



Protecting the NNSS from Wildland Fires

A Climate at Risk for Wildfires

At 1,355 square miles, the Nevada National Security Site (NNSS) is a wide expanse of land with mountain ranges, dry lake beds and a variety of plant and animal life. The climate is arid, with an average annual rainfall of about six inches or less on the lower elevations – an ideal setting for wildland fires.

Wildland Fire Prevention

NNSS Fire & Rescue (F&R) provides fire suppression, emergency medical, hazmat mitigation, technical rescue response and fire prevention activities to the Site 24/7 year-round.

F&R has developed several strategies to mitigate the risks of wildland fires and provide protection for personnel and property at the NNSS and the surrounding areas.



The NNSS conducts annual vegetation and risk mitigation assessments to prioritize the removal of vegetation near utilities and other critical infrastructure. This, combined with other abatement, mitigation and prevention activities, helps to reduce fuel sources for fires. These areas also act as fire breaks and defensible space for firefighter access and anchor points. Groups of heavy equipment operators are trained annually in fire safety to work in, around and near any wildland fire situation. The operators plow access roads and firebreaks as necessary, and firefighters use all-terrain vehicles specially equipped with small electric pumps to stop fires from spreading.

A detailed hazards map enables firefighters to view different layers of the NNSS infrastructure such as surface-laid cables, power lines, unexploded ordnance, bore holes, abandoned mine shafts, facilities storing hazardous materials and radiological areas to further mitigate the threat posed by wildland fires.

Tracking Storm Cells

In partnership with the NOAA Air Resources Laboratory Special Operations and Research Division and the Operations Command Center (OCC), F&R uses weather forecast data and lightning detection equipment to track storm cells as they move across the Site. When these storms produce dry lightning, the potential for wildland fires increases. F&R counters that risk by placing a pair of two-man crews on wildland patrol using brush engines and all-terrain vehicles.

These crews, with the assistance of OCC operators who monitor wildland fire cameras, patrol the area of highest potential. If a strike is detected, crews will monitor the activity and if a fire starts, they will wait until the lightning activity decreases and the storm moves out before combatting the fire. These efforts have allowed F&R to control and extinguish more than a dozen wildland fires in their initial stages since 2012.

The Threat of Wildland Fires to Radiological Areas

Because of the high probability of fires at the NNSS, the release and migration of airborne radioactive particles by wildland fires on and around the Site has been



studied and tracked for decades. Just over 7% of the Site has radioactive surface contamination. These areas are well known and have been characterized and mapped through aerial radiation surveys and are regularly monitored. Access to these remote, hard-to-reach areas is prohibited. The areas with highest levels of soil contamination are sites of historical nuclear testing, and represent just over 2% of the Site.

From 1992 through 2020, the NNSS did not experience any wildland fires that spread into one of these areas, as confirmed by annual NNSS environmental reports. In 2021, the Cherrywood Fire entered a site with remnant radiological material from a Cold War era test. The NNSS completed air sampling and radiological surveys on vehicles, equipment, personnel and aircraft and the analysis showed only naturally occurring radiation at background levels, with no risk to health and human safety on or off site.

If a wildland fire occurs near one of the identified contaminated areas, fire personnel begin early preparations for possible expansion of the fire. Although radioactivity made airborne by a fire is not expected to result in significant health concerns to either on-site personnel or members of the public, firefighters still take an aggressive approach to prevent the fire from reaching those areas.

In addition to the dose monitoring and modeling conducted at the Site, the Desert Research Institute, working with members of the local community, operates the Community Environmental Monitoring Program, an independent radiological air monitoring system at 24 locations around the Site, throughout Nevada and in parts of Utah and California.

Are there Dangers to the Public?

In 1994, a detailed radiological aerial survey was conducted of the NNSS to provide baseline data in the event of an emergency. This data, along with regular surveys conducted every three years,



provides a basis from which to estimate potential radiation exposure.

If a wildfire does occur in one of the NNSS radiological areas, it could result in measurable airborne radiation at the Site, and very low levels of measurable airborne radiation outside the Site's boundaries. In particular, burning plants within contaminated areas or windstorms after a fire event could cause solid or liquid radioactive materials to become airborne.

Extremely conservative dosage estimates from burning contaminated vegetation project the highest dose for on-site workers to be one millirem at 2.5 miles downwind. The highest dose to a member of the public was calculated to be 0.1 millirem. By comparison, the average annual dose that a member of the general public experiences from naturally occurring and man-made radiation sources is 620 millirem.

In the event that radiological contamination becomes airborne due to a fire, the NNSS would conduct ongoing continued monitoring through a network of existing air monitors throughout the Site. Additionally, air samplers would be established downwind from the Site where radioactive soil contamination exists. The U.S. Environmental Protection Agency (EPA) would also establish air monitors in public areas downwind from where a fire might be burning. The EPA would report their findings to the public and work with communities, counties and the state on any appropriate protective actions.



National Nuclear Security Administration

For more information, visit:

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