

# NEVADA

## Nevada National Security Site

### Background

The Nevada National Security Site (NNSS) — formerly known as the Nevada Test Site — occupies approximately 1,350 square miles in southeastern Nye County, about 65 miles northwest of Las Vegas. The NNSS is larger than Rhode Island and comprises more than 40 percent of all U.S. Department of Energy (DOE) land holdings.<sup>1</sup> As a DOE defense program site, the primary mission of the NNSS is to help ensure the security of the United States and its allies by supporting the stewardship of the nuclear deterrent, providing emergency response capability and training and contributing to key nonproliferation and arms control initiatives. The site also has a role in National Nuclear Security Administration nuclear nonproliferation programs, nuclear emergency response capabilities and other federal projects.<sup>2</sup>



**FIGURE 1:** Nevada National Security Site Revegetation Efforts. Photo courtesy of U.S. Department of Energy.

Several regulatory agreements currently guide cleanup and disposal activities at the site. A 1999 Agreement in Principle identified activities that Nevada and DOE would undertake to work cooperatively to assure citizens of Nevada that the public's health and safety as well as the environment are protected. The Agreement in Principle and its later revisions afford Nevada the opportunity to provide input into the evaluation of the waste sent to the NNSS for disposal.<sup>3</sup> Nevada also engages with DOE EM on the review of low-level waste (LLW) transportation protocols and notifications, and coordinates with NNSS on emergency planning and response exercises.<sup>4</sup>

The 1996 Federal Facility Agreement and Consent Order (FFACO) governs remediation of historical contamination and stipulates a process to ensure that DOE and the U.S. Department of Defense thoroughly investigate and complete corrective actions for contaminated sites on the NNSS and DOE sites on and around the Tonopah Nevada Test. The NNSS also has a Resource Conservation and Recovery Act Part B permit that includes authorization to dispose of mixed LLW generated at the NNSS and other DOE sites. The permit, which was modified in 2018 to add a second mixed LLW cell,<sup>5</sup> is currently in the Nevada permit renewal process and undergoing review by the Nevada Division of Environmental Protection.

<sup>1</sup> Nevada National Security Site. (n.d.). About the NNSS. Retrieved from <https://www.nnss.gov/pages/about.html>.

<sup>2</sup> Nevada National Security Site. (n.d.). About the NNSS. Retrieved from <https://www.nnss.gov/pages/about.html>.

<sup>3</sup> Nevada Division of Environmental Protection. (n.d.). Agreement in principle (AIP). Retrieved from [https://ndep.nv.gov/uploads/documents/14524CD-FY21-26\\_AIP\\_FINAL\\_signed.pdf](https://ndep.nv.gov/uploads/documents/14524CD-FY21-26_AIP_FINAL_signed.pdf).

<sup>4</sup> National Nuclear Security Administration. (2016, November). *Nevada National Security Site waste acceptance criteria* (Report No. DOE/NV-325-16-00). Retrieved from [https://www.nnss.gov/docs/docs\\_RWM/NNSSWAC\\_DOE\\_NV--325-22-00.pdf](https://www.nnss.gov/docs/docs_RWM/NNSSWAC_DOE_NV--325-22-00.pdf).

<sup>5</sup> Nevada National Security Site. (2018, September). *Environmental report 2017*. Retrieved from [http://www.nnss.gov/docs/docs\\_LibraryPublications/2017%20NNSSER.pdf](http://www.nnss.gov/docs/docs_LibraryPublications/2017%20NNSSER.pdf).

## Major Accomplishments

Since the FFACO was signed in 1996, DOE EM has made significant progress in addressing the remediation process in several categories of contaminated sites:

- Industrial site restoration addresses facility deactivation and demolition, historical infrastructure remediation efforts and conventional weapons cleanup, including unexploded ordnance. The FFACO identified more than 2,000 such sites; to date, all but nineteen sites have been addressed, meeting specific protective closure criteria that enable DOE to close the site with use restrictions;<sup>6</sup>
- At the underground test areas, where underground nuclear tests contaminated groundwater, Nevada has approved the closure of three corrective action units, Frenchman Flat, Yucca Flat and Rainier Mesa/Shoshone Mountain, moving them into long-term monitoring. Nevada and DOE formally established use restrictions, regulatory boundaries, and a long-term monitoring strategy for each of these corrective action units. The remaining two underground test areas, with a total of 82 corrective action sites, are expected to move into the closure stage in the 2030 timeframe;<sup>7</sup>
- Soil sites contain contamination from historical nuclear detonations, safety experiments, nuclear reactor development, nuclear rocket development and hydronuclear experiments. To date, all 143 soil sites have either been clean-closed or closed in place with monitoring and use restrictions through a process to which the state and DOE have agreed;<sup>8</sup>
- The two Nevada off-site areas — Project Shoal and the Central Nevada Test Area (CNTA) — were transferred to the DOE Office of Legacy Management (DOE LM) in 2006. The surface unit at Project Shoal was clean-closed and has no monitoring requirements. Post closure monitoring is required for the CNTA surface unit. Nevada has approved moving the ground water units at the Project Shoal and CNTA sites into the closure stage; therefore, moving them into long-term monitoring;<sup>9</sup> and
- In September 2020, DOE EM transferred 70 legacy corrective action sites on and around the Tonopah Test Range to DOE LM. Ten of the 70 corrective action sites require post-closure monitoring, which is now conducted by DOE LM.

## Site-Specific Issues

Although the NNSS has a relatively small DOE EM cleanup budget (approximately \$76 million in FY2022, or just over 1 percent of all DOE cleanup funds), the site contains significant contamination in surface soils and groundwater. Contamination of groundwater is an area of focus for the state of Nevada at both the NNSS and the Nevada off-site locations; nearly 30 percent of more than 828 underground nuclear tests conducted at the site were performed near groundwater.<sup>10</sup> Nevada will continue to establish regulatory boundaries for each groundwater unit based on model-generated contaminant boundaries or potential flow paths. If radionuclide levels ever exceed established levels at those boundaries, Nevada will require DOE EM to submit a plan to meet specific groundwater unit objectives.

Nevada has identified the following priorities associated with low-level radioactive waste management at the NNSS and is working with DOE EM and other partners across the complex on these matters:

1. Waste disposal predictability and forecasting;
2. Appropriate waste classification and management based on actual waste characteristics rather than origin;

<sup>6</sup> Nevada National Security Site. (2022, September). *Environmental report 2017*. Retrieved from [https://www.nnss.gov/docs/docs\\_LibraryPublications/Nevada%20National%20Security%20Site%20Environmental%20Report%202021.%20Summary%20-%20Final.pdf](https://www.nnss.gov/docs/docs_LibraryPublications/Nevada%20National%20Security%20Site%20Environmental%20Report%202021.%20Summary%20-%20Final.pdf).

<sup>7</sup> Ibid.

<sup>8</sup> Andres, C. (2023, January 13). *Federal Facility Agreement and Consent Order (FFACO) quarterly report* [Memorandum]. Retrieved from [https://ndep.nv.gov/uploads/land-doe-ffacoaip-docs/FY23\\_Q2.pdf](https://ndep.nv.gov/uploads/land-doe-ffacoaip-docs/FY23_Q2.pdf).

<sup>9</sup> Ibid.

<sup>10</sup> Nevada National Security Site. (n.d.). Groundwater characterization. Retrieved from <https://www.nnss.gov/pages/programs/em/GroundwaterCharacterization.html>.

3. Enhanced waste verification of waste being accepted at NNSS for permanent disposition;
4. Ongoing potential incident planning and outreach to local stakeholders; and
5. Increased focus on waste characterization from the point of generation at off-site DOE facilities for disposal at the NNSS.

## Relationship to Other Sites in the Complex

The NNSS is currently the only DOE-owned disposal site available for off-site disposal of DOE-generated low-level, mixed low-level and classified waste (in contrast to the Waste Isolation Pilot Plant in New Mexico, that accepts defense-generated transuranic waste). DOE designated the NNSS and Hanford as the two regional disposal sites for off-site LLW and mixed LLW from throughout the complex in 2000: however, a moratorium is in place on most new waste shipments to Hanford until the Waste Treatment Plant is in full operation.<sup>11</sup> NNSS receipt of waste is conducted in accordance with the facility waste acceptance criteria and a waste profile review process that includes state review.

Nevada and DOE had agreed in the past several years to engage in discussions on any potential changes to the NNSS Waste Acceptance Criteria (WAC) or LLW classification in general.<sup>12</sup> Beginning in 2019, DOE EM began updating the 2016 WAC. The State of Nevada participated in review of the updates. The revised WAC was published on March 22, 2022. Discussions on potential changes to the LLW classification system continue.

For many years, there has been an increase in interactions between the State of Nevada and DOE in regard to NEPA documents identifying the NNSS as a potential waste disposal site and engagement with the DOE sites shipping wastes to the NNSS, evidenced by an increase in the number of site visits conducted and development of tools to track individual waste streams and waste characteristics.

The NNSS will continue to generate LLW into the future through its ongoing active mission. DOE will manage and dispose of the vast majority of waste on-site, with the exception of a small quantity of newly-generated transuranic waste currently stored at the site that will ultimately be shipped to the Waste Isolation Pilot Plant in New Mexico.

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<sup>11</sup> U.S. Department of Energy. (n.d.). *Hanford annual site environmental report for calendar year 2017*. Retrieved from [https://msa.hanford.gov/files.cfm/DOE-RL-2018-32\\_RevO\\_UP-DATED.pdf](https://msa.hanford.gov/files.cfm/DOE-RL-2018-32_RevO_UP-DATED.pdf).

<sup>12</sup> National Nuclear Security Administration. (2016, November). *Nevada National Security Site waste acceptance criteria* (Report No. DOE/NV-325-16-00). Retrieved from [https://www.nnss.gov/docs/docs\\_RWM/NNSSWAC\\_Nov%202016.pdf](https://www.nnss.gov/docs/docs_RWM/NNSSWAC_Nov%202016.pdf).