



Forest Service
U.S. DEPARTMENT OF AGRICULTURE



Wildland Fire Management

Fiscal Year 2022 Annual Report and Large Fire Review



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This report satisfies the reporting requirements stipulated in Division O, section 104 of Public Law 115-141 (H.R. 1625-712 to 714), known as the Consolidated Appropriations Act, 2018 (Act). In general terms, the report analyzes cost drivers, the effectiveness of risk management techniques, effectiveness of suppression operations, effectiveness of fuels treatments, firefighter exposure, suggested corrective actions and lessons learned. The full reporting requirements identified in legislation can be found in Appendix C.

Five USDA Forest Service fires from fiscal year (FY) 2022 were analyzed to develop this report (Black Fire in New Mexico, Cedar Creek Fire in Oregon, Hermit’s Peak Fire in New Mexico, Moose Fire in Idaho, and Mosquito Fire in California. Appendix A contains expenditure data specific to these five selected fires, as well as an overview of each. The fires were selected based on their varied geographical locations, complexity, fire management objectives, response strategies, operational issues, and use of advanced decision support, and each was analyzed per the Act’s requirements.

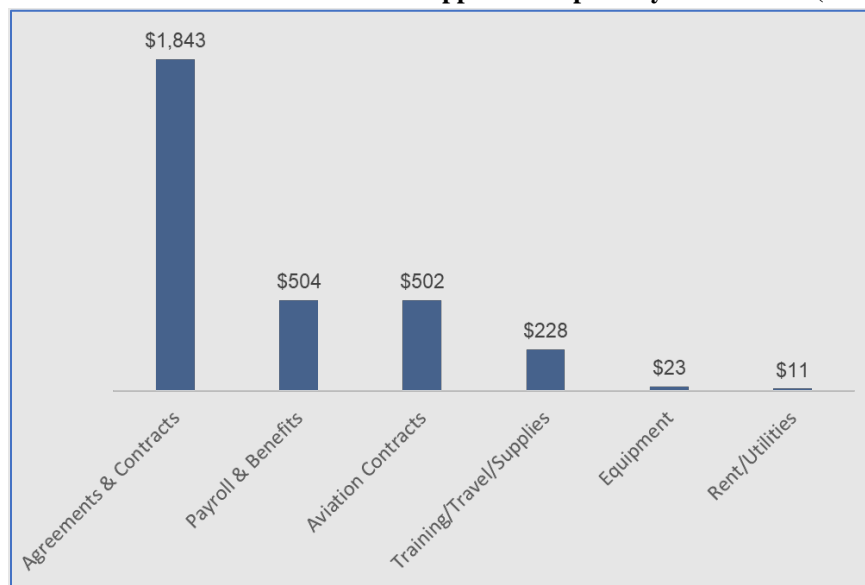
Areas of Analysis

Cost Drivers

2022 Wildfire Suppression Expenditures

In FY 2022, the Forest Service spent \$3.11 billion in fire suppression expenditures (Figure 1). The Forest Service accessed and started spending the Wildfire Suppression Operation Reserve Fund on May 8, 2022. Throughout FY 2022, the agency accessed \$1.77 billion of the Wildfire Suppression Operation Reserve Fund, 40 percent less than FY 2021.

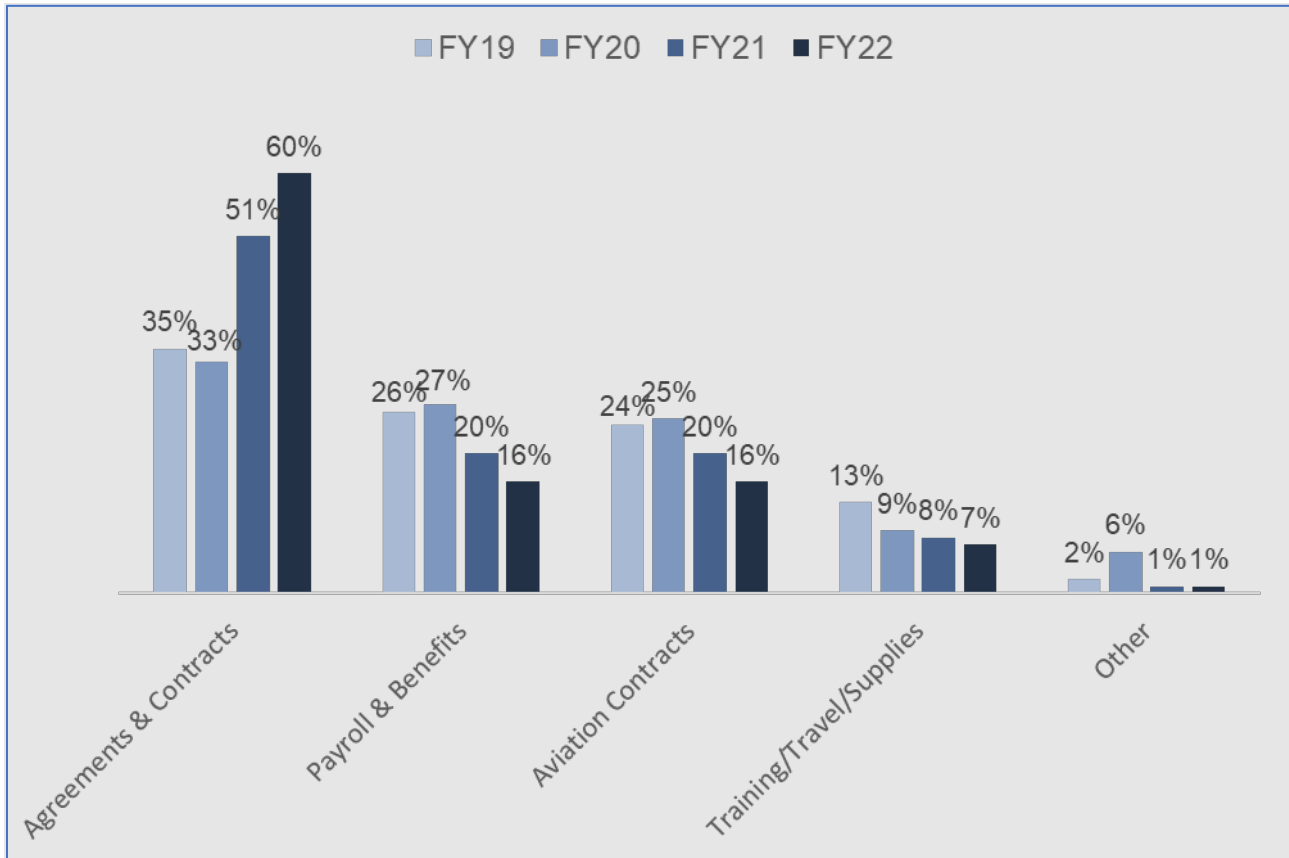
Figure 1. FY 2022 Forest Service Wildfire Suppression Spend by Cost Center (in millions).





Logistical, support and ground-based crew contracts and agreements represented nearly 60 percent of total expenditures, with personnel and aviation costs each accounting for about 16 percent of expenditures (Figure 2). This continues the trend from FY 2021 with contracting and agreement costs increasing both overall and as a percentage of total cost.

Figure 2. FY 2019 – FY 2022 Forest Service Wildfire Spend by Cost Center (percent of FY Costs).



Contracting and Cooperative Agreement Reimbursements are the Most Significant Cost Drivers

Costs for any given fire are determined by fire conditions and resource decisions with a focus on suppression objectives while minimizing exposure and risk. Thoughtful planning during fire preparedness actions such as risk management reviews, analyses, fuel treatments and pre-planning with partners can maximize cost benefits in suppression response. However, even ideal planning can be overcome by the unpredictable nature of wildland fire.

However, unlike 2021, systemic resource constraints were not a significant factor for the reliance on contracting and cooperative agreement resources. In 2021, the fire season was long and intense, as



indicated by the nation being at Preparedness Level 5 ¹from mid-July through late September. In 2022, however, the fire season was not as severe, and the nation only reached as high as Preparedness Level 4 for 10 days in September. Instead, specific circumstances of the individual fires led to differing degrees of reliance on non-federal resources.

For example, because the Hermit's Peak fire occurred early in the season, there were fewer available federal resources, since many wildland firefighters work seasonally. Early season resource orders for federal resources were unable to be filled since much of the federal workforce was engaged in pre-season training and meeting mandatory qualifications for response. The non-federal resources that were needed to supplement the available federal resources came with a higher cost. The Forest Service's movement towards a more permanent workforce, documented in the March 2022 interagency Wildland Workforce Framework, will help control this particular impact to Wildland Fire Suppression costs in the future. However, the availability of adequate response resources will continue to challenge the Agency and highlight the need for additional federal wildland firefighters.

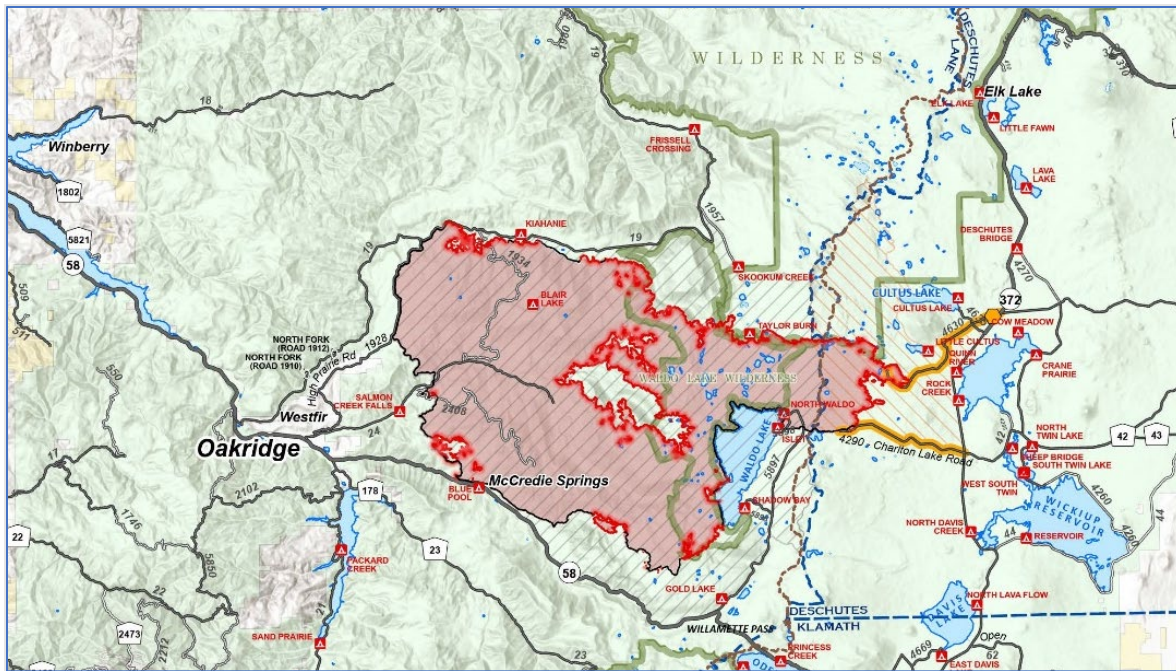
At the Moose fire, the level of non-federal resources was driven by two factors. First, local federal resources were fully committed to fire response. Second, specific equipment needs for aircraft, hand crews, and structure engine crews was dictated by private land structure protection and activated through the Idaho Department of State lands. Structure protection responsibility and capacity tends to fall to state and local resources, as federal wildland fire resources are equipped for wildland response missions.

Similarly, at the Mosquito fire, capacity needs exceeded available local federal resources, especially engines, within the timeframes needed, increasing reliance on state and local government resources. This highlights the fact that many federal resources require travel time to an incident, unlike local resources that can dispatch quickly. Partnerships with state and local resources provide flexibility for timely response and access to critical local knowledge. As noted above, structure protection often requires specialized state and local resources.

During the Cedar Creek fire, there was a short, intense period that threatened the nearby Oakridge community and required an evacuation of nearby communities (Figure 4). The number of state and private resources increased dramatically for a short period, primarily structure engines, while Oregon State Fire Marshalls were stationed in and around Oakridge to help with the evacuation, which is their jurisdictional responsibility.

¹ https://www.nifc.gov/sites/default/files/2020-09/National_Preparedness_Levels.pdf

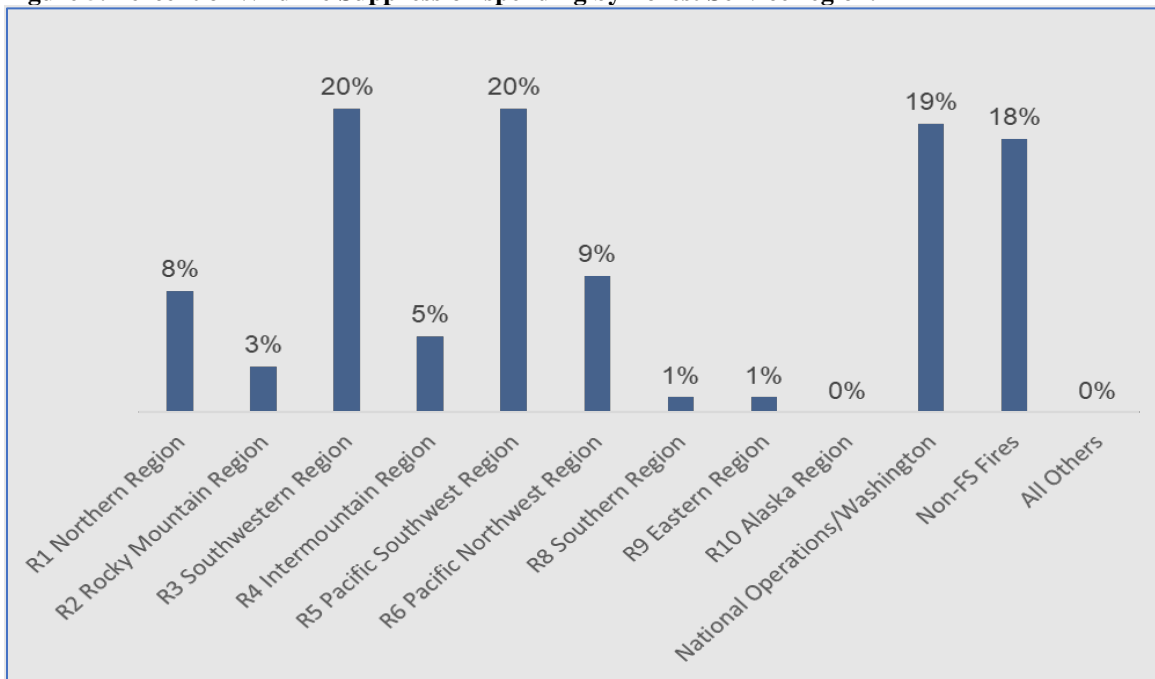
Figure 4: Extent of the Cedar Creek fire approaching Oakridge, Oregon in August 2022.



In 2022, the Southwestern Region, Region 3, made up a substantially larger part of the total suppression expenditures than in prior years driven by significant fires in New Mexico. When combined with the R5 Pacific Southwest Region (California) and R6 Pacific Northwest Region (Oregon and Washington), the three regions comprise nearly half of Forest Service suppression costs (Figure 5).



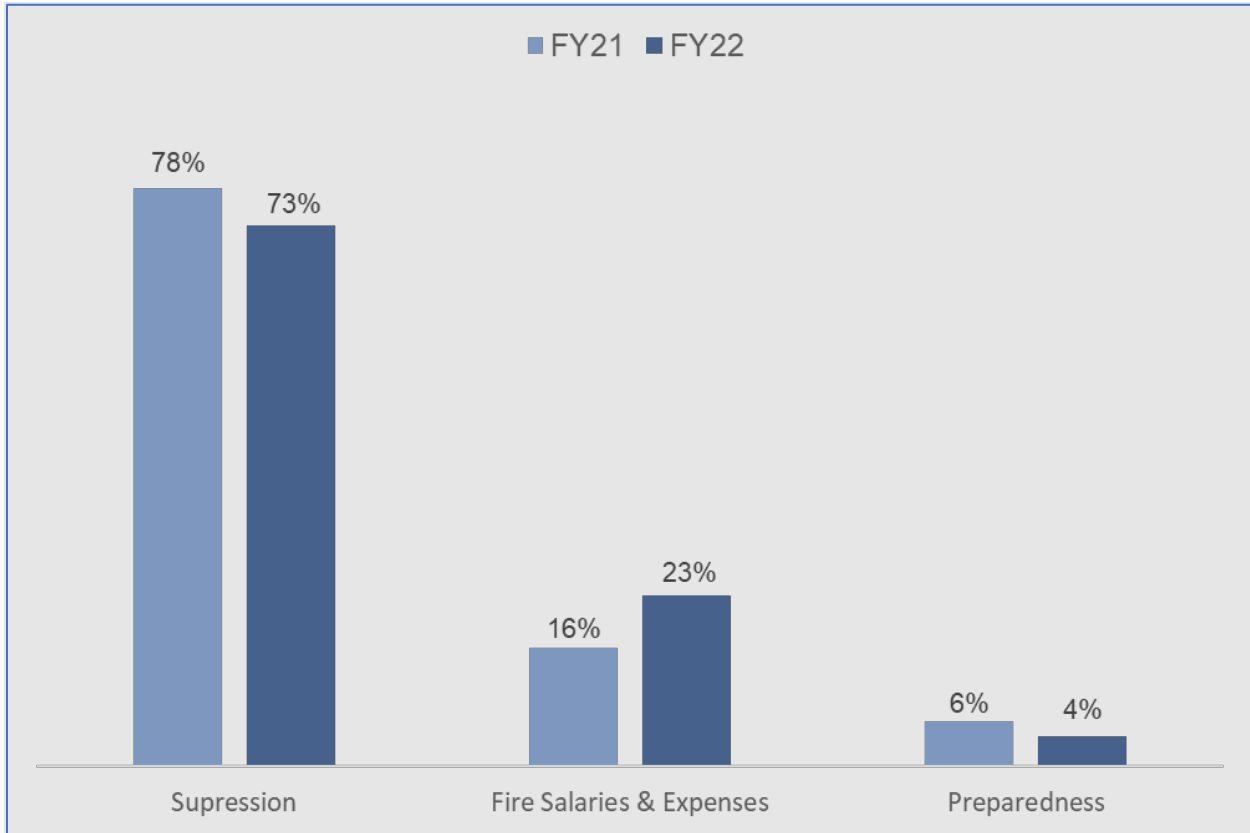
Figure 5. Percent of Wildfire Suppression spending by Forest Service region.



Total Wildfire Fire Management Costs

Total Wildland Fire Management outlays include Suppression, Salary & Expense, and Preparedness expenditures. This includes direct wildfire incident accounts as well as non-incident-specific wildfire support accounts (e.g., an aviation contract servicing multiple fires). Suppression cost represented a smaller share of total Forest Service Wildland Fire Management Costs in FY 2022 compared to FY 2021 as shown in Figure 6. Salary and expenses include standard employee pay and benefits (not inclusive of BIL supplemental payments) while suppression response includes employee pay premiums such as hazard pay and overtime. Note that suppression outlays also include costs associated with wildfire incidents in prior fiscal years that often take several years to resolve, including cost sharing amounts under mutual aid agreements with non-federal partners.

Figure 6. Distribution of Forest Service Wildland Fire Management FY22 and FY21 total spending.



Risk Management

Risk Factors and Strategic Decision Making in 2022 Wildfire Suppression Operations

Every wildfire has a unique set of considerations that affect decisions on suppression objectives and approaches, which may change in response to changing fire conditions. Fire managers balance operational decisions that must consider exposure of fire personnel; protection of life, property and infrastructure; landscape management objectives; cost versus efficacy; and the impacts of suppression actions. A broad range of risk assessment tools support strategic and operational decision making, including the Relative Risk Assessment within the Wildland Fire Decision Support System and operational risk assessments within Incident Action Plans.

Firefighter Exposure



Firefighter exposure (G in the analysis requirement of this report) and Risk Management (B in the analysis requirement of this report) are linked since firefighter safety is tied to risk management. However, risk management covers a breadth of topics.

Firefighter and public safety are the number one priority on any wildfire. Firefighter exposure to risk is an integral part of fire management decision-making, and managers often face complicated choices of whether to accept increased exposure to meet other pressing incident objectives. Managers frequently conduct risk assessments to ensure that the potential benefits of suppression actions are worth the risk to fire personnel. In some cases, we have been able to decrease risk and exposure to firefighters by leveraging technology. For example, in the Black fire, Unmanned Aircraft Systems (UAS) were used for firefighting operations to help mitigate exposure to firefighters.

The agency continues to make targeted strategic investments to improve the quality of its decisions. For example, the agency provides training in strategic risk and decision making through its Senior Leader Program and Line Officer Academy to help future decision makers learn critical concepts and best practices in wildland fire response. Further, significant effort has been made over the last several years by both the Forest Service and the Department of the Interior to improve risk management strategies, wildfire response planning, and fire analytics that speak to suppression difficulty and probability of control. These strategies played an integral part in decision-making for the reviewed fires (Appendix A) with a focus on reducing firefighter exposure to risk. For example, at the Hermit's Peak fire, risk management was considered for the more than 20,000 personnel working to contain fire spread. Decision makers avoided sending crews to many portions of the fire perimeter that were predominantly in steep, mostly roadless terrain where the risk exposure to personnel was high and the probability of success in protecting values at risk was low.

In 2022, COVID-19 had an ongoing, but significantly reduced, impact on firefighter health and operations more broadly. There were occasional losses of staff days when assigned personnel contracted COVID-19 and/or had to isolate. In some areas, such as Hermit's Peak, hybrid meetings and briefings (in person as well as on video conference platforms) were standard procedure, because of COVID-19 community levels, and continued throughout the incident. Overall, COVID-19 was not a big driver of cost and did not appear to impact broader resource availability.

Risk Management-Driven Decision-Making

Incident management teams are increasing the use of data-driven strategic decision support from agency administrators and fire managers to better manage expectations for fire personnel to protect the public, communities, and natural resources, as well as the rapid growth in program costs. Furthermore, area command teams, geographic area coordination centers, and regional and national multi-agency coordinating groups need science-based analytics to help inform allocation of resources. These ongoing



improvements are expanding the interagency focus that produce better decisions during wildfire suppression and non-wildfire incident management².

In 2022, the Forest Service continued to broaden its use of strategic and data-based risk management tools to inform decision-making throughout active incidents. Most of the reviewed wildfires used Strategic Risk Assessments (SRA) informed by data gathered during pre-season planning coupled with live information from products available through the Risk Management Assistance (RMA) Dashboard³. The Risk Management Assistance Dashboard currently provides analytics including Geographic Information System data, charts, tables, and maps on suppression difficulty, potential control locations, assessment of proposed containment lines, potential operational delineations (PODs), snag hazards, estimated ground evacuation for injured firefighters, aviation use, fire danger, severe fire weather, fire progression and history, smoke production and dispersion, and historical probability of season-ending weather events.

In the large wildfires included in this report (Appendix A), except the Black fire, the Risk Management Assistance Dashboard (RMA) data was used as part of the strategic risk-assessment process to help make risk management decisions and direct operational tactics. These decisions were driven by the relative importance of competing risks such as firefighter exposure and protecting high value resources. For example, at the Cedar Creek fire, the Risk Management Assistance Dashboard helped decision makers focus on where to place firefighters on the ground that would pose less risk to them and be the most successful. These decisions likely resulted in responders having less direct risk from fireline hazards and the use of fewer control lines meant that less damage from suppression repair. However, the size and duration of the fire increased.

In addition to the value as a decision-making tool, the Strategic Risk Assessments (SRA) process serves as a productive communication and collaboration tool between firefighting teams and their partners. At the Moose fire, the process was completed collaboratively with safety managers, operations, incident commanders and agency administrators. Once a decision was made on a strategic action, the values and relative importance as shown in the tool were used to communicate the decision with responders and help ensure firefighter and public understanding of why selected actions were being taken. At the Hermit's Peak fire, State of New Mexico Agency Administrators (AAs) were embedded with Forest Service Agency Administrators on site to ensure ongoing risk dialogues and assessments occurred across multiple Incident Management Teams. This included strategic risk assessment early in the incident that provided a format for continued dialogue with partners and interagency leaders. This learning and dialogue led to increased investment of resources to protect specific priority values identified by the State of New Mexico in the Colfax County area.

² <https://www.ready.gov/incident-management>

³ <https://experience.arcgis.com/experience/f9d7f7f920494c3db43a23a8dffe4664>



Similarly, at the Mosquito and Creek fires, the teams found that the Strategic Risk Assessments (SRA) tools aided a more meaningful discussion with agency partners and helped explain to partners and the public the basis for decisions on how the fire was being managed.

One drawback to the current suite of tools was noted at the Cedar Creek fire. The Strategic Risk Assessments (SRA) process measures risk associated with an action based on current fire behavior, weather trends, resource commitment and values at risk. This occasionally led to a snapshot for an action based on anticipated fire behavior and weather that subsequently changed dramatically over the next operational periods.

Ecological Benefit

Wildfires selected for this review grew quickly, often in wind-driven events, and exhibited extreme fire behavior, which threatened life, property, and natural resources. The need for the protection of Wildland Urban Interface communities or the subsequent damage to property is one of the reasons they were selected because they represent cost drivers that are highlighted in this report. Fires that are managed for resource benefit tend to be selected for their location and conditions that are favorable for restoring fire and fire regime on the landscape. They tend to not be the most expensive fires and typically require fewer resources assigned to them.

However, there are examples where fuel treatments completed in advance of the fires or completed by firefighters during the event helped moderate fire activity for some level of ecological benefit.

For example, during the Mosquito fire, fuel treatments such as mechanical removal of trees as well as prescribed fire footprints encountered on both federal and private land significantly modified fire behavior and were instrumental in slowing the fire progression for a large portion of the fire. The treatments were completed over the course of approximately 20 years utilizing a mix of funding which was primarily normal Forest Service appropriations.

During the Cedar Creek fire, areas where the fire was wind driven, particularly during the three-day east wind event, the fire moved through treated and untreated stands alike. When the fire had more typical conditions for fire growth, treated areas generally reduced fire intensity and impact.

In contrast, in the Moose fire, fire behavior was not modified significantly when it encountered fuel treatments due to the nature of the fire. The Moose fire occurred during a time of low relative humidity which resulted in more extreme fire behavior which was escalated by high winds. The team reviewing the fire believed that additional completed complementary treatments and different fire conditions would have been beneficial in modifying fire behavior.

The Impact of Investments in Wildfire Suppression Operations Preparedness

Forest Service investment in readiness sustains performance in initial attack success at ninety-eight percent (of wildfires are caught on initial attack). When conditions such as drought, wind events, low relative humidity and other factors are in place, the Forest Service pre-positions wildland firefighters,



using severity funds (within Suppression Operations), in key locations to extinguish wildfire starts on initial attack in areas where rapid fire growth is anticipated, and to enhance initial attack capabilities.

Suppression Management

Factors That Influence Suppression Operations Effectiveness

The effectiveness of suppression operations is a function of objectives, response strategies and tactics, conditions, and resource availability. By leveraging the best available information such as RMA analytics, managers can better identify locations and windows of time where the probability of success is highest.

For example, on the Cedar Creek fire, Incident Management Teams (IMTs) and Agency Administrators (AAs) had to balance protecting the high value resources and assets (HVRA), particularly the nearby community of Oakridge, with risk to responders. The fire was located largely in steep, inaccessible terrain near the community with untreated overgrown fuels outside of the natural fire regime and in hard-to-access areas. Aircraft support was critical to conduct and aid in direct containment operations, as was the general availability of firefighting resources. Firefighters were able to construct robust firelines early in the incident based upon potential operational delineations (PODs) to provide multiple contingency options. This was beneficial when fire behavior and weather led to major runs, but suppression forces still had successful containment of the fire on the western boundary just outside of the town of Oakridge.

Conversely, constraints on the timeliness of resources can have a negative impact on operations effectiveness. For example, the steep terrain and proximity to infrastructure led to the quick decision of a full suppression strategy within the first 30 minutes of the Mosquito fire. However, the lack of nearby available resources required them to tactically allocate resources to structure protection rather than perimeter control until more resources arrived.

Finally, communication before and during an operation is critical to suppression effectiveness. For example, at the Black fire, during the transition between two incident management teams, not all values at risk (VARs) were communicated directly to the incoming Incident Management Team by the local unit or the outgoing Incident Management Team. As a result, the incoming Incident Management Team remained unaware of the values at risk (VARs), particularly the historic Apache Camp cabin and outbuilding, leading to their eventual loss.

Landscape Considerations

Fuel Treatment Effectiveness

A century of wildland fire research has shown that low-intensity fire reduces fuels across landscapes, slows large wildfires, and diminishes fire severity. Likewise, fuel treatments reduce wildfire risk to firefighters, property, and infrastructure. Experience across the sampled fires reflected the findings from this prior research. However, some fires demonstrated the limitation of fuel treatments when faced with extreme fire behavior.



Where fuel treatments were in the right places under the right circumstances, they aided in suppression and reduced firefighter risk. However, treatments have never approached the pace and scale of the needed work as detailed in the January 2022 strategy document, “Confronting the Wildfire Crisis: A strategy for Protecting Communities and Improving Resilience in America’s Forests⁴”. Treatments have been limited by the challenge of coordinating funding and capacity to do the work with partners across landownership boundaries.

For example, during the Mosquito fire, fuel treatments encountered on both federal and private land significantly modified fire behavior and were instrumental in slowing the fire progression for a large portion of the fire. The treatments reduced the amount of prep-work required to hold the fire at specific locations throughout the incident. They also reduced the resources and time required to construct the line, thus aiding suppression efforts, and reducing overall line construction costs. Similarly, in the Black fire, areas on the north side of the fire where prescribed fire treatments had taken place offered a logical location for suppression resources to safely make a stand. Likewise, the footprint of previously managed wildfires contributed to lessening fire intensity and spread. The footprint of the Round fire slowed the Black fire’s progress around private inholdings, providing suppression resources with the ability to protect them.

In contrast, in the Moose fire, fire behavior was not modified significantly when it encountered fuel treatments due to the nature of the fire. The Moose fire occurred during a time of low relative humidity which resulted in more extreme fire behavior which was escalated by high winds. The team reviewing the fire believed that additional completed complementary treatments and different fire conditions would have been beneficial in modifying fire behavior.

The Cedar Creek fire offers examples of both situations illustrating the varied impact fuel treatments can have. In areas where the fire was wind driven, particularly during the three-day east wind event, the fire moved through treated and untreated stands alike. When the fire had more typical conditions for fire growth, treated areas generally reduced fire intensity and impact. It may be informative to compare the thinned stands with and without fuels treatment and the natural stands in conjunction with the fire progression to see if it reveals insight into fire behavior differences in these areas.

Findings and Lessons Learned

Fire Expenditures

In the 2022 fire season, contracted resources remained a critical part of the current resource capacity and big driver of overall costs. Even in this less intense fire season, federal resource availability and distribution contribute to higher costs by increasing reliance on more expensive contracted resources.

⁴ https://www.fs.usda.gov/sites/default/files/fs_media/fs_document/Confronting-the-Wildfire-Crisis.pdf



Risk Management

The use of Strategic Risk Assessments, which use Risk Management Assessment products, continues to enhance decision-making before and during wildfires. The Forest Service is leveraging risk analytics that inform better decision making and optimize resource use. These risk-informed approaches are useful, and there is also opportunity for product and model improvements.

Suppression Management

Adequate resources in the right place at the right time are an important contributor to success in wildland firefighting. In 2021, the intense fire season led to workforce capacity constraints and ongoing shortages. The less-intense 2022 season highlighted the importance of effective resource distribution capabilities throughout the extended fire-season.

When resources are plentiful, such as at Cedar Creek, suppression operations are enhanced. When resources aren't available quickly, such as the fast-moving Mosquito fire, suppression decisions focus on life and property first.

Additionally, the fires reviewed highlighted the importance of productive partner communication to help prioritize and achieve suppression objectives, both before and during incidents. Establishing preseason Land Use Agreements for things such as water sources in advance of instead of at the time of an incident could potentially help the initial suppression response.

Landscape Considerations

Under the right conditions, fuel treatments and prior fire footprints can alter fire behavior and provide opportunities to achieve suppression objectives with less cost and exposure risk. The Forest Service has launched a robust, 10-year strategy to squarely address this wildfire crisis in the places where it poses the most immediate threats to communities. [“Confronting the Wildfire Crisis: A Strategy for Protecting Communities and Improving Resilience in America’s Forests,”](#) combines an historic investment of congressional funding with years of scientific research and planning into a national effort that will dramatically increase the scale of forest health treatments over the next decade.

Prescribed Burn Operations

The Hermit’s Peak fire, as well as the Calf Canyon fire that merged with it, were the result of escaped prescribed fires. The Forest Service implemented a *National Prescribed Fire Program 90-day Learning Review* to thoughtfully consider and review these issues around prescribed fire. [The National Prescribed Fire Program Review](#) will continue to provide tools to learn from and help to minimize the risk of future escapes. We are implementing a revised Prescribed Fire Strategy to help us develop a more robust prescribed fire program in collaboration with our partners and local communities. We are also training prescribed fire practitioners through the Prescribed Fire Training Center curriculum to focus on western landscapes, which have departed from their natural fire regime and in complex terrain and fuels.



Recommended Actions for Improvement and Correction

The analysis of 2022 fires reinforced and enhanced themes which emerged from the 2021 analysis. These themes can be grouped into activities that are done before an incident begins, those done during incidents, and the approach to post-incident review.

1. Pre-Incident Preparations: Fuel Treatment and Partner Relationship

There are three key focus areas of recognized importance that will continue to benefit from ongoing improvement in the Pre-Incident phase:

- Fuel treatment and forest maintenance
- Partner relationships
- Workforce planning and capacity building

As discussed above, strategically designed and executed fuel treatments do aid wildfire suppression outcomes while helping to reduce exposure for both firefighters and high values at risk. Fully addressing this challenge will not happen in the short-term and will require at least a decade of investment and strategically sound approaches to landscape selection for treatment. Currently, two to three million acres are treated per year for hazardous fuels.

To make a meaningful difference over the next 10 years, up to an additional 20 million acres on National Forests and up to an additional 30 million acres across all lands need to be treated. There are challenges in accomplishing this, as was highlighted this year with the escaped Las Dispensas prescribed fire that became the Hermit's Peak fire, leading to loss of public trust and institutional liability issues.

Relationships with partners, nationally and locally, are critical across many aspects of the fire management mission. Establishing operating, resource use, and cost sharing agreements ahead of the season helps ensure smooth operating partnerships when incidents emerge. These agreements also need to be reviewed regularly to ensure they still reflect current conditions in terms of resources, strategies, and risk. When the partnership works well, it supports more efficient and effective execution. Beyond agreements, cross-boundary and collaborative strategic fire planning can set the stage for success by developing a shared understanding of risks and opportunities with partners and stakeholders. Further, this pre-work can reduce uncertainties and ease time pressures by developing operationally relevant information for incoming, often out-of-area incident management teams.

Addressing workforce planning and capacity building will require a commitment of support and funding from Congress as well as the involvement of all members of the wildland fire community. As a starting point, the Forest Service is undertaking an analysis of its own fire management workforce with an eye towards identifying opportunities for improvement. The Forest Service is working with Office of Personnel Management and the Department of Interior to implement the new wildland firefighting series. It is expected that the Forest Service will advertise jobs in the new series by December 2023. Additionally, the agency has been requested to offer technical assistance to congressional members and their staff on legislation proposals that would provide permanent compensation reform for wildland



firefighters, improved mental health and well-being programs, and ongoing efforts to convert seasonal employees to permanent status.

2. In-Incident: Resources and Informed Decision Making

There are two key focus areas of recognized importance that will continue to benefit from ongoing improvement in the In-Incident phase:

- Contracted cost management for both aviation and ground crews
- Expanding adoption and capabilities of analytical decision-making

The Forest Service has made great strides in developing protocols for use of aviation resources and other contracted resources, and it should continue to expand areas of expenditure analysis that identifies opportunities to leverage strategic sourcing, category management, and other tools to better manage contract spending.

The Forest Service continues to develop and deploy analytical tools that inform real-time decision making. As discussed above, this already has had an impact in the field leading to improved outcomes and reduced risk exposure. As the approach continues to expand and be fully institutionalized, the tools and techniques will have broader use and impact. This will require systematically marshalling resources with analytical capability to increase overall analytical capacity across the organization.

3. Post-Incident: Fully Integrate Continuous Improvement

The Forest Service strives to be a High Reliability Organization and seeks to learn from every incident ranging from local response to large, complex, interagency incidents.

A Learning Agency

Tools such as the Wildland Fire System Continuous Improvement Assessment (CIA) are an important part in creating a culture of continuous improvement and the ongoing effort to be a Learning Agency. Tools like the Wildland Fire Lessons Learned Center provide opportunities for firefighters and crews to discuss safety factors and protocols. After Action Reviews, designed to debrief after a wildland fire or other incident response, are designed to understand what took place, why it happened the way it did, and how to improve on it. When used correctly, they can highlight areas of strength or concern. Other programs, such as 6 Minutes for Safety,⁵ can be used to create a culture of safety by learning about common safety concerns that wildland firefighters experience. All of these efforts are used to create an agency culture focused on risk-based decisions in the complex, wildland fire environment.

⁵ <https://www.nwcg.gov/committees/6-Minutes-for-safety>



Appendices

Appendix A: Overview of Selected Fires

Table 1: Suppression costs¹ for Large Fire Review selected incidents (percentage by cost driver).

Fire Name	Forest Service Cost	Agreements & Contracts	Payroll & Benefits	Aviation Contracts	Training/ Travel/ Supplies	Equipment	Rent/ Comms/ Utilities
BLACK	\$53,262,648	65%	22%	7%	3%	2%	0.3%
CEDAR CREEK	\$27,160,143	55%	26%	14%	4%	1%	0.0%
HERMIT'S PEAK	\$17,961,609	56%	32%	3%	5%	2%	0.9%
MOOSE	\$41,821,950	55%	33%	6%	4%	2%	0.2%
MOSQUITO	\$3,483,723	0%	88%	0%	11%	0%	0.2%

¹ Table of selected fires reflects data as of the end of FY 2022-(September 30, 2022). Full fire costs span into FY 2023 and are significantly higher than this table reflects and align with public information records. Percentages may not equal 100% due to rounding.

On May 13, 2022, the **Black fire** started thirty-one miles northwest of Truth or Consequences, New Mexico on the Gila National Forest. The fire was human-caused and is under investigation. The fire spread quickly through dry timber and tall grass fuels and intensified due to high temperatures and winds. The fire threatened homes, businesses, utility infrastructure, watersheds, natural and cultural resources on private, non-Federal, and Federal lands. Due to the size of the fire, it contained numerous high value risk assets (HVRA) including watersheds, wilderness, recreation infrastructure, cultural resources, and important wildlife habitats for threatened and endangered species on Federal lands. The fire cost \$53,262,648 to suppress and consumed 325,136 acres.

On August 1, 2022, a series of 20 to 30 lightning strikes ignited the **Cedar Creek fire**, 15 miles east of Oakridge, Oregon in the Willamette National Forest. The rough nature of the terrain restricted the initial response to the fires enabling it to spread on the steep slopes. The proximity of the fire to the community of Oakridge, Highway 58, and associated infrastructure, including the Union Pacific Railroad, the Cascade Lake Highway, and associated infrastructure, led to non-Federal Highly Valued Resources (HRVA) driving the strategic response. Federal highly valued resources included Waldo Lake and Waldo Lake Campgrounds, Joe Goddard's Old Growth Grove, Waldo Lookout, Huckleberry Lookout, Wolf Mountain Communication Tower, Taylor Burn Cabin and other historic buildings, Gold Lake Bog and Campground, whitebark pine, Willamette Ski Area, Odell Lake summer homes, Cascade Lakes Highway and Infrastructure, Flat Creek Work Center, Willamette Fish Hatchery and Huckleberry Off-highway Vehicle (OHV) area. The fire cost \$27,160,143 to suppress and consumed 127,283 acres.

On April 6, 2022, seasonal winds, dry soil and other factors resulted in the Las Dispensas prescribed burn in the Santa Fe National Forest to escaping project boundaries and igniting spot fires that were declared the **Hermit's Peak fire**, 12 miles northwest of Las Vegas, New Mexico. The fire was in mixed conifer in steep, rugged terrain posing initial challenges for firefighter access. On April 19, 2022, when Hermit's Peak fire was 91 percent contained, a new fire, initially named the Calf Canyon fire,



ignited among leftover burn piles from a prescribed burn in January. On April 22, 2022, a red flag warning was issued by the National Weather Service for the area with high winds and dry conditions, leading both fires to grow rapidly toward the northeast, and exhibit crowning where the fire burns into the tree canopy. This fire was spread by winds that blew fire embers ahead of the fire front, called long-range spotting. The two fires merged on April 23. Due to the nature of the fire's cause, the fire was under a full suppression strategy upon conversion to a wildfire and for the entirety of the incident. The Forest Service implemented a *National Prescribed Fire Program 90-day Learning Review* in response to this incident. The fire was fully contained on August 21, 2022. The fire resulted in the evacuations of thousands of households and consumed hundreds of buildings with no reported fatalities. The fire placed considerable high values at risk including watersheds, lakes, riparian zones, terrestrial and aquatic wildlife and habitat, rare plants, rangeland assets, recreation assets, FS buildings, wilderness values, energy and communication infrastructure, cultural and historical resources, acequias and associated infrastructure on Federal land as well as multiple communities and private inholdings, areas of cultural and historical significance, watersheds, drinking water systems, lakes, riparian zones, rangeland assets, recreation assets (ski areas and state parks), energy and communication infrastructure, acequias and associated infrastructure, and major roadways on non-Federal land. The fire cost \$17,961,609 to suppress and consumed 341,735 acres.

On July 17, 2022, an unextinguished, unattended campfire ignited the **Moose fire** in the Salmon-Challis National Forest, approximately 17 miles north of Salmon, Idaho. The fire started on the bank of the Salmon River near Little Moose Creek and quickly spread from grass and shrubs at low elevations to mixed conifer forests at high elevations. Critical values at risk included private land/structures within the Wildland Urban Interface ⁶(WUI), private inholdings, the City of Salmon, the Salmon Municipal Watershed, Mine and Powerline infrastructure, access to river running operations by the public and outfitter/guide community, range allotments, and sold and planned timber sales. The fire cost \$41,821,950 to suppress and consumed 130,205 acres.

On September 6, 2022, the **Mosquito fire** ignited four miles east of Foresthill, California, in the Tahoe and El Dorado National Forests. Steep terrain and difficult access hindered the ability to directly attack the fire and the fuel and weather conditions led to rapid spread. The fire was near multiple communities including Michigan Bluff, Foresthill and Volcanoville, prompting the evacuation of over 11,000 people. At least 78 structures were destroyed and 13 damaged during the incident. Highly valued resources and assets on Federal lands included the Placer County Grove of Big Trees, the Tahoe National Forest American River Genetics Center, threatened and endangered species, and hydroelectric facilities operated under Federal Energy Regulatory Commission (FERC) license. On non-Federal lands, in addition to nearby communities, highly valued resources and assets (HVRA) included private industrial timber lands, municipal water supply, and utility and transmission lines. The fire was 100 percent contained on

⁶ https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_053107.pdf



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October 22, 2022, and fully controlled on November 10, 2022. The fire cost \$3,483,723 to suppress and consumed 76,788 acres.



Appendix B. Assessment Process

Performance assessments provide an objective analysis to improve program performance and operations. To ensure consistently rigorous and objective assessments, the Forest Service established a standardized process.

The Act states that the Forest Service and Department of the Interior will analyze a statistically significant sample of large fires. Fires were selected to represent a range of multiple geographic areas, costs, complexity, risk level, and suppression management strategies. This approach was designed to concisely survey the diverse variation in circumstances across Forest Service landscapes and to ensure the availability and sufficiency of data and information for reporting purposes.

Performance assessments provide assurance or conclusions based on an evaluation of appropriate evidence against stated criteria, such as specified requirements, measures, or defined business practices. For all fires, the team obtained appropriate, relevant and reliable evidence to provide a reasonable basis for any findings and conclusions.

The assessment team analyzed all the information obtained on the selected fires and required by the Act, conducted targeted interviews with Forest Service and external subject-matter experts, and synthesized their findings to develop this report.



Appendix C: Reporting Requirements for FY 2022 Annual Report and Large Fire Review

SEC. 104. Reporting Requirements

(a) IN GENERAL. —Not later than 90 days after the end of the fiscal year for which additional new budget authority is used, pursuant to section 251(b)(2)(F)(i) of the Balanced Budget and Emergency Deficit Control Act of 1985 (2 U.S.C. 901(b)(2)(F)(i)), as added by section 102 of this division, the Secretary of the Interior or the Secretary of Agriculture (as applicable), in consultation with the Director of the Office of Management and Budget, shall—

- (1) prepare an annual report with respect to the additional new budget authority;
- (2) submit to the Committees on Appropriations, the Budget, and Natural Resources of the House of Representatives and the Committees on Appropriations, the Budget, and Energy and Natural Resources of the Senate the annual report prepared under paragraph (1); and
- (3) make the report prepared under paragraph (1) available to the public.

(b) COMPONENTS. —The annual report prepared under subsection (a)(1) shall—

- (1) document obligations and outlays of the additional new budget authority for wildfire suppression operations;
- (2) identify risk-based factors that influenced management decisions with respect to wildfire suppression operations;
- (3) analyze a statistically significant sample of large fires, including an analysis for each fire of—
 - (A) cost drivers;
 - (B) the effectiveness of risk management techniques and whether fire operations strategy tracked the risk assessment;
 - (C) any resulting ecological or other benefits to the landscape;
 - (D) the impact of investments in wildfire suppression operations preparedness;
 - (E) effectiveness of wildfire suppression operations, including an analysis of resources lost versus dollars invested;
 - (F) effectiveness of any fuel treatments on fire behavior and suppression expenditures;
 - (G) levels of exposure experienced by firefighters;
 - (H) suggested corrective actions; and
 - (I) any other factors the Secretary of the Interior or Secretary of Agriculture (as applicable) determines to be appropriate;

(4) include an accounting of overall fire management and spending by the Department of the Interior or the Department of Agriculture, which shall be analyzed by fire size, cost, regional location, and other factors;

(5) describe any lessons learned in the conduct of wildfire suppression operations; and

(6) include any other elements that the Secretary of the Interior or the Secretary of Agriculture (as applicable) determines to be necessary.