

# Spring Coulee Fire

September 1, 2019



## Facilitated Learning Analysis

*"Change is the end result of all true learning." ~Leo Buscaglia*

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# Executive Summary

*\*Except for Christian Johnson, names have been intentionally omitted from this document.*

Sunday, September 1, 2019 dawned a beautiful day in the Okanogan Valley. Many of the area's volunteer firefighters, including those from Okanogan County Fire District 3, were enjoying Labor Day weekend with family and friends. When their pagers sounded, they were "toned out" to respond to a quick-moving fire in grass and brush, just off B/O Road and south of Okanogan, Washington. Within the joint jurisdiction of the Washington State Department of Natural Resources (DNR) and Okanogan Fire District 3, resources from both entities, partners, and neighboring districts responded.

The entire incident moved rapidly. The fire was reported just before 1600. Upon size-up by the Incident Commander at 1609, the fire was 5-10 acres in size, located in grass and brush, and spreading rapidly. Assistant Chief Christian Johnson arrived in B341 (a 2012 Ford F450 Type 6 Brush Truck) at 1615. The MAYDAY was called at 1626 and a second radio call for assistance from a separate location was made at 1655. The fire was contained at 107 acres at approximately 1730.

Assistant Chief Johnson was seriously burned during the incident and succumbed to those injuries on October 2, 2019.

A Facilitated Learning Analysis (FLA) was initiated jointly by Okanogan County Fire District 3 and DNR shortly after the incident to help identify and share lessons that could be learned from the event. Personnel involved in the Spring Coulee Fire highlighted six core lessons. These lessons are focused on communications, training, medical pre-positioning and medical evacuation coordination, vehicles, access, and personal protective equipment.

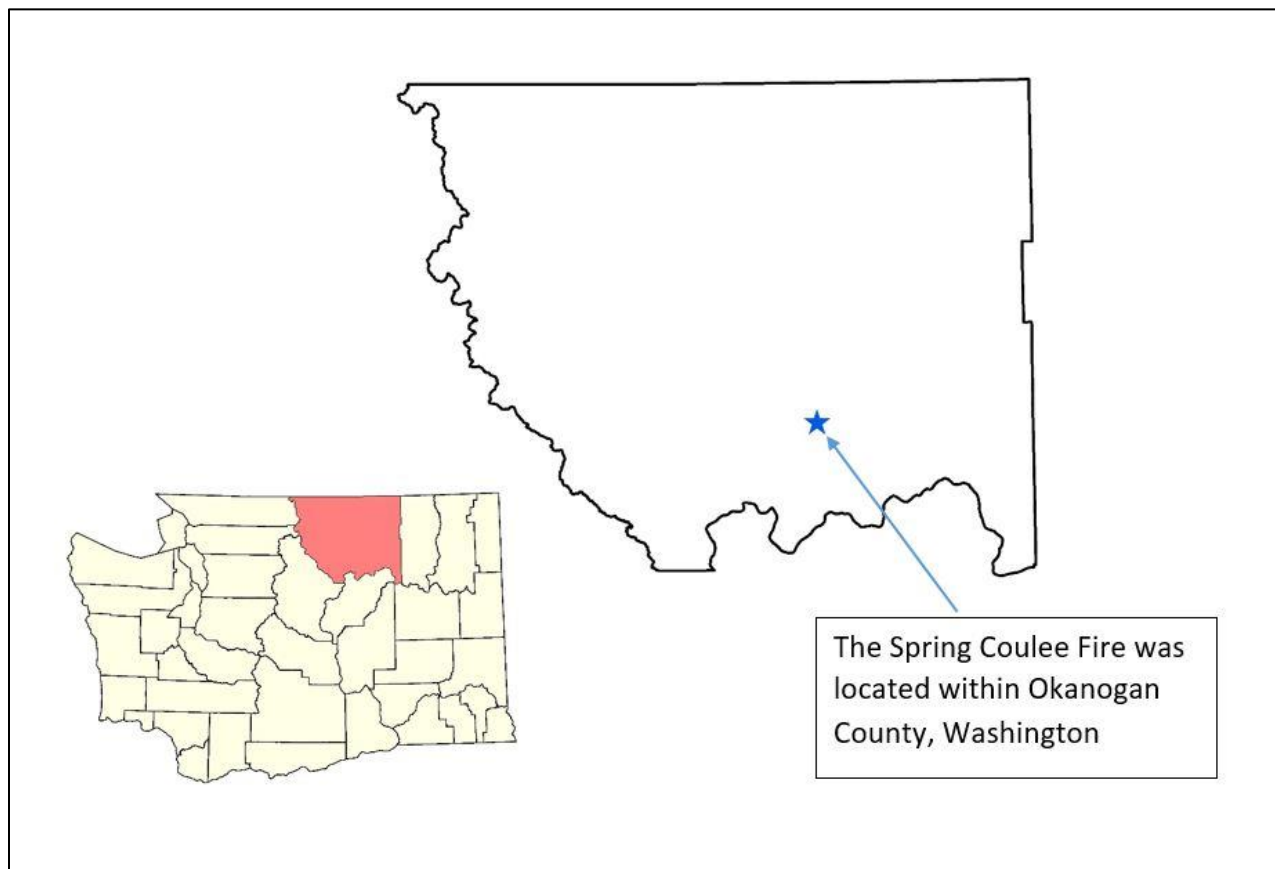
The decision to develop and share the incident story was not made lightly. Ultimately, personnel involved in the incident, fire managers, and the family and friends of Assistant Chief Christian Johnson undertook this process to honor the life of a man deeply loved. We share this story and the emergent lessons in the spirit of growth from tragedy—we honor through learning.

# Introduction

The Okanogan Valley, and its firefighters, are no strangers to wildfire. The Carlton Complex in 2014 scorched 425,300 acres and took more than 300 homes before the snow fell. It was Washington's worst fire season on record—until 2015. When the 2015 fire season ended, 1,064,100 more acres had burned and more homes had been lost. Heartbreakingly, three firefighters died that year battling the Twisp River Fire approximately 30 miles to the west of Okanogan. In 2018, an Okanogan County Fire District 8 firefighter suffered second-degree burns while fighting the Grass Valley Fire near Grand Coulee Dam.

In comparison, the 2019 fire season had been relatively calm. While the spring and summer had felt relatively cool, the indicators firefighters use to measure a season (things like temperature and relative humidity) were tracking at average on September 1.

## Vicinity



**Figure 1.** Spring Coulee Fire location.

### **Recurrent Theme: Relationships**

Throughout the Spring Coulee Fire, relationships between responders were critical. When things went well, pre-existing or rapidly built relationships played a large role in those successes. When things went wrong, relationships enabled effective action to be taken. As you read through the incident story and the lessons presented here, reflect on the status of key relationships within your own sphere of influence.

### **Recurrent Theme: Hindsight Bias**

It is relatively common after an incident to perceive the sequence of events as more predictable than they really were as they unfolded. Known as “hindsight bias,” this tendency hinders our ability to put ourselves in the place of personnel on the incident and falsely enables the confidence that these outcomes would never happen to us. Readers are encouraged to think about this fire, the sequence of events, and lessons learned with their own experiences in mind. Reflect on how many of these conditions (wind shifts, small-scale topographic features with an outsized impact on fire behavior, technical communication challenges) you have experienced. Try to place yourself on this incident without the benefit of hindsight.

# The Incident Story

## Background

Labor Day weekend (August 31 through September 2) in the Okanogan Valley held the promise of summer—the first real “summer” of the season. With temperatures near 90°F, fire danger was at its highest level so far that year. Most of the members of the area’s volunteer fire districts had plans to enjoy the great weather with friends and family. Some were golfing while a few were just hanging-out with family at home; most were ready to respond if tones “dropped” for a fire.

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*“This [weekend] was our summer.”*

~Firefighter, Spring Coulee Fire, in reference to Labor Day weekend

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Christian Johnson, the Assistant Chief of Okanogan Fire Department, spent the morning of September 1 fishing with his family. Christian was an avid fisherman and often spent his spare time on local waterways. While a building official by trade, Assistant Chief Johnson had given over 22 years as a volunteer firefighter. A loud, boisterous and well-respected man, Christian was known to his fellow volunteers as “Mr. Safety” or the “Safety Guy.”

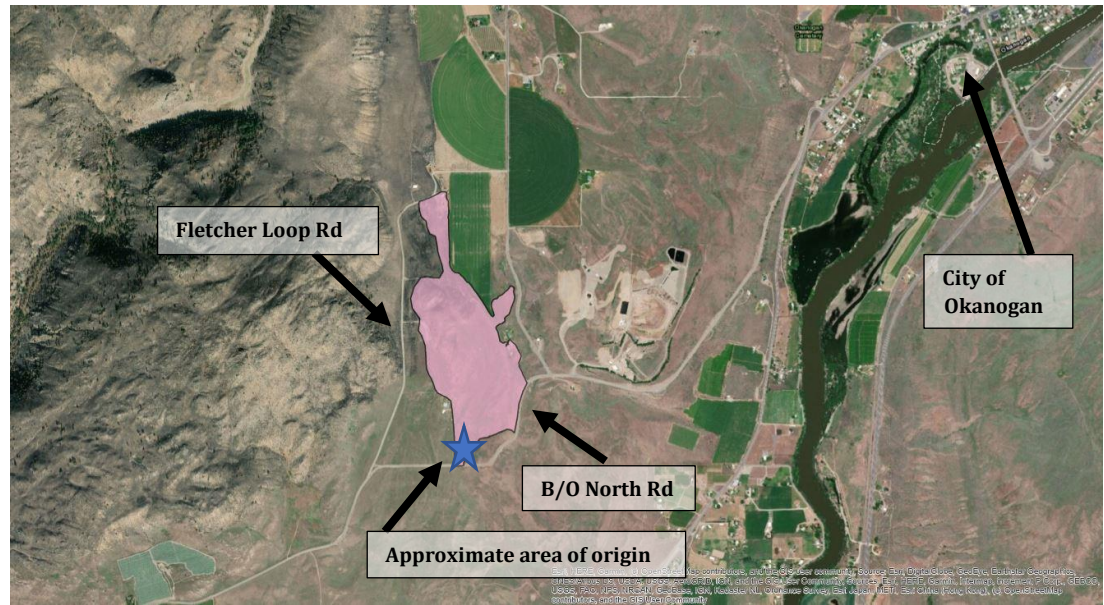
## Fuels, Topography, and Weather

Approximately 2 miles to the southwest of the City of Okanogan, among gently rolling hills and alfalfa fields, lies a flat area of land (known as a bench) between several roads and driveways. The area is generally open and immediately subject to any shift in wind direction. Grass and sagebrush cover the ground and a number of private residences, barns, and outbuildings dot the landscape. The vegetation was knee-high in most places (approximately 2-feet high) with heavier concentrations in some areas.

West of the bench, the gently rolling hills become a little steeper. Small topographic features like swales and short steep slopes occur in the area (see Figure 2).

September 1 was hot and dry; the temperature hovered around 90°F and the relative humidity was 19%. Winds were out of the south at approximately 15 mph with some gusts to 25 mph.





**Figure 2.** Spring Coulee Fire Perimeter.

### 1559 to 1626 Hours

Just before 1600 on Sunday, September 1, a caller to Okanogan Dispatch reported a fire, approximately the size of a basketball court, off of B/O North road. The area had burned previously during the summer of 2014. The initial report noted that the fire was spreading toward a residence approximately ¼-mile away.

Tones were sent to alert the members of the area's volunteer fire departments to respond to their respective stations for a wildland fire. Volunteers immediately left their weekend plans and began gathering to initiate a response. The local fire departments don't have staff present at all times throughout the day and rely on volunteers to respond when toned for a fire.

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***"No one is in service, not until the tone drops."***

*~Dispatcher*

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A few moments later, around 1606, a call to the Northeast Washington Interagency Communication Center reported a fire in the area of B/O North road the size of a football field and moving toward structures. As the area is also within the jurisdiction of the Washington State Department of Natural Resources (DNR), three DNR engines and a fire manager were dispatched to the fire. Their estimated time of arrival was more than 25 minutes from the time of dispatch.

At close to 1609, just ten minutes after the fire was initially reported, the Incident Commander (IC) reported the fire was approximately 5-10 acres in size with 40-foot flame lengths. The fire was approaching structures on Fletcher Loop Road. The IC recommended evacuations for residents between Fletcher Loop and B/O North roads and requested air support.

A responder for the local emergency medical services unit heard radio traffic and decided to load-up his command rig and head toward the fire. While not an official policy or procedure to pre-position medical response units for wildland fires, when the fires are substantial and in their core service district it is a relatively common practice in the area. Experience and instinct told the emergency medical responder that this was a fire he should head toward. As he made his way to the incident, he could see a column of smoke developing and was certain he had made the right call to get on the move.

#### **SIZE-UP and HINDSIGHT**

Many firefighters have sized-up a fire at night only to discover that, in the light of day and after the initial operational period has passed, the fire is significantly smaller than first reported. While the IC on Spring Coulee initially reported 40-foot flame lengths, after the incident he revised that estimate downward. Fire behavior analysis indicates flame lengths were approximately 9 to 15 feet during the incident. Adjusting of initial reports on fire conditions is a normal occurrence. In this case, the initial report might best be used to indicate the urgency felt by responders.

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***“We just do it [pre-position] because they are our folks.”***

*~Local emergency medical provider*

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Assistant Chief Johnson was headed back to town from a day of fishing when he heard the initial dispatch. His family dropped him off at the Okanogan Fire Department and he joined the volunteers already gathering gear and organizing for response.

Most of the Okanogan firefighters donned their structural firefighting clothing, referred to as “turnouts,” because structures were reported as threatened during the initial dispatch. Wearing his turnout pants, Assistant Chief Johnson loaded into B341 (a 2012 Ford F450 Type 6 Brush Truck) and stowed his turnout jacket on the back of the truck between the cab and a rear-mounted storage compartment. With another firefighter onboard, Assistant Chief Johnson pulled out of the station at approximately 1610. A relatively quick drive, B341 arrived at the fire approximately five minutes later at 1615. A second brush truck from the Okanogan Fire Station arrived a few moments behind B341.



Units from other nearby stations were undertaking parallel actions, leaving their Labor Day plans, heading to their respective stations to gather their gear and vehicles, and initiating their response. Radio traffic was extremely heavy from the onset of the incident.

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***“There was so much [radio traffic] I couldn’t even let Dispatch know I was on scene.***

**~Firefighter, Spring Coulee Fire**

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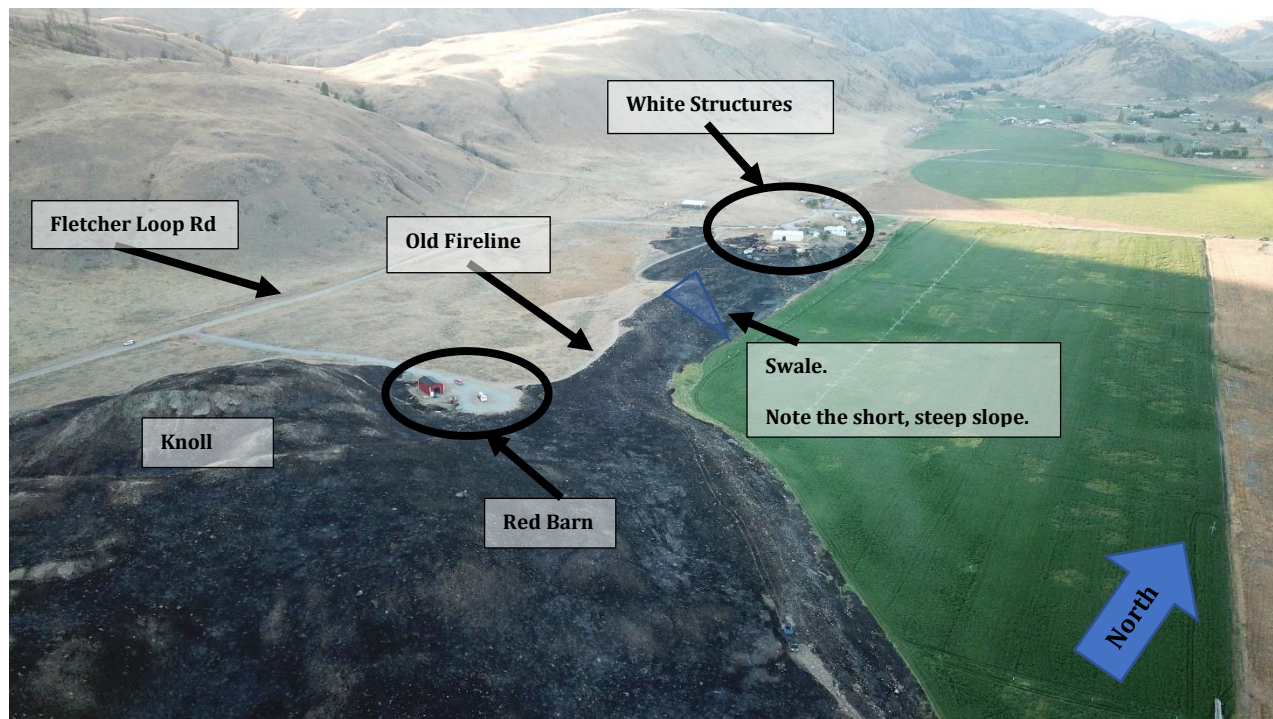
Simultaneously, members of the public began making their way toward the smoke—visible just outside of town. Firefighters in Okanogan are notified of a fire via pager, mobile phone application, and a siren; the siren is audible to most of the town. Alerted by the siren and guided by the smoke, relatively direct road access to all four sides of the fire allowed members of the public to get close enough to see the action from a number of different vantage points. Traffic control was requested early in the incident, but numerous vehicles disregarded road closure signs and remained in the area. Apparatus moving toward the fire had to slow and adjust course to navigate around the heavy traffic.

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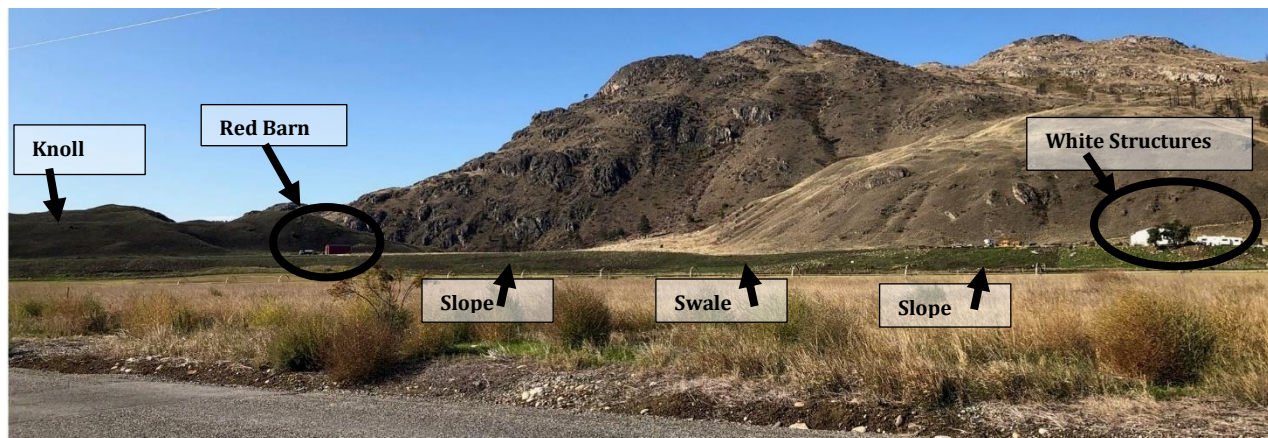
***“When I got there, there was so much public traffic I was not willing to go [down that road].”***

**~Firefighter, Spring Coulee Fire**

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**Figure 3.** Northern end of Spring Coulee Fire.



**Figure 4.** Street view, northern end of Spring Coulee Fire.

B341 contacted the IC and began protecting the Red Barn off of Fletcher Loop Road. The fire was moving fast. They actively worked to keep the flames away from a recreational vehicle and put out fire on a stationary private bulldozer near the barn. As the second brush truck arrived to provide additional resources at the Red Barn, B341 indicated they were going to head north along an old “cat trail” to provide protection to the white structures (see Figure 3). A firefighter from the second brush truck noticed Assistant Chief Johnson hadn’t yet donned his turnout coat. The firefighter hollered out *“Put your jacket on!”* There was no clear response from Assistant Chief Johnson to indicate whether or not he heard.



**Figure 5.** Assistant Chief Johnson's turnout coat stowed on B341. Photo taken after the turnover.

Assistant Chief Johnson drove north along the old cat trail while the other firefighter was located on the exterior of B341 and operating the hose. B341 progressed along the old cat trail, flanking the fire from above the slope. Their intent was to keep the fire from crossing the cat trail and prevent it from closing in on the white-colored structures to the north. As B341 reached a bend in the cat trail, the truck pulled off and into the grass. The exterior firefighter pulled hose off the truck and started extending the hose line down toward the fire. There was no radio or voice communication between Assistant Chief Johnson and the exterior firefighter.





**Figure 6.** B341 headed north along the old cat line prior to the burnover. Note the dark smoke indicating heavier fuels and the upward drift of the smoke (indicating the wind is not heavily influencing the fire at this time).

Due to the fairly flat terrain, the fire continued to spread north as it was pushed by surface winds.

The wind then calmed for an instant and the fire didn't seem to be moving quite as quickly.

The second brush truck was still working at the Red Barn to protect the structure. Recognizing the calm as an indicator of a potential wind shift, a firefighter near the barn called out to his crew.

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***"It just laid down and I yelled 'Wind Shift!'"***

***~Firefighter near the Red Barn, Spring Coulee Fire***

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On a separate section of fire, south of the Red Barn, an additional engine had arrived and had taken the initiative to begin work on the flank of the fire. Radio traffic was heavy and communication between units and agencies was difficult. This engine did not have radio contact with the IC but felt there was work to be done and they could "anchor in" and "get to work" in this area. When the wind calmed, a firefighter from this engine associated the calm with an opportunity to make progress on fire suppression.

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***"Oh, it's calm. Let's go get it."***

***~Firefighter south of the Red Barn, Spring Coulee Fire***

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As quickly as the wind had calmed, it shifted directions.

The wind moved from generally south to southeasterly and aligned with the small swale (see Figure 3 and Figure 4) off the old cat trail and near where B341 was working. During this wind shift, the fire established itself on the slope below B341 and burned rapidly toward the truck.

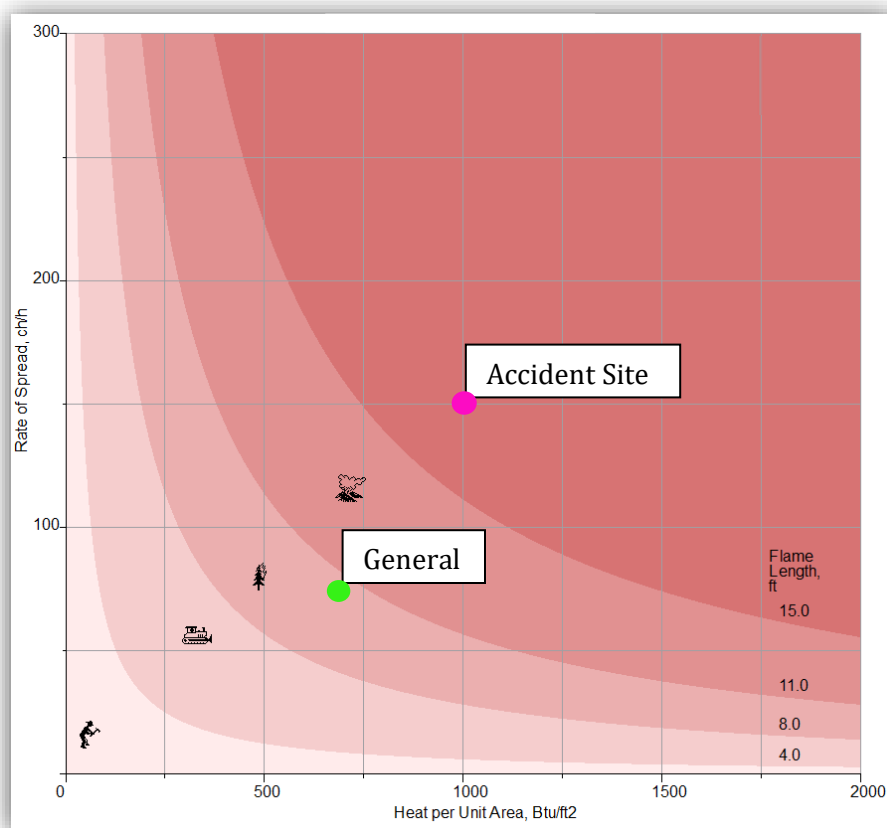
The first indication that B341's exterior firefighter had that conditions were changing was the fast ignition of grass and brush coming toward him as opposed to moving north. A wave of heat came with the flames. Hearing Assistant Chief Johnson yelling for him to drop the hose and move, the exterior firefighter ran for the truck. He reached B341 at the same time the fire did.



**Figure 7.** Spring Coulee Fire close to the time of the burnover. The southeast winds and alignment with the small swale more heavily influenced fire behavior at this time (as compared to the conditions in the previous photo [Figure 6]). B341 is located behind the smoke at the left side of the image. The irrigation of the adjacent green field that is visible in this photo may have allowed for a heavier concentration of brush in this area.

Fire behavior and intensity had increased as the wind shifted to align with the slope. The wind was also channeled by the swale near B341's position. Fueled by the heavy concentration of brush, flame lengths in this area increased from approximately 9 feet to 15 feet and rate-of-spread exceeded 150 feet per minute (see Figure 8).





**Figure 8.** Surface Fire Behavior and Fire Characteristics Chart.

The exterior firefighter didn't open the passenger door; fire was immediately at his back and had caught the passenger mirror on fire. He ran around to the driver's side of B341 and climbed on the outside of the truck again. As fire moved under B341, Assistant Chief Johnson attempted to drive B341 away from the area. After travelling five or six feet, B341 "lurched" and then became immobilized. With flames rolling up the exterior firefighter's legs, visible on the passenger side of the vehicle itself, under the truck and in front of them, both the exterior firefighter and Assistant Chief Johnson exited the vehicle to escape the fire. Assistant Chief Johnson and the exterior firefighter ran toward the old cat trail at slightly different angles. In Assistant Chief Johnson's path, hidden by vegetation, lay a substantial field of rocks and metal debris (Figure 9). While it is impossible to know for certain, it is thought Assistant Chief Johnson may have become entangled in the debris and was overtaken by fire.



**Figure 9.** Rocks and debris in the area of the burnover. Note that what is seen in this photo would have been obscured by vegetation prior to the fire.

The exterior firefighter, with fire surrounding him—and at times reaching up between his legs—was able to escape the advancing fire. The exterior firefighter and the fire reached the road at approximately the same instant.

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*“I’m a very fast runner and I couldn’t even remotely outrun it.”*

~Exterior firefighter, B341

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As it was starved of fuel, the roaring and crackling of the fire quieted and the exterior firefighter from B341 immediately turned around to head back into the black and re-establish contact with Assistant Chief Johnson. The firefighter located Assistant Chief Johnson approximately 150 feet from the exterior of B341. The MAYDAY was called at 1626.

## **1626 to 1730 Hours**

The IC heard the MAYDAY on the command channel, proceeded to B341's location, assumed control of the medical incident, and quickly requested a medical helicopter. The IC transferred command of the fire to an officer from a neighboring station and then left B341 to lead the emergency medical personnel into the scene.

The emergency medical responder who had prepositioned in the area was able to provide rapid medical care for Assistant Chief Johnson as he was transported from the burnover site to the intersection of Fletcher Loop and Spring Coulee Road to rendezvous with additional medical care. A transport ambulance, already headed toward the fire at the time of the burnover, was able to provide advanced medical care for Assistant Chief Johnson until the medical helicopter arrived.

With four aircraft and a helicopter working the fire, the introduction of a medical helicopter into already busy airspace concerned incident personnel. It was unclear whether the medical helicopter had direct communication with other aircraft in the area. The medical responder who had initially prepositioned had radio contact with the medical helicopter. One of the firefighters who had been working south of the Red Barn at the time of the MAYDAY had radio contact with the suppression aircraft operating in the area. Standing side-by-side, these two individuals coordinated airspace.

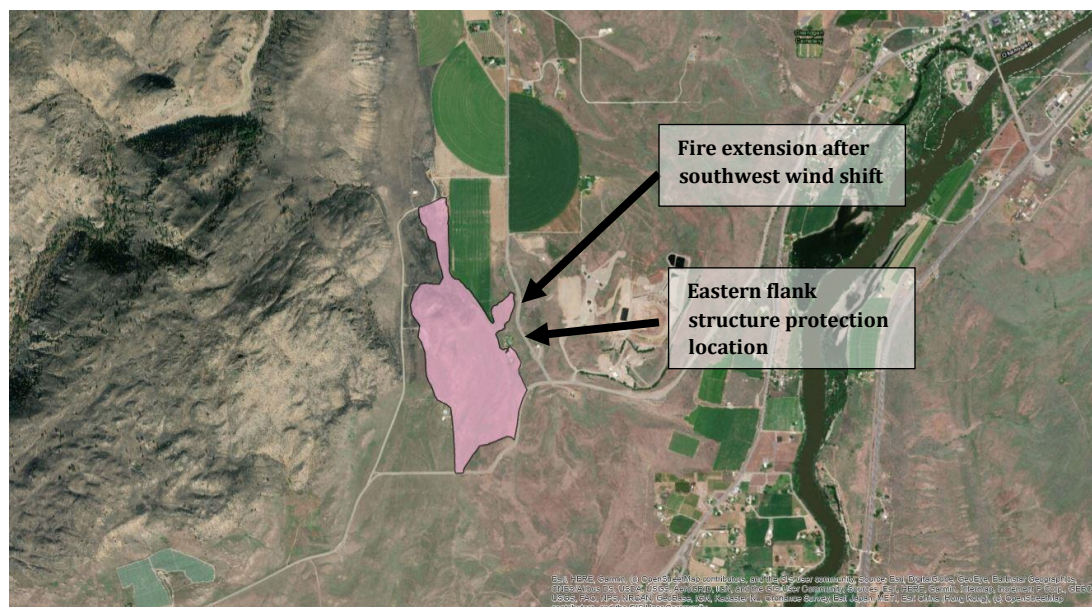
While personnel cared for Assistant Chief Johnson, suppression actions were continuing along the eastern flank of the fire. A structural fire engine had headed up a steep, narrow drive (approximately 300 yards in length) to provide protection to a group of structures at the top of a slope (see Figure 10 and Figure 11). Finding the access and turnaround too narrow, the structure engine headed out and was replaced by two, more maneuverable, brush trucks. Access and turn-around space was still limited in the area. At one point, two private vehicles headed up the drive and further congested the area.

Firefighters from the brush trucks worked to extinguish spots around the structures and keep the brush and grasses near the home from igniting. Just before 1655, the surface winds shifted to a south-southwesterly direction. This pushed a “finger” of fire north of the structures on the eastern flank and increased fire behavior in the area. At approximately 1655, the engine on the eastern flank requested air support as “*we are trapped here*” and they needed water to continue effective structure protection. A helicopter in the area had already spotted the flare-up and was able to deliver water within seconds of the radio call. At least one additional water drop was completed by a fixed-wing aircraft (Figure 12). The brush trucks were able to continue to provide structure protection and mop-up in the area after air support knocked down flare-ups in the area.

#### **CALLING FOR HELP**

It is often tempting to use hindsight to evaluate whether a request for assistance was “warranted.” In real time, all we can ask is for those on scene to communicate the conditions as perceived. Communicating our perspectives is necessary for safe and effective firefighting. We must be careful not to discourage the practice of requesting assistance by judging a call for help after the fact.





**Figure 10.** Fire activity along the eastern flank.



**Figure 11.** Drive to structures along the eastern flank of the fire.



**Figure 12.** Engine along eastern flank of the fire after air support requested. View from the top of the bench looking south and does not show the steep drive suppression apparatus used to access the location (depicted previously in Figure 11).

Assistant Chief Johnson was enroute to definitive care at 1720 and the Spring Coulee Fire was contained by 1730 at approximately 107 acres.



# Lessons Learned By Those Involved

## Vehicles

The exterior firefighter on B341 reported the vehicle “lurched” before becoming immobilized. After the incident, personnel were able to drive B341 off the cat trail under its own power. Personnel on the Spring Coulee Fire identified several possible reasons for the immobilization of B341:

- A low oxygen code (pulled from the sensor after the incident).
- Non-engagement of four-wheel drive.
- Numerous large (softball-size) rocks in the area of the old cat trail.

Even though a low oxygen code is consistent with conditions at the location of the vehicle during the burnover, no data is available regarding when this code registered, how long it lasted, or what impact it may have had on B341’s mobility.

Regardless of the cause, the dilemma of a disabled vehicle at a crucial time is not a new phenomena on the fire ground. Here is a short list of recent events:

- [Utah IA Engine Burn Damage](#)
- [Sheep Creek Entrapment](#)

**Lesson:** Equipment can fail at critical moments. Forethought and preparation is our best defense.

**Have you trained for your vehicle becoming immobilized in the path of a fire? How often do your escape routes rely on a vehicle?**

## Communication (Technical)

The radio repeater used during the Spring Coulee Fire is owned and maintained by Okanogan County Fire District 3. Dispatch occurs through the Okanogan County Sheriff's Office Communication Center. Both dispatch and fire command traffic occur on a repeated channel while a second channel (non-repeated) is designated as a line-of-sight tactical channel. Both the repeated command channel and non-repeated line-of-sight tactical channel use the same frequency.

Firefighters reported heavy radio traffic on the command channel throughout the incident, with the IC urgently requesting several times for firefighters to *"clear the frequency for emergency traffic."* In addition, other responding agencies were using their own tactical channels and were therefore not tied-in directly.

Compounding the technical communication challenges, the IC had a new radio that had been installed in the command vehicle days prior the incident.

On scene, these dilemmas were addressed through constant movement and face-to-face communication. While not ideal or efficient, operators managed to quickly build relationships to overcome technical hurdles.

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*"I knew [the other individual], and I knew he had contact on Air-to-Ground, so I walked over to him to see if we could coordinate the med-evac."*

~Medical responder, Spring Coulee Fire

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**Lesson:** Technical and organizational interoperability is best addressed *before* critical operations.

**How are you addressing interoperability with your partners?**

## **Medical Pre-Positioning and Medical Evacuation Coordination**

Personnel on the Spring Coulee Fire indicated the pre-positioning of emergency medical responders enabled an extremely quick response to the turnover and provided near-immediate medical care to Assistant Chief Johnson.

While prepositioning of emergency medical services is the standard of practice on structure fires in the area as well as on larger wildland fire incidents such as Type 1 and Type 2 fires, it is not the standard during initial attack of wildland fires.

Firefighters also felt the coordination of suppression aircraft and medical evacuation aircraft by resources on the ground enabled safe and effective air operations. This coordination was enabled by relationships that were in existence prior to the incident

**Lesson:** Pre-positioned medical response capability for wildland fire initial attack is not always “standard practice.” Should it be?

**How can you improve your initial attack medical response capacity?**

# Reflections from the FLA Team

The discussion and reflections presented in this section of the Facilitated Learning Analysis (FLA) were all discussed by Spring Coulee Fire personnel and could have easily been included in the preceding “Lessons Learned By Those Involved.” They have been included here to allow for additional reflections from the FLA Team.

## Weather, Fuel, and Topography

In many respects, the Spring Coulee Fire was typical for the area. A mid-afternoon fire, it was relatively small (contained at approximately 107 acres), located in light fuels, and in an area with small-scale topographic features. An unexpected wind shift enabled the fire to run rapidly uphill.

Some readers may recognize the above description as a normal day on the fireline. Others may recognize these conditions as the [Common Denominators of Fire Behavior on Tragedy Fires](#). Both are correct. It is tempting to use the benefit of hindsight to clearly identify the “right” responses to the conditions, especially when the outcome is both known and heartbreaking.

As tempting as it is to point out the “common denominators” in hindsight, what is the utility in doing so? Is the “right” response to roll up to the Spring Coulee Fire and stop all operations because conditions meet the “common denominators”? Is it to recognize the conditions and then be “extra heads up”? What does “extra heads up” look like and how do you train for different levels of heads up? These are hard questions, but hard questions are needed for growth.

For many, a typical IA response meets most or all of the “common denominators.” As a result, for the “common denominators” to be useful, we need to talk about them as they relate to *future* operations and identify actions we can take in real time as well as a way to practice them.

**What is an operational action you can take if you recognize the Common Denominators of Fire Behavior on Tragedy Fires during an incident?**

**How can you practice taking that action?**

## Personal Protective Equipment (PPE) Selection and Use

Responders' decisions regarding the type of PPE (structural or wildland) to don during the Spring Coulee Fire were based on the initial report of the fire, knowledge of local conditions, and previous experience. Several responders anticipated the fire—moving rapidly according to initial radio reports—would reach nearby structures prior to their arrival and necessitated the use of structural PPE. Another firefighter chose turnouts as they often move between a brush truck and structural fire engine, depending on the personnel available. Several responders chose wildland clothing and stowed their turnouts on their rigs in case they were needed later.

The absence of a turnout jacket or other PPE (such as a Nomex shirt) on Assistant Chief Johnson's upper body likely contributed to the severity of his injuries. While it is impossible to know what factored into Assistant Chief Johnson's decisions that day, it is unlikely that the man known as "Mr. Safety" conscientiously made a decision to discard his turnout jacket for the entirety of the fire. It is more likely that small, micro-decisions—such as the choice not to wear a turnout coat while driving—played a role in the incident. Micro-decisions can have an outsized impact on outcomes and urgency can compete with our ability to pause and reassess.

Imagine the following scenario: Time is of the essence (structures are threatened) and you decide to put on your turnout gear because it is the quickest option. The urgency of the call has put a premium on response time. A turnout jacket is not comfortable to drive in, especially in the cramped cab of a brush truck. Once you arrive on scene, immediate action is needed and you just jump in and get to work. Then, you get surprised by fire behavior—and we have all been surprised by fire behavior. It is only at that point that you realize: *"I don't have my jacket on."*

Both the decisions about which PPE to wear and when to put it on played a role in the outcome of this incident.

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***"The only reason I am alive is because I had all this [structural] gear on. Without that I wouldn't have even made it back to the truck."***

***~Exterior firefighter, B341***

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**What systems can you put in place to reduce decision tension during response?**

**How can you ensure there is a "tactical pause" between arrival on scene and engaging in operations?**

## Different Perspectives

Firefighters from two different engines (neither being B341), located on the same side of the fire and not very far apart from each other, reported different reactions to the wind dying. The firefighter who interpreted the sudden cessation of wind to mean an impending wind shift attributed his interpretation to training, as well as local experience. When he made sense of the event, he communicated that to his crew. Another firefighter interpreted the wind change as a change in condition that would allow fire suppression to be more effective. Both individuals perceived the wind dying down—but they made sense of that information differently.

In another example of the importance of perspective, one firefighter on the incident articulated that they felt safe due to the presence of another department. What is unknown is whether that department shared the perception of safety.

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*“I knew [another department] was there so I felt safe.”*

~Firefighter, Spring Coulee Fire

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Knowing that perspectives will always vary on the fire ground it is crucial to communicate our perspectives. Interoperability makes communication easier.

**Are you and your organization able to incorporate and benefit from different perspectives and reactions, especially during high-tempo operations? How can you improve your capacity in this area?**



## Summary

The Spring Coulee Fire was a fast-moving incident in a small, close-knit community. It was, in many ways, a typical fire for an area prone to fires. However, the outcome on this particular fire was anything but typical. The loss of Assistant Chief Johnson, who died of injuries sustained on the incident, is felt profoundly by his family, friends, co-workers, and community.

The facilitated analysis process undertaken on this fire is an attempt to honor Assistant Chief Johnson through learning. It is a process used throughout the wildland fire community. For example, the [2008 Dutch Creek Fatality](#) highlighted the need for better preplanning for medical events on the fireline and directly influenced how we prepare for medical incidents on large-scale fires. The death of Andy Palmer on The Dutch Creek incident and its resulting medical protocol is an example of how this type of learning can improve the safety of wildland firefighters across the country and around the world. The Spring Coulee Fire lesson centered on medical pre-positioning during initial attack has broad implications; this lesson, in addition to the others presented here, should serve as a call to action for us all.

It is the sincere hope of the Facilitated Learning Analysis Team that this process has benefited those involved in this incident. This analysis represents a commitment to all responders and to our community. Through learning, we can improve our safe response to wildland fires.

# Epilogue



Christian Johnson, 55, of Okanogan, Washington passed away Wednesday, October 2, 2019 from injuries sustained in the Spring Coulee Fire south of Okanogan.

Christian was born in 1963 in Salem, Oregon, to James and Margaret Johnson. He grew up in Salem, graduating from South Salem High School in 1982. Christian began college at Oregon State University, but felt he had a larger calling and joined the Army. Christian served from 1983-1986 in the 82<sup>nd</sup> Airborne Division where he achieved the rank of Sergeant. After being honorably discharged, Christian continued his duty by joining the Oregon Army National Guard. He then returned to college and graduated from

Chemeketa Community College in Salem in 1988 with an A.A. in Building Inspection Technology. Christian accepted a position as a building inspector in Washington for Okanogan County and later transferred as building official and permit administrator to the cities of Oroville, Tonasket, and Okanogan. He also transferred to the Washington National Guard where, along with his Charlie Company of the 1-161 Infantry Regiment, he deployed to Iraq. Christian served from November 2003–April 2005. Upon returning home, Christian retired from the National Guard after a total of 22 years of service. In Okanogan, Christian found another call to duty and in May of 1999, he joined the Okanogan Fire Department where he served as the Assistant Fire Chief and Secretary of the Okanogan Volunteer Fire Department Association.



# Appendices

## Appendix A: Fire Behavior Summary

The Spring Coulee Fire was reported at approximately 1600 hours on September 1, 2019. The fire was located on a bench west of the Okanogan River in the Okanogan Valley, which is oriented north/south. The fuels consisted of grass and sagebrush, in mixed concentrations. Most of the fire area was sparse to moderate grass up to 2-foot high, with patchy low sagebrush. However, concentrations of heavier sage and bitter brush did occur. Seasonally, the 2019 fire season was tracking at average for indices at the time of this incident, and was a much milder fire season that had been experienced in recent years. At the time of the incident, conditions were at their highest levels experienced so far during this fire season.

While the terrain of the incident was generally flat, small-scale terrain features would affect fire behavior at the burnover site.

Weather for the day was near 90 degrees, with relative humidity at 19% and southerly winds at 15 mph with occasional gusts to 25 mph. These were hot and dry conditions, but by no means extreme for the location. The moderately strong winds dominated the fire spread from the south to the north, and the fire travelled approximately 4000 feet from the origin to the area of the burnover, which was approximately 1625 hours.

Firefighters on the ground reported a wind shift at the burnover site. There is evidence that the wind was out of the SE at the time of the burnover. At the location of the burnover, the wind aligned with a short steep slope and a small swale, which allowed for increased fire flow path effects over the area of the burnover. Additionally, in the same location, a heavy concentration of brush provided for increased fuel and higher intensity, rate-of-spread, and flame length. Estimated flame lengths of 15+ feet and rate-of-spread over 150 feet per minute would have been experienced at the burnover location.

Summary prepared by:

Matt Castle, Deputy Fire Staff-Fuels  
Okanogan-Wenatchee National Forest  
U.S. Forest Service

## Appendix B: Significant Events of September 1, 2019

| Time | Event  |
|------|--|
| 1559 | Initial report to Okanogan Dispatch by phone: "Wildland fire approximately the size of a basketball court, spreading toward residence .25-mile away."  |
| 1601 | Malott and Okanogan Fire Departments paged.  |
| 1606 | Northeast Washington Interagency Communication Center (NEWICC) log: "Fire reported at 1818B/O Road, size of a football field, moving to structure."  |
| 1607 | DNR Engines enroute with 30 minute, 25 minute, and 60 minute estimated time of arrival, respectively.  |
| 1609 | Incident Commander reports evacuations in place from Fletcher Loop to B/O North Road. Incident Commander reports 40-foot flame lengths and 5 to 10 acres involved.                             |
| 1611 | DNR Duty Officer requests dozer, air attack, 2 fire bosses, and helicopter.  |
| 1618 | Traffic control requested at B/O North for heavy traffic.  |
| 1622 | Structure protection needed northeast of Fletcher Loop Road.   |
| 1625 | Helicopter is overhead and reports that "fire is approximately 50 acres; burning in grass, sage and brush on top of a knob. Access is good, keep resources coming. Heading to hook-up bucket." |
| 1626 | Incident Commander: "MAYDAY, firefighter down at head of fire."  |
| 1629 | Incident Commander requests Lifeflight for major burns.  |
| 1643 | Landowner along B/O North Road requests fire unit as fire is close to their barn and chicken house.  |
| 1655 | From engine on eastern flank of fire: "Need support here, we are trapped. Helo just dropped water."  |
| 1705 | South end of the fire is backing to B/O Road with 2 to 3 foot flames.  |

| <b>Time</b> | <b>Event</b>   |
|-------------|--|
| <b>1707</b> | A little fire is reported over Judd Rd. driveway. Hotspots reported between Spring Coulee and Judd Rd. Existing resources are able to hold the fire between Spring Coulee, Fletcher Loop, and B/O roads and not requesting any additional evacuations. |
| <b>1711</b> | Lifelight on the ground and preparing to take patient.   |
| <b>1719</b> | Second Incident Commander, having been briefed by the original Incident Commander, reports the fire is 75 to 100 acres and its forward progression has been stopped. There is a bulldozer on scene and will be lining the entire perimeter.            |
| <b>1721</b> | Lifelight is airborne and enroute to Central Washington Hospital in Wenatchee.   |
| <b>1730</b> | Fire contained. Resources to continue to mop-up.   |
| <b>1731</b> | Mop-up completed around all structures.  |
| <b>1732</b> | All four fixed-wing aircraft are released; helicopter is still working.  |
| <b>1811</b> | Helicopter released from incident.   |
| <b>1914</b> | DNR to remain on scene all night; all fire district resources released from the incident.  |



## **Appendix C: Facilitated Learning Analysis Team**

**Gary Berndt**, Team Leader, Local Wildland Fire Liaison, Washington State Department of Natural Resources/Incident Commander (ret.)

**Matt Castle**, Deputy Fire Staff, Okanogan-Wenatchee National Forest, U.S. Forest Service/Fire Behavior Analyst

**Dave Leitch**, Chief (ret.), Yakima County Fire District 12/Type 2 Incident Commander

**Sergeant Gary Margheim**, Washington State Department of Natural Resources Law Enforcement

**Gerald H. Phipps II (Jay)**, Wildfire Division Safety Officer, Washington State Department of Natural Resources

**Cody Rohrbach**, Chief, Spokane County Fire District 3/Type 1 Operation Section Chief

**Annie Schmidt**, Writer, Washington State Department of Natural Resources

**William Vallance**, Chief, Douglas-Okanogan Fire District 15

## **Acknowledgements**

The FLA Team would like to thank those who participated openly in the process, sharing their insights, emotions, and experiences. Your trust is deeply appreciated. Without trust, there would be no learning.

We would also like to thank Travis Dotson of the Wildland Fire Lessons Learned Center for sharing his extensive knowledge with all of us. Thank you for your help creating a document that honors the experiences of those involved and shares their lessons effectively with the broader wildland fire community.

Thank you to the Okanogan County Sheriff's Office Communication Center and the Northeast Washington Interagency Communication Center for your assistance with dispatch logs and other documentation. We are also grateful to those who provided photos of the incident.

To the Commissioners and leadership of Okanogan County Fire District 3 and the leadership of the Washington State Department of Natural Resources, thank you for your commitment to the personnel involved and to the learning process.

Lastly, and most importantly, we would like to extend our heartfelt gratitude to Pam Johnson, wife of Assistant Chief Christian Johnson. The depth of your loss is difficult to fathom. Even in grief, your generosity of spirit in supporting this process has been a guiding light for us all.