



**OFFICE OF INSPECTOR GENERAL**

U.S. Department of Energy

# AUDIT REPORT

DOE-OIG-20-32

March 2020

**THE DEPARTMENT OF ENERGY'S  
WILDLAND FIRE PREVENTION  
EFFORTS AT THE OAK RIDGE  
RESERVATION**



**Department of Energy**  
Washington, DC 20585

March 4, 2020

MEMORANDUM FOR THE UNDER SECRETARY FOR SCIENCE

A handwritten signature in black ink, appearing to read "John E. McCoy II".

FROM: John E. McCoy II  
Deputy Assistant Inspector General  
for Audits and Inspections, West  
Office of Inspector General

SUBJECT: INFORMATION: Audit Report on "The Department of Energy's  
Wildland Fire Prevention Efforts at the Oak Ridge Reservation"

BACKGROUND

The Department of Energy's Oak Ridge Reservation (Reservation) consists of approximately 32,000 acres that encompasses three major Department complexes: East Tennessee Technology Park, Oak Ridge National Laboratory, and Y-12 National Security Complex. With mission-related assets estimated at over \$10 billion, these complexes are managed by three different program offices<sup>1</sup> and are operated by different prime contractors. Surrounding these developed facilities is a large undeveloped forested area that serves as a buffer between the public and Reservation activities, which support the mission of the Department. In 2003, the Department formally adopted the *2001 Federal Wildland Fire Management Policy and Implementing Actions* (Policy). Under the Policy, contractors are required to have a program in place to protect Department resources from wildland fires. As part of the program, contractors must understand, analyze, and manage risks associated with fire management activities. In addition to adopting this Policy, program offices were directed to ensure that sites under their purview had wildland fire management plans in place consistent with the Policy. For the Reservation, there is a consolidated Wildland Fire Management Program which covers the three major complexes as well as undeveloped areas.

Under the Reservation's Wildland Fire Management Program, overall responsibility for wildland fire management at the Reservation resides with the Oak Ridge Office's Reservation Management Branch<sup>2</sup> (Reservation Management). Reservation Management responsibilities

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<sup>1</sup> The three program offices include the Office of Environmental Management, Office of Science, and National Nuclear Security Administration.

<sup>2</sup> Subsequent to our fieldwork, the Reservation Management Branch and its mission were transferred from the Oak Ridge Office to the Oak Ridge National Laboratory Site Office in October 2019.

include ensuring defensible space<sup>3</sup> around Reservation structures and operations, coordinating with offsite emergency response organizations for fire protection assistance, and budgeting and planning for site-wide activities that support wildland fire management across the Reservation. In addition, Reservation Management contracts for roads and grounds maintenance services, which requires the inspection and maintenance of all existing fire roads in accordance with National Fire Protection Association (NFPA) standards<sup>4</sup>.

Within each complex, the prime contractor is responsible for implementing wildland fire mitigation activities such as clearance and maintenance of vegetation around structures to protect the facilities and personnel under their purview and coordinating their efforts with Reservation Management. The prime contractors are also responsible for performing fire hazard analyses for their facilities, including wildland fire considerations. Although the prime contractors for the three major complexes have a role in wildland fire management, the focus of this report is on Reservation Management since, as noted above, it has overall responsibility for wildland fire management at the Reservation.

While the Reservation has not been impacted by any major wildland fires, eastern Tennessee experienced a number of wildland fires in 2016. According to the Reservation's Forester, the conditions which led to the fire spread in the 2016 eastern Tennessee fires, such as fuel type and severe drought, also existed at the Reservation at that time and could reoccur. Given the risk posed by wildland fire to the Reservation's facilities and workforce, we initiated this audit to determine whether Reservation Management was taking necessary actions to identify and mitigate possible hazards associated with the impacts of wildland fire.

## RESULTS OF AUDIT

Our review found that Reservation Management had taken some actions to identify and mitigate possible hazards associated with the impacts of wildland fire. For instance, we noted that Reservation Management had agreements in place with onsite and local community fire departments, and the Tennessee Division of Forestry, to assure a quick response in case of a wildfire. In addition, emergency exercises involving Reservation emergency response organizations and offsite entities had been conducted to test emergency response capabilities, ensuring the Reservation was adequately protected in the event of a wildland fire. Additionally, we noted that Reservation Management had taken actions such as conducting prescribed burns and harvesting of trees in some areas to reduce the buildup of fuels, which could feed a wildland fire. Further, Reservation officials indicated that there is a full-time onsite Forester with nearly 30 years of experience on the Reservation who works with a local Tennessee Division of Forestry Forest Technician to support wildland fire management efforts. While these were positive measures, we found that Reservation Management had not yet fully implemented preparedness and prevention activities designed to reduce the impact from wildland fire.

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<sup>3</sup> Defensible space is the area around a structure that has been modified to reduce fire hazard. In this area, natural and man-made fuels are treated, cleared, or reduced to slow the spread of wildfire.

<sup>4</sup> NFPA 1143, *Standard for Wildland Fire Management*, and NFPA 1144 (2002 edition), *Standard for Protection of Life and Property from Wildfire*.

Specifically, we found that:

- Reservation boundaries were not being enforced in areas where Reservation property borders residential developments and residential homeowners were potentially encroaching<sup>5</sup> on Reservation property, increasing the risks for additional ignition sources, obstacles, and/or barriers in the event of a wildland fire, and exposing the Department to potential liability if an accident occurred on the property.
- Fire roads necessary for establishing fire breaks and providing access for firefighters and equipment had not been maintained as required by the Reservation's Wildland Fire Management Program and roads and grounds maintenance contracts, which could hinder response times and create unsafe conditions for firefighters. Reservation Management Branch officials agreed that the Reservation's Wildland Fire Management Plan and roads and grounds contracts required this maintenance; however, the officials stated that these documents needed to be updated because the version of the NFPA standard cited was no longer applicable to the Reservation.
- Mitigation activities such as prescribed burns and thinning of forested areas were not yet fully implemented in all areas where the need for fuel reduction had been identified by Reservation Management, allowing buildup of fuels which could feed a wildland fire.

These issues occurred, at least in part, due to complexities associated with obtaining funding for site-wide activities that support wildland fire management. In addition, a lack of Federal oversight added to the difficulties of implementing the Reservation's Wildland Fire Management Program. Further, the identified issues occurred because wildland fire risks for the Reservation as a whole had not been assessed to ensure it was adequately protected from a wildland fire event.

### **Potential Encroachment on Reservation Property**

We identified several issues related to the enforcement of the boundary between the Reservation and adjoining landowners at the wildland urban interface<sup>6</sup>, increasing the Department's risk for wildland fires and exposing the Reservation to potential legal liability if an accident were to occur. During our fieldwork, Reservation officials<sup>7</sup> identified potential encroachment by residential homeowners in areas where the Reservation's land extended beyond the Department's fence line. According to the officials, the potential encroachment was not addressed due to the fact that a current land survey of the neighboring areas had not been completed to identify boundaries. Specifically, we observed:

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<sup>5</sup> Encroachment exists when a structure is built in whole or part on a neighbor's property.

<sup>6</sup> The *2001 Federal Wildland Fire Policy* defines the wildland urban interface as the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

<sup>7</sup> Reservation officials included the Reservation Management Branch Chief, Reservation Management Industrial Hygienist, and the Reservation Forester.

- Structures, such as wooden storage sheds, playsets, and swimming pools with electrical components, installed on Reservation property;
- Access gates with private homeowner locks installed on the Reservation’s fence; and
- Combustible materials such as tree branches and leaves piled on Reservation property.

The pictures below are examples of conditions we observed. While the report only includes a few pictures to illustrate our observations, Reservation officials provided us with numerous pictures (more than 30) of other potential encroachment examples.



Examples of combustible debris (left) and a wooden shed on Reservation property as well as a private access gate with a lock (right) installed on the Reservation’s fence along North Boundary Road (Pictures taken and provided by Reservation Management Branch Chief and Reservation Forester)



Example of a swimming pool (left) along Midway Turnpike and wooden playset (right) installed on Reservation property along North Boundary Road (Pictures taken and provided by Reservation Management Branch Chief and Reservation Forester)

The issues we observed were particularly troubling since the occurrences were within locations designated as the most significant interface areas of concern by Reservation Management

officials due to the buildup of fuels that feed wildland fires. Ensuring that interface areas are adequately maintained is important due to the increased exposure to common fire causes along the Reservation boundary.

Further, while not directly related to wildland fire, the lack of enforcement in these areas was also concerning because it could have legal consequences for the Department if an accident resulting in injury or death occurred on Reservation property. When we brought this issue to the attention of Oak Ridge Office legal counsel, it was agreed that the Department is always at risk for potential litigation and that if encroachment were established, the issue would need to be addressed. Subsequent to our fieldwork, the Oak Ridge Office's Assistant Manager for Administration indicated that a survey identifying Reservation boundaries was underway and that officials were evaluating options to address potential encroachment issues.

### **Fire Roads Not Maintained as Required**

We found that fire roads necessary for establishing fire breaks and providing access for firefighters and equipment had not been maintained in accordance with applicable regulations as required by the Reservation's Wildland Fire Management Program and roads and grounds maintenance contracts. As defined in each of these documents, fire roads are to be maintained in accordance with the 2002 edition of NFPA 1144, *Standard for Protection of Life and Property from Wildfire* (NFPA 1144). The NFPA 1144 requires that fire roads support the weight of heavy equipment such as fire engines, provide a minimum road width to allow two vehicles to pass, and provide vertical clearances so vehicles can pass under the forest canopy. The Reservation's roads and grounds maintenance contracts that were in effect during the period of our review identified specific width standards and clearance requirements to maintain Reservation fire roads. Specifically, in the current roads and grounds contract, issued in 2018, Task 2.1.5, Fire Grid Road Inspection and Maintenance, requires inspection and maintenance of all existing fire grid roads in accordance with applicable regulations, citing the 2002 edition of NFPA 1144. Further, the two previous versions of the contract included in our review also contained a task related to existing fire grid road maintenance. In particular, Task 4.3.11, Construct New and Maintain Existing Fire Grid, stated that wildland fire grid roads were to meet NFPA requirements, including 13'6" overhead clearance from vegetation and 20'-30' road widths.

Since fire roads were designed to provide quick and safe access for emergency personnel and equipment into areas where fires are burning for containment, these roads are an essential component of the Reservation's wildland fire management strategy under its Wildland Fire Management Program. However, we observed fire roads that did not meet roads and grounds maintenance contract requirements for width and clearance standards as well as fire roads that were impassable due to washout conditions. With the reorganization of the Reservation Management Branch, officials stated that the current version of NFPA 1144 does not apply to the Reservation, unless there is a new development or change in land use. Therefore, according to Reservation Management officials, the roads and grounds maintenance contracts and the Reservation's Wildland Fire Management Plan need to be updated to reflect the current version of NFPA 1144, which would remove width and overhead clearance requirements.

Similar conditions were also noted in the Oak Ridge Office Year 1 Roadway Baseline Inspection report, commissioned by Reservation Management in 2018, which identified portions of 40 of the 48 reviewed wildland fire roads that did not meet road width standards, including those which also had washout conditions or excess vegetation. Noncompliance with road standards has been a self-identified and known issue since the Reservation's Wildland Fire Management Program was established in 2005. Reservation officials indicated that some of the fire roads could not meet the standards due to terrain and other barriers; therefore, a variance from the road standards was needed. However, while Reservation officials provided documentation showing that a variance was considered, officials were unable to provide evidence that a variance was requested. As noted earlier, these roads are crucial because they provide emergency personnel and equipment access into areas where fires are burning for containment. By not meeting standards, wildland fire response is restricted to smaller firefighting brush trucks with limited water capacity<sup>8</sup>, which could increase the duration of a wildland fire. Additionally, inadequate fire road widths prohibit emergency vehicles from being able to turn around or pull over, leading to traffic congestion and creating unsafe conditions for incident responders. The following images illustrate the conditions described above that we observed with Reservation Management:



Example of washout conditions (left) on Midway Turnpike as well as improper clearance and excess vegetation (right) on Sam Grubb Road  
(Picture on left taken by audit team; picture on right obtained from Oak Ridge Office Year 1 Roadway Baseline Inspection report)

Compounding the fire road maintenance issue, we found that fire roads were also impacted by failing culverts which, in some instances, led to road closures. This is concerning because the Reservation has over 580 culverts, the majority of which support fire roads.

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<sup>8</sup> As an example, a firefighting brush truck could have a 200 gallon water tank with a 250 gallons per minute (gpm) pump capacity, whereas a fire engine could have a 500-750 gallon water tank with a 1500 gpm capacity.

During our field observations, we captured the following image of a road closure due to a failed culvert:



Example of a road closure due to a failed culvert  
on Midway Turnpike  
(Picture taken by audit team)

According to Reservation Management officials, approximately 243 culverts had been identified as requiring complete replacement or significant repair. While Reservation Management started requesting funding to address these culverts in fiscal year (FY) 2017, officials indicated that years of deferred maintenance has led to failing culverts, which compromised fire road safety and access. In 2018, six culverts structurally failed and temporary fixes were implemented to reopen the roads. While these temporary fixes allowed for emergency and security vehicle access, these roads cannot support the weight of heavy equipment necessary to respond to wildland fire events. According to Reservation Management budget documentation, more culverts are anticipated to fail over the next year, which could have a direct impact on mission success. Given the importance of fire roads, the lack of proper maintenance could hinder response times and create hazardous conditions for firefighters.

To its credit, in recognition of the failing culverts noted above, Reservation Management commissioned a study in FY 2017 to assess the condition of culverts throughout the Reservation. The study, conducted by the U.S. Army Corps of Engineers, verified that more than 200 culverts were in danger of failing within the next 10 years and noted that more than 30 may fail within the next year. Based on the results of the assessment, Reservation Management developed a prioritized list of culverts for repair or replacement and had begun requesting funding to address the failing culverts.

### **Fuel Reduction Activities**

We found that mitigation activities such as prescribed burns and thinning of forested areas had not yet been fully implemented in all wildland urban interface areas where the need for fuel reduction had been identified by Reservation Management. One of the goals of the Reservation's Wildland Fire Management Program is to prevent and reduce the impact of



wildland fires through control of wildland fuels in high access areas. According to Reservation officials, actions including but not limited to conducting prescribed burns and harvesting of trees had been taken to reduce the buildup of fuels in some areas. However, over the years, efforts to complete mitigation activities have fallen short in wildland urban interface areas. In particular, during our field observations, Reservation Management officials identified the need to perform prescribed burns to remove heavy fuel loads in residential areas that border the interface. Despite recognition of the buildup of fuels which could feed wildland fires, officials indicated that there were no set plans at that time to address the risk in all the interface areas. While officials noted that a prescribed burn had been proposed in January 2017 and a draft burn plan had been developed to address one of the areas, the burn plan had not been approved at the time of our physical observations. Subsequent to our field site visit and during our fieldwork, Reservation Management officials provided a copy of the final approved burn plan for this area. Although the burn plan was approved in October 2018, according to Reservation officials, the prescribed burn could not be completed until March 2019 when weather conditions were acceptable. While this is a positive step, there were still no set plans to address the other interface areas. As noted earlier, ensuring that interface areas are adequately maintained is important due to the increased exposure to common fire causes.

In addition, we also observed a forested area along the edge of live fire ranges, which was concerning due to the potential for a wildland fire from the heavy fuel buildup within the surface danger zones<sup>9</sup> of the ranges. While Reservation Management officials have acknowledged the need for thinning of dense pine trees at several locations within these areas, there was no mitigation plan in place to reduce the threat.



Example of a forested area within the live firing ranges surface danger zones at the Central Training Facility  
(Picture taken and provided by a Y-12 National Security Complex official)

Subsequent to our fieldwork, Reservation officials indicated that although the need for mitigation efforts within surface danger zones was needed, it was considered a low priority due to accessibility issues.

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<sup>9</sup> A surface danger zone is an area identified to protect personnel from weapons firing during training activities due to the potential for ammunition to go beyond its intended target.

## **Funding Complexities Lead to Inefficiencies**

The issues we identified occurred, in part, due to the complexities associated with obtaining funding for site-wide activities that support wildland fire management. Specifically, site-wide infrastructure related activities do not have a direct budget. Instead, funding for these types of activities is negotiated among Reservation Management and the three program offices with operations on the Reservation each fiscal year. Reservation Management officials, who are no longer with the organization, as well as an Oak Ridge Office budget official who was involved in the funding negotiation process for site-wide activities, stated that obtaining funding is a challenge since program offices have different funding priorities and are reluctant to allocate funds for activities that they consider non-mission related. This approach makes it difficult to plan for and complete activities that support wildland fire management. For example, as noted earlier, Reservation Management officials identified the need to repair or replace failing culverts and started making requests for funding to address the issue in FY 2017; however, funding was not always approved at the requested amounts and, in some cases, no funding was provided. Reservation officials indicated that the initial funding request for culvert replacements for FY 2017 was not approved because program officials questioned the scope of the project. Therefore, a decision was made to fund a study to assess the condition of culverts across the Reservation. While this was a positive measure, management's efforts to agree on the study's scope of work, and then define a prioritized list of culvert repairs with all of the Reservation parties, delayed corrective actions and funding for culvert replacements until FY 2019, almost 2 years after the need was identified. This is concerning because according to the budget documentation provided, delays in addressing this issue jeopardizes facility access and fire road availability necessary for safety, security, fire protection, and mission support. As noted earlier, six culverts structurally failed in the intervening time period and temporary fixes were put in place to reopen the roads; however, access was limited because the roads could not support the weight of heavy equipment needed to respond to wildland fires. Due to the complexities associated with obtaining funding, Reservation Management cannot efficiently plan for and complete essential activities that support wildland fire management, which increases the risk that the Reservation may not be able to address issues in a timely manner.

## **Lack of Federal Oversight**

We also attributed the issues we identified to a lack of Federal oversight. While Reservation Management is responsible for overseeing a multitude of activities, including wildland fire management, Reservation Management officials indicated that they were unable to perform physical verification of wildland fire related activities, such as road maintenance or boundary enforcement, due to competing oversight responsibilities. This lack of Federal oversight was evident during our physical observations. For example, although the Reservation's Wildland Fire Management Program required a Federal official to perform periodic inspections of areas that bordered residential communities, our observations related to potential encroachment on Reservation property illustrate that the inspections were not being conducted. In addition, we also observed instances of excess vegetation around communication towers owned by offsite entities that have easement agreements with the Oak Ridge Office. Under the terms of these agreements, maintenance of vegetation is the responsibility of the equipment owner and

Federal officials are to inspect the easement areas for compliance with easement terms. However, as highlighted by the picture below and our discussion with Reservation Management officials, these inspections did not always occur.



Example of excess vegetation around communication equipment owned by an offsite entity  
(Picture taken by audit team)

During our review, we were informed that a staffing analysis was performed in 2018 following the departure of two Reservation Management employees. Based on the analysis, a request for additional staffing, specifically for a Reservation Management Specialist and a Telecommunications Specialist, was made and approved; however, due to the recent reorganization at the Oak Ridge Office, filling the positions was on hold and staffing may be reevaluated. Without adequate Federal oversight, issues that could impact the successful implementation of the Reservation's Wildland Fire Management Program may not be identified in a timely manner, increasing the risk that the Reservation is not adequately protected.

### **Wildland Fire Risk Assessments**

These issues also occurred because wildland fire risks for the Reservation as a whole had not been assessed to ensure that the Reservation is adequately protected from a wildland fire event. Specifically, we found that comprehensive evaluations and/or risk assessments, as required in the Reservation's Wildland Fire Management Program, such as a triennial risk and hazard rating analysis and wildland fire needs assessments, had not been developed. Although the 2005 Wildland Fire Management Plan identifies priorities and strategies to manage wildland fire, it has not been updated recently. When we questioned Reservation officials on why these assessments were not completed as prescribed, officials indicated that there was no onsite Federal Fire Protection Engineer with forestry experience to perform the assessments. According to the Reservation's Wildland Fire Management Program, the purpose of these assessments is to analyze the wildland fire risk to the Reservation and surrounding communities and determine necessary mitigation measures to ensure that the Reservation is adequately protected from a wildland fire event. While Reservation Management had prepared a wildfire risk summary report, this report did not meet the full intent of the assessments as outlined in the Reservation's Wildland Fire Management Program. For instance, the report did not identify mitigation measures needed to protect the Reservation. Also, this report was generated using an online application that pulled population density and wildfire ignition datasets from public sources,

such as municipality records, which did not accurately reflect actual conditions at the Reservation. According to the Reservation Forester, based on the population density dataset used by the application, the report did not necessarily account for all fire risk activities unique to the Reservation.

Additionally, under the Reservation's Wildland Fire Management Program, Reservation Management has responsibility for tracking findings and corrective actions from assessments of wildfire risks to specific facilities or operations on the Reservation. However, Reservation Management officials informed us that there is no centralized tracking system for these types of assessments. Instead, they indicated that these assessments are performed and tracked by the individual program offices for the operations under their purview. Since the results of the assessments are not centrally tracked, the full spectrum of risks and overall impact to the Reservation as a whole cannot be fully understood and mitigated.

Further, a comprehensive risk-based evaluation of mitigation activities and the potential consequences of not completing the mitigation activities had not been performed in accordance with the Policy. Under the Policy, risk management should be the foundation for all fire management activities, and risks must be understood, analyzed, communicated, and managed as they relate to the cost of either doing or not doing a particular activity. While Reservation Management had identified certain areas as high-risk based on the need for fuel reduction measures such as prescribed burns or vegetation thinning, they had not completed a formal risk assessment and had not developed a prioritized list of mitigation activities.

Without performing comprehensive analyses, the wildland fire threat to the Reservation and surrounding communities cannot be fully understood and addressed, which increases the risk that the Reservation may not be adequately protected from a wildland fire event.

### **Enhancements to Wildland Fire Protection Strategies Needed**

By not enforcing the Reservation's boundaries, the Department is at an increased risk of potential liability if an accident resulting in injury or death were to occur on Reservation property. Additionally, the Reservation includes thousands of acres that are susceptible to wildland fire, and these types of fires remain a threat during the wildland fire season. While this threat cannot be completely eliminated, certain enhancements to the Reservation's wildland fire protection strategies could provide increased protection for the Department's assets, as well as the health and safety of its workers and the public. Without comprehensive wildland fire planning and preparedness activities, the Reservation may be at a higher risk from the impacts of wildland fire events.

### **RECOMMENDATIONS**

To address the observations highlighted above, we recommend that the Under Secretary for Science, in coordination with the Administrator, National Nuclear Security Administration, work with the Managers of the National Nuclear Security Administration Production Office, Oak Ridge National Laboratory Site Office, Oak Ridge Office, and Oak Ridge Office of Environmental Management to take the following actions:

1. Assess wildland urban interface areas to ensure that Reservation boundaries are identified;
2. Determine a path forward to address potential encroachment on Reservation property, once boundaries have been established for wildland urban interface areas, to reduce higher risks and increased exposure to common and wildland fire causes and litigation, thereby protecting the safety and security of the Reservation and surrounding communities;
3. Evaluate the mechanism used to fund site-wide activities that support wildland fire management at the Reservation to ensure that necessary projects can be planned for and completed;
4. Analyze staffing to ensure essential oversight activities related to wildland fire management are performed; and
5. Update the Wildland Fire Management Plan to include an assessment of wildland fire risk for the Reservation and surrounding communities and a mitigation plan to address identified risks.

#### MANAGEMENT RESPONSE

Management concurred with the report's recommendations and indicated that corrective actions have been initiated or were planned to address the issues identified in the report. Specifically, management stated that it would complete the initiative to update the Reservation boundary map and communicate property boundaries to homeowners bordering the Reservation. Management indicated that actual encroachment situations would be addressed individually to ensure an appropriate outcome. Additionally, management stated that it would assess potential improvements to communicating and coordinating funding needs as well as Reservation Management operations and associated staffing needs. Further, management indicated that the Wildland Fire Management Plan and associated Implementation Plan would be updated to reflect current versions of standards and requirements upon which wildland fire reponse actions would be based.

Management comments are included in Attachment 3.

#### AUDITOR COMMENTS

Management's proposed corrective actions were responsive to our recommendations. While our initial report was factually accurate, we revised the report language to include measures that management has implemented to put the overall report in better context. We disagree with management's assertion that the issues described in the report do not demonstrate how the threat of wildfire to Reservation operations and the local community is increased. Our report focused on preparedness and prevention activities in areas that were identified as high risk by Reservation officials due to heavy fuel buildup, which increases fire spread and intensity. In

addition, we also identified potential encroachment issues on Reservation property, a situation created by a lack of management oversight. The potential encroachment heightens exposure to common fire causes originating from offsite sources, as well as other litigation risks. These issues represent tangible threats to the Reservation and could have an adverse impact on mission-related work.

#### Attachments

cc: Chief of Staff  
Administrator, National Nuclear Security Administration

## **OBJECTIVE, SCOPE, AND METHODOLOGY**

### OBJECTIVE

We conducted this audit to determine whether the Oak Ridge Office's Reservation Management Branch was taking necessary actions to identify and mitigate possible hazards associated with the impacts of wildland fire.

### SCOPE

This audit was conducted between October 2018 and September 2019 at Department of Energy Headquarters in Washington, DC, as well as the Oak Ridge Reservation (Reservation), which consists of the East Tennessee Technology Park, Oak Ridge National Laboratory, and Y-12 National Security Complex, and is located in Oak Ridge, Tennessee. This audit was conducted under Office of Inspector General project number A18PT039. This report is one in a series of reports that will be issued as part of the audit effort.

### METHODOLOGY

To accomplish our audit objective, we:

- Reviewed applicable Federal and Department regulations as well as National Fire Protection Association standards pertaining to wildland fire management;
- Reviewed relevant reports issued by the Office of Inspector General, Government Accountability Office, and Office of Enterprise Assessments;
- Interviewed Federal and contractor officials responsible for wildland fire management at the Reservation;
- Reviewed the Oak Ridge Reservation's Wildland Fire Management Program documentation, which encompasses the Wildland Fire Management and Implementation Plans;
- Reviewed budget requests for fiscal years 2014 to 2021 for site-wide projects related to wildland fire management;
- Reviewed mutual assistance agreements with the City of Oak Ridge and the State of Tennessee Department of Agriculture, Division of Forestry;
- Reviewed the Oak Ridge Office Year 1 Roadway Baseline Inspection and Oak Ridge Reservation Culvert Assessment Engineering Study reports;
- Reviewed contract documentation for roads and grounds maintenance services at the Reservation; and

- Performed physical observations of wildland fire mitigation efforts at the Reservation.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. Accordingly, we assessed significant internal controls and compliance with laws and regulations necessary to satisfy the audit objective. Because our review was limited, it would not necessarily have disclosed all internal control deficiencies that may have existed at the time of this audit. We did not rely on computer-processed data to satisfy our audit objective, and therefore, did not conduct a reliability assessment of computer-processed data.

Management waived the exit conference on February 20, 2020.



**PRIOR REPORT**

Audit Report on [\*The Department's Wildland Fire Planning and Preparation Efforts\*](#) (DOE/IG-0760, March 2007). The review found that Department of Energy sites within known wildfire zones had failed to perform, or were not completely successful performing, essential wildland fire mitigation activities involving the assessment and removal of vegetation and the maintenance of roads. The report concluded that contractor officials had not always adhered to established wildland fire planning and mitigation guidance. In particular, contractors had not used risk-based principles to prioritize mitigation efforts and had either omitted or not adequately considered a number of other items specified in Federal policy, Departmental guidance, and the Initial Joint Review when developing fire protection plans. In addition, Federal officials had not always actively monitored contractor wildland fire protection programs, coordinated protective efforts, or validated the effectiveness of contractor fire mitigation activities.

## MANAGEMENT COMMENTS




### Department of Energy

ORNL Site Office  
P.O. Box 2008  
Oak Ridge, Tennessee 37831-6269

January 31, 2020

MEMORANDUM FOR BRUCE B. MILLER II  
ASSISTANT INSPECTOR GENERAL FOR AUDITS & INSPECTIONS  
IG-301

FROM: JOHNNY O. MOORE, MANAGER  
ORNL SITE OFFICE  
SC-OSO 

SUBJECT: MANAGEMENT RESPONSE TO THE INSPECTOR GENERAL'S OFFICE AUDIT REPORT,  
*THE DEPARTMENT OF ENERGY'S WILDLAND FIRE PREVENTION EFFORTS AT THE  
OAK RIDGE RESERVATION*

In response to the factual accuracy verification, we appreciate the changes made to the original draft report. The following is the Department of Energy's (DOE) management response to the draft report provided on December 13, 2019.

We recognize that even the most effective programs can benefit from an external evaluation. The Audit Report does not convey the proactive risk mitigation actions the Department has taken to address wildland fire risks across three major independent complexes, and the Oak Ridge Reservation (ORR) as a whole. Rather than identifying plausible scenarios and real risk to DOE's high-value complex operations and assets, the issues within the report describe remote areas of the ORR and specific examples (e.g., swimming pools and playsets encroaching on DOE property) do not demonstrate how the threat from wildfires to either DOE operations or the local community are increased. DOE will continue our long history of maintaining an expansive and proven reservation wildland fire road system, and continue wildland fire risk mitigation to assure the health and safety of DOE employees and citizens, protection of unique national assets, and assure that we are not creating additional risk to the local community.

Overall, we concur with the recommendations contained in this subject report. With regard to recommendations #1 and #2, the Department will continue the ongoing initiative to update the ORR official boundary map, completing it no later than June 30, 2020. The Department will communicate DOE property boundaries to homeowners along residential areas bordering the ORR by June 30, 2020. Actual encroachment situations will be addressed individually to ensure an appropriate outcome. With regard to recommendation #3, the Department will complete an effort to assess potential improvements to communicating and coordinating funding needs by June 30, 2020. With regard to recommendation #4, the realignment of Reservation Management operations to the Oak Ridge National Laboratory Site Office on October 28, 2019, has streamlined operations; however, by September 30, 2020, the Department will complete an assessment of Reservation Management operations and associated staffing needs. With regard to recommendation #5, the update of the ORR

BRUCE B. MILLER II

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January 31, 2020

MANAGEMENT RESPONSE TO THE INSPECTOR GENERAL'S OFFICE AUDIT REPORT, *THE DEPARTMENT OF ENERGY'S WILDLAND FIRE PREVENTION EFFORTS AT THE OAK RIDGE RESERVATION*

Wildland Management Plan, and an associated Implementation Plan that reflects current versions of standards and requirements upon which wildland fire response actions are based, will be completed by December 31, 2020. As a continuous learning organization, the Department highly values external reviews to support potential improvements to our operations.

The Department, through a prime contract, will continue its long history of maintaining an expansive and effective system of wildland fire roads. The ORR designated fire roads are used only for transporting firefighting personnel and equipment to fire locations. These fire roads are not used for the evacuation of personnel. That capability is provided by a multitude of primary roadways in the limited areas where personnel could be impacted. The fire roads were upgraded to the 2002 National Fire Protection Association 1144 standard, considering that their singular purpose is to transport firefighting personnel and equipment, not to evacuate personnel. This approach is consistent with current national standards and has been determined by a professional fire protection engineer as appropriate for the roads' intended purpose. The existing wildland fire road system is highly effective. For example, prior to the fire roads upgrade, the average number of acres consumed in a fire event on the ORR was 13.1 acres. Since 2004, the average acreage consumed in the small number of fire events has been 1.9 acres.

If there are any questions or additional information is required, please contact me at (865) 576-3536 or John Shewairy, Reservation Manager, at (865) 576-9604.

cc:

Geoffrey L. Beausoleil, NA-NPO-1  
 Jardean L. Childs, NA-MB-1.1  
 Tynesha C. Douglass, CF-20  
 Juston K. Fontaine, SC-3  
 Tara D. Fuller, CF-20  
 Anthony V. Giannetti, S4  
 Thomas P. Griffin, CF-20  
 Timothy C. Harms, EM-5.11  
 Jeremy T. Ison, SC-3  
 Leslie J. Jackson, EM-5.112  
 Lois A. Jessup, EM-5.112  
 John A. Mullis, EM-90  
 Tina J. Pooler, SC-CSC  
 Janet B. Venneri, SC-41.1  
 George A. Webb, NA-MB-1.1  
 Michele G. Branton, SC-OSO  
 John C. Shewairy, SC-OSO  
 Claire A. Sinclair, SC-OSO

## **FEEDBACK**

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Washington, DC 20585

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