets Plan	No
19 Smoke Management and Air Quality	Yes	Meets Policy	No	No	The burn plan notes that: <i>Smoke production (modeling) using current Fuel and Duff Moistures should be conducted prior to permit application (Burn Plan, pg. 42).</i>	No
20 Monitoring	Yes	Meets Policy	No	No	Fuel moistures were not collected as identified in burn plan (pg. 46)	No
21 Post Burn Activities	Yes	Meets Policy	No	Yes	Meets Plan	No
Appendix A: Maps	Yes	Meets Policy	No	Yes	Meets Plan	No
Appendix B: Technical Review Checklist	Yes	Meets Policy	No	Yes	Meets Plan	No
Appendix C:	No	Values identified within the CA are not carried over	No	Yes	Meets Plan	No

Complexity Analysis		into Element 4: Description of the Prescribed Fire Area within the burn plan. Preliminary Risk Rating: No unique or site-specific descriptions that affect the Risk to Values are noted. Post-Plan Risk Rating: Elements and Actions in the Prescribed Fire Plan that Address Risk Mitigation are not listed. Post-Plan Technical Difficulty: Unique project or site-specific descriptions that affect technical difficulty to mitigate the risks are not identified.				
Appendix D: JHA Risk Assessment	No	RMA is not current. Signature exceeds one-year.	No	Yes	Meets Plan	No
Appendix E: Medical Plan	Yes	Meets Policy	No	Yes	Meets Plan	No
Appendix F: Fire Behavior Modeling	Yes	Meets Policy	No	Yes	Meets Plan	No

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

The Agency Administrator was currently qualified as an RX Agency Administrator Type 2 (RXA2) and approved to sign and implement moderate complexity prescribed fire plans and the Agency Administrator Ignition Authorization (element 2A). An RXA2 trainee with a current and valid taskbook was also on-site during implementation.

#5: The qualifications and experience of key personnel involved.

The Burn Boss was qualified as a Prescribed Fire Burn Boss Type 2 (RXB2) and an RXB2 trainee with a current and valid taskbook was utilized during implementation.

The Burn Plan Preparer and Technical Reviewer were both qualified and current RXB2's.

The ignition element of the plan was implemented by qualified Firing Boss (FIRB).

The minimum qualification for the holding boss was listed in the burn plan as Single Resource Boss, Crew (CRWB) or Engine (ENGB), and was implemented by a qualified ENGB who was also qualified as a Task Force Leader (TFLD).

The resources required for holding operations in the burn plan were listed in terms of both personnel (total FFT2s) and equipment (Engines and Tenders). While the number of personnel and equipment listed under the moderate staffing level was met for implementation, the engines on site should not be considered "engines" without a requirement of having an ENGB clearly assigned to each module, instead of the of the requirement listed in the burn plan that an engine have "three crewmembers".

APPENDIX B: CONTRIBUTING FACTORS OR CONDITIONS

To better understand the factors associated with prescribed fires that result in declared wildfires, the U.S. Forest Service maintains a database of all reports associated with these events. This database (the USFS Prescribed Fire Escapes Database) uses a system of categories of contributing factors or conditions present in each report and uses these as a means of identifying commonalities and trends over time across all such events to better evaluate the prescribed fire program as a whole.

Each Declared Wildfire Review Team is asked to identify any of the following contributing factors or conditions that pertained to the event to help WO-FAM's understanding of prescribed fire risks and opportunities across the entire program. In addition, the Team is asked to identify any additional contributing factors or conditions WO-FAM might need to consider tracking in the future if this review identified any new or unique factors or conditions not previously observed.

Category	Contributing Factor or Condition	Mark "X" If Observed
Planning	Burn area boundaries not aligned with favorable locations for fire containment.	
	Interdisciplinary team coordination lacking during design and planning of the treatment	
	Lack of proficiency using fire behavior and related modeling tools.	
	Insufficient holding plan	X
	Insufficient ignition plan	
	Insufficient mop-up and patrol plan	
	Insufficient contingency plan	X
	Insufficient technical review	X
	Complexity rating did not adequately reflect the conditions actually experienced.	X
Operations	Burn could not be completed and secured before forecasted worsening weather arrived.	X
	Test fire did not provide accurate representation of fire potential.	X
	Actions taken inconsistent with those described in the burn plan.	X
	Insufficient patrol after burn boss transfers control to local unit.	
Communications	Unit boundaries or special features not communicated or identified accurately.	
	Instructions not given or well understood.	
Equipment	Malfunction or breakdown.	
	Improper use or selection of equipment.	X
	Equipment not set-up and tested prior to need.	

Fire Environment	Extended fire persistence – 2 weeks or more in patrol status	
	Actual weather experienced was outside what was forecast.	X
	Severe drought conditions contributing to unusually dry fuels	
Fuels	Higher than typical fuel quantity/loadings	
	Large machine piles	
	Hand piles	
Human Factors	External influences or distractions	
	Internal stress or fatigue.	

If applicable, list contributing factors or conditions identified by this review not already found in the table above to consider for long-term tracking:

APPENDIX C: CHRONOLOGY

October 14, 2024- Burn Day at Top of the World Unit

0730- RXB2, RXB2(t), and FMO had a TEAMs call with the AA and local line officer to review 2A. Parties involved felt the review of the 2A was thorough. AA asked about any conditions that would push the limits of the prescription. RXB2(t) explained winds were forecast to be in the “high” scenario that afternoon. However, RH was expected to remain high, and temperature was expected to be low, which put those parameters in the “low” scenario. Considered together, the parameters indicated a “moderate” scenario overall. AA felt all involved were comfortable and confident and gave verbal approval to proceed. AA briefing went slightly long, and it delayed the intended crew briefing time.

~0815- FMO and RXB2 arrived at the briefing site near the unit. All other resources were already on site. RXB2 did not have an opportunity to pre-brief with overhead as they typically would have prior to the general resource briefing but trusted the report from RXB2(t) that they had discussed details with HOLB and FIRB. Weather was taken at the briefing site; RH was at or below the low RH forecast for the day, which was 70%. All parameters were in prescription.

0912- All resources were briefed and felt comfortable with their assigned roles, but the 2A had not been physically signed. Getting that signature caused a substantial delay. The AA was otherwise on days off, so they had to track them down to get the needed signature despite their verbal approval at the morning briefing. Ignition had been planned for 09:00, but they didn’t start test fire until 1100. No threshold was identified for how late was too late to start.

1100- Physical copy of 2A was signed and test fire was initiated. The test fire and early stages of the burn went well. Things were slow, but no concerns were noted, and fire effects were favorable.

1134 to ~1330- Test fire complete and ignitions continued into the burn unit. The first burn block, which had been piled and burned the previous year, was time-intensive, and they had to put a lot of fire on the

ground to get it going. Some concerns arose around the amount of water being used. RXB2 secured a tender from a cooperator to refill fold-a-tanks later that day and the following day.

~1330 to ~1530- Burning continued into the second burn block. The second burn block had not been pre-treated, fuel loads were higher, and fire activity increased. A pulse in fire behavior prompted a tactical pause to let fire behavior settle down and reconfigure ignitions. HOLB noted a change in wind conditions; dominant winds appeared to overtake the influence of slope winds. Others noted the smoke was not lifting quite as effectively as earlier in the day. FIRB decided to switch to fewer lighters, a different pattern, and progress in pulses to allow things to burn incrementally. Holding concerns increased, including the rate of water use and water availability. RXB2, RXB2(t), HOLB, FIRB, and FMO all confirmed they were okay with fire behavior and effects at this time.

Time management constraints were noted while working through the second block. Wind was forecast to peak around 1400. The smoke lookout sent a photo around 1400 that suggested smoke may already be starting to settle into the Gorge. The decision was made to hold the burn after the second block and not complete the entire burn unit.

~1530- Local line officer left the burn unit. FMO communicated to local line officer that the burn was almost complete and should wrap up quickly.

~1530 to ~1600- Wind that had been relatively calm suddenly picked up and started gusting, pushing hard downhill with downbursts in all directions. Until this point, no winds over 10 mph (mostly 2 to 5 mph) had been observed. Shortly after the winds increased, group torching was observed, and a 40x40 spot fire was identified downhill, in the third burn block. The third burn block was below the block in which ignitions were taking place at that time and in the area, they had recently decided not to burn that day. Within three minutes of identifying the initial spot fire, other spots and a slopover were observed, and crews were told to use their escape routes and get out of the unit. Overhead resources developed an interim plan to try to hold the power line road and Atwood Road, but found there were multiple spots, spreading quickly across those roads and out of the proposed burn unit. Fire had blown out in three directions, all downhill of the burn unit.

~1600- RXB2 called the FMO to discuss wildfire declaration because with the amount and type of fire behavior observed, and already knew they were going to need aircraft. Four minutes passed between when RXB2 saw the spot fires and when they called their supervisor, the Forest Fuels Planner who was on a day off, to say they thought they lost it and to be prepared to mobilize to the incident as ICT3.

1604- FMO called the local line officer to let them know they had fire outside the unit.

1610- FMO started making calls and ordering resources. RXB2(t) recommended two fire bosses, a helicopter, and a couple hand crews to get around it. FMO asks dispatch about aircraft and was told DNR aircraft were already committed to a fire near Wenatchee. DNR had a hand crew on site and committed to send an additional engine and dozer. Mt. Hood National Forest committed engines for the following day but had no resources available to offer immediately.

1613- When the lack of resources became apparent, FMO called 911 to page out local fire districts rather than going one to one with each fire chief.

~1620- FMO spoke with the regional duty officer and, based on what resources they were going to need from talking with the burn bosses, decided they would likely need to make the wildfire declaration.

~1625- FMO spoke with the AA to discuss making the wildfire declaration. They knew they had 24 hours to make the declaration but, ultimately, the AA concurred with the decision to make the declaration based on resource needs and called the Regional Forester to notify them and their staff. AA mobilized to the incident to offer support.

~1625 to ~1730- VLAT with lead plane, Type 1 hand crew, Type 6 engines, 2 dozers, and other resources that could be secured were ordered. RXB2(t), assumed command of the incident as ICT3. Other prescribed burn resources on site were re-assigned roles and immediately switched to fighting fire aggressively. Additional local resources arrived on scene. VLAT delivered retardant to the southwest side of the fire, which was critical to controlling that flank and keeping the fire on USFS land.

1731- Forest Fuels Planner arrived on scene and assumed command of the incident as ICT3.

~1800- Erratic, gusty winds that drove the increase in fire behavior began to die down.

~1800 to ~2200- Fire spread slowed. Downhill line construction on the east side with crews initially progressed quickly but then slowed as it got darker, safety concerns arose, and fatigue settled in. Some resources were released, re-located, or swapped to mitigate risk and fatigue.

10/13/2024

0216- RXB assumed control of the incident as ICT4 for the remainder of night shift.

0323- Mad River IHC conducted a burn out operation. Upon completion, fire had line all the way around it.

0653- RXB2(t)/Engine Captain assumed control of the incident as ICT3.

APPENDIX D: DELEGATION OF AUTHORITY AND EXPECTATIONS



Forest Service

Pacific Northwest Region

1220 SW Third Avenue
Portland, OR 97204

File Code: 5140

Date:

Route To:

Subject: Delegation of Authority – Declared Wildfire Review for Top of the World RX

To: Paul Willard

This letter formalizes your appointment as Review Team Leader to complete a Declared Wildfire Review for the Top of the World prescribed fire initiated on October 14th 2024 that resulted in the Top of the World wildfire on the Columbia River Gorge National Scenic Area. To ensure an objective and insightful review, I have approved your review team roster that includes subject matter experts from various US Forest Service offices.

As Team Leader, you have the authority of my office to execute and complete a thorough review as described in this document. Your Point of Contact for assistance and coordination with Region 6 is Trevor Miller, Regional Fuels PM, 541-604-5625. Your Point of Contact with the Columbia River Gorge National Scenic Area is Erin Black, Acting Forest Supervisor, 509-850-7813.

For necessary travel, equipment, salary or other costs related to this review use the Top of the World charge code P6R90C with override code 0622.

Your authority includes, but is not limited to:

- Controlling, organizing, managing, and directing the review.
- Maintaining the confidentiality of the process.
- Protecting and managing the integrity of documents, media or other artifacts collected.
- Authorizing requests for additional personnel, including technical specialists, to support the Team, and releasing them upon completion of assigned duties.
- Authorizing and coordinating the expenditure of funds.
- Coordinating all media releases about the review with Jennifer O’Leary Risdal, Regional Fire Communications Officer, 541-731-0390 and/or Columbia River Gorge PAO, Beth Kennedy, 503-477-2980.
- Issuance of Safety Alerts, if warranted, in coordination with Matt Holmstrom, Regional Risk Management Officer, 406-380-0247.

Expectations for Conduct of Top of the World Declared Wildfire Review

These expectations are intended to provide you with additional context to help guide you through the Declared Wildfire Review process for which your team has been assembled.

Policy



America’s Working Forests – Caring Every Day in Every Way

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Per Forest Service Manual (FSM) 5140, all prescribed fires that result in a wildfire declaration must be reviewed according to the procedures found in the National Wildfire Coordinating Groups [NWCWG Standards for Prescribed Fire Planning and Implementation, PMS 484](#).

Controls

Given the sensitive nature of these reports, Team Leaders, Agency Administrators, Directors, and Staffs are expected to maintain close control over all drafts, final reports, and related materials. Use care and discretion when sharing these reports adhering closely to the processes described below.

In-Brief, Status Updates, and Out-Brief

You are scheduled to in-brief with my staff and I on October 14th 2024 at 3 pm on Microsoft Teams and with the Columbia River Gorge National Scenic Area on November 19th 2024 at the Hood River Administrative Office 902 Wasco Ave, Suite 200, Hood, River, OR 97031. The Regional Fuels group has assigned a SME to your team (Chris Donaldson, Fuels Coordinator, 503-951-7111) and can provide process assistance and coaching as necessary. Chris Harper, Fire Staff Officer will be your forest logistical coordinator to you throughout the process. Please contact him at 541-340-4541 to discuss your logistical support needs as soon as possible.

I expect you will provide myself or my designee with status updates on your team's progress according to the terms we agree to during your in-briefing. I expect you to complete an initial draft within 45 days which will allow time for regional and national-level review and feedback needed to finalize the report and meet the requirement to provide a briefing to the Chief/Deputy Chief within 90 days (FSM 5140). If you need more time, or if you discover information that would warrant a different type of review or investigation, please contact me immediately to discuss further.

I request that your team conduct an out-brief with myself and identified staff when your team is ready to leave the local unit which may or may not be prior to completion of your report. Your final report will be provided to me, and my office will be responsible for scheduling briefings with the next higher authority, internal and external distribution, and permanent archive of the report.

Review Protocol

The goals of a Declared Wildfire Review are to:

1. Allow those directly involved an opportunity for individual learning and performance improvement through self-reflection as well as feedback and critique from third-party peers and other experts.

2. Provide for organizational learning and system-wide performance improvement by examining established policies, procedures, practices, and behaviors, offering advice to managers for actions to create systems that produce more reliable and less consequential results in the future.
3. Establish a factual account of the event that may be utilized in training, research, claims' proceedings, or similar uses.

To be clear, this is not a Facilitated Learning Analysis (FLA). A Declared Wildfire Review shares similarities with the FLA when it comes to interview techniques, storytelling techniques, development of the narrative, and providing an opportunity for read-back and validation by those interviewed, but it also differs in many respects. While the FLA is centered around learning and understanding of the event, it does not typically bring in the thoughts or opinions of third-party experts and relies almost exclusively on what was learned by those directly involved. The Declared Wildfire Review seeks to learn and understand what happened from the perspective of those involved, but also employs the knowledge and expertise of review team members with applicable expertise to provide additional context to the story by providing a description of the setting and conditions surrounding the event, and a critique of how applicable policy standards were applied including training, planning, and implementation standards.

An understanding of the FLA process gained from attendance in [NAFRI Learning from Unintended Outcomes Workshop](#) or [LFUO: Self Study](#) is helpful for all team members, but not required. I expect that you will use a similar approach to interviews and interaction with those involved as is described in the FLA process, but that you will be clear that this is not an FLA and rather this review is in pursuit of the goals described above.

Representing My Intentions

Employees or others you will be interviewing to learn about this event will be interested in the purpose and objectives of this review and how the information they provide might be used. They may want to know how this review might affect their employment status, and the degree to which they might face civil or criminal proceedings. I expect you will represent my intentions for how I will use the information provided to your team as follows:

In pursuit of full transparency and disclosure of the events that took place, I agree that no punitive actions will be taken by the Forest Service against any employee because of information provided to any member of your team. During the review, if it is discovered that willful negligence/illegal activity may have led to the outcome notify me immediately. I expect that employees are equally committed to the objective of this review to reduce the chances of a similar outcome in the future and will provide your team with honest and constructive accounts of their experience. Please ensure participants understand the limits of my authority and that actions taken by private citizens, or other agencies or organizations, are outside of that authority

and administrative or legal proceedings could be pursued by others based on information from this review.

Format, Content and Organization

The content and organization of the final report will meet the minimum standards as described in NWCG PMS 484 under the requirements of an "Outcome Review". The telling of the story of what happened, the chronology of events, and perspectives of the individuals involved is the focal point of the report. The Declared Wildfire Review must also address the five required analyses specified in NWCG PMS 484. The methodology and format for addressing those analyses can occur in many formats and I leave that discretion up to you and your team utilizing the direction here and within other guiding documents.

In addition to the narrative and lessons from those directly involved, I am also requesting that your team reflect on this event and provide lessons learned from the team's perspective as outside observers with applicable expertise in prescribed fire. I also ask that your team be alert to and if identified, include findings of conditions that contributed to the outcome along with recommendations for actions whether they be local, regional, or national in scope, that could help mitigate those conditions and reduce the potential for similar outcomes in the future. I want to thank you for your willingness to lead this important review. Please contact Merv George, Deputy Regional Forester at 707-373-4151 if you need to discuss the details of this assignment or to schedule key team meetings or status reports.

Approved By:

MERV
GEORGE
MERV GEORGE
Deputy Regional Forester



Digitally signed by MERV
GEORGE
Date: 2024.11.14 16:00:13
-08'00'

Enclosure: Team Roster

cc: Kelly Kane, Alex Robertson, Deana Wall, Trevor Miller, Chris Harper, Chris Donaldson, Erin Black, John McFarland

APPENDIX E: REVIEW TEAM

Paul Willard, Team Lead - Agency Administrator, District Ranger, Okanagan Wenatchee National Forest

Chris Donaldson, RXB2, Fuels Coordinator, Pacific Northwest Region

Deborah Flowers, RXB2/LTAN(t), Prescribed Fire Specialist, Intermountain Region

Andy Bellairs, RXB2, Fuels Specialist, Mt Hood National Forest

Jessica Hudec, LTAN, Ecologist, Gifford Pinchot National Forest

Kip Van de Water, LTAN, Fire Analyst, Pacific Northwest Region