

# NEW MEXICO

## Los Alamos National Laboratory, Sandia National Laboratories, the Waste Isolation Pilot Plant

### Background

New Mexico hosts three major U.S. Department of Energy (DOE) sites: Los Alamos National Laboratory, Sandia National Laboratories and the Waste Isolation Pilot Plant (WIPP).

Los Alamos National Laboratory (LANL), located 25 miles northwest of Santa Fe, was established in 1942 to develop the first atomic bomb. It still serves as a key center for weapons and basic science research. The site spans more than 40 square miles and is dissected by canyons several hundred feet deep that drain into the Rio Grande River. The regional aquifer beneath the plateau is the sole water supply for the laboratory and the communities of Los Alamos and White Rock.<sup>1</sup>

Sandia National Laboratories (SNL) began operating as Z Division in 1945 on Sandia Base in Albuquerque to support LANL's efforts to build the first atomic bomb. The lab is located within Kirtland Air Force Base and shares its northern boundary with the city of Albuquerque. The regional aquifer in the Albuquerque Basin serves the nearly 1 million people who live in Albuquerque and its surrounding communities. Like LANL, SNL has contributed to groundwater contamination of its regional aquifer, with at least four groundwater plumes identified.<sup>2</sup>

WIPP, located 26 miles east of Carlsbad, was authorized by Congress in 1979 as the nation's first (and remains the only) underground repository for the permanent disposal of the nation's defense-related transuranic waste (waste that contains manmade elements heavier than uranium on the periodic table, generally protective clothing, tools and equipment).<sup>3</sup> WIPP is operated under a repository certification from the U.S. Environmental Protection Agency and a hazardous waste facility permit issued by the New Mexico Environment Department (NMED). The latter document requires that DOE EM use robust characterization procedures at each generator site across the complex before WIPP can receive waste.<sup>4</sup> DOE EM requires strict compliance with the waste analysis plan and waste acceptance criteria in the WIPP permit.



**FIGURE 1:** TRU waste shipment to WIPP. Photo courtesy of U.S. Department of Energy.

<sup>1</sup> Los Alamos National Laboratory. (n.d.). Our history. Retrieved from <https://www.lanl.gov/about/history-innovation/>.

<sup>2</sup> Sandia National Laboratories. (2022). History. Retrieved from <https://www.sandia.gov/about/history/index.html>.

<sup>3</sup> Waste Isolation Pilot Plant. (n.d.). History. Retrieved from <https://wipp.energy.gov/historytimeline.asp>.

<sup>4</sup> New Mexico Environment Department. Hazardous Waste Bureau: WIPP. Retrieved from <https://www.env.nm.gov/hazardous-waste/wipp/>.

## Major Accomplishments

In New Mexico, WIPP, LANL and SNL have all had recent successes:

- **WIPP reopening and more stringent reviews:** After being shut down for almost three years following the radiation incident of 2014, the NMED held a facility-wide inspection in late 2016 to clear the way for WIPP to resume operations. Part of this inspection was to verify that the enhanced facility emergency response processes and training and the more stringent reviews for waste coming to WIPP required by the settlement agreement and stipulated final order were being implemented.<sup>5</sup> WIPP reopened on January 9, 2017 and has received more than 7,000 containers in over 300 shipments since reopening. DOE EM is currently reviewing options for properly storing more than 400 containers of problematic LANL waste. In addition, DOE EM has submitted several permit modifications for WIPP. WIPP is currently undergoing the 10-year permit renewal process. The current permit, which expired in December 2020, remains in effect and enforceable. The anticipated completion of the permit renewal process is Spring of 2023.
- **WIPP/LANL:** In January 2016, the NMED and DOE signed a settlement agreement to address the 2014 events. They agreed to:
  - Enhanced waste characterization review and process;
  - Enhanced facility maintenance and site emergency response; and
  - Funding of various supplemental environmental projects.
- **Supplemental environmental projects at WIPP and Los Alamos National Laboratory:** The settlement agreement and stipulated final order included the completion of supplemental environmental projects for both LANL and WIPP.<sup>6</sup> Funding was provided for WIPP for the following projects: road repairs along the WIPP transportation route in southern New Mexico; triennial independent reviews of environmental regulatory compliance and operations at WIPP (the first of which has already been completed); enhanced training for local emergency responders; and the creation of a state-of-the-art emergency operations center in Carlsbad, New Mexico. Projects at the LANL include potable waterline upgrades, watershed enhancement, storm water monitoring, independent reviews of environment regulatory compliance and operations at LANL, and road projects in the Los Alamos area.
- **LANL chromium plume cleanup:** The NMED and DOE EM are partnering on the chromium plume cleanup at LANL as part of the settlement agreement signed in 2016.<sup>7</sup> For the federal fiscal year 2021, DOE EM completed 13 of the 18 milestones on time;<sup>8</sup> five milestones which remained in dispute were not submitted by DOE EM. The NMED and LANL agreed upon 19 milestones for fiscal year 2022.

<sup>5</sup> U.S. Department of Energy, Carlsbad Field Office. (2016, June 3). *Class 2 permit modification request. Revise the RCRA Contingency Plan and associated emergency response personnel training and active room ventilation flow rate: Waste Isolation Pilot Plant, Carlsbad, New Mexico* (WIPP Permit No. NM4890139088-TSDF). Retrieved from <https://www.env.nm.gov/wipp/documents/160603.pdf>.

<sup>6</sup> U.S. Department of Energy. (2016, January 22). *U.S. Department of Energy and New Mexico finalize \$74M in settlement agreements for nuclear waste incidents of 2014*. Retrieved from <https://www.energy.gov/articles/us-department-energy-and-new-mexico-finalize-74m-settlement-agreements-nuclear-waste>.

<sup>7</sup> New Mexico Environment Department. (2016, January 22). *Settlement agreement and stipulated final order*. Retrieved from [https://www.env.nm.gov/OOTS/documents/LAN-LSASFO-FINAL1\\_22\\_16.pdf](https://www.env.nm.gov/OOTS/documents/LAN-LSASFO-FINAL1_22_16.pdf).

<sup>8</sup> New Mexico Environment Department. (2022, January). *Los Alamos National Laboratory Compliance Order on Consent Public Information Meeting – FY2022 Milestones (Appendix B)*. Retrieved from [https://www.env.nm.gov/hazardous-waste/wp-content/uploads/sites/10/2022/01/HWB-LANL-NMED-Presentation-Appendix-B-Public-Meeting\\_1-6-2022.pdf](https://www.env.nm.gov/hazardous-waste/wp-content/uploads/sites/10/2022/01/HWB-LANL-NMED-Presentation-Appendix-B-Public-Meeting_1-6-2022.pdf) B-M.

- **Sandia National Laboratories:** In the past three years, Sandia National Laboratories has achieved corrective action complete status for 32 solid waste management units and areas of concern, which included industrial septic systems, drain fields, surface impoundments, open dumps, and firing and burn sites. This accomplishment has reduced the overall management of sites from close to 300 sites in the 1990s to six areas requiring corrective action; these six sites are undergoing continuing characterization and remedy efforts. In 2021, NMED approved the 5-Year Review of the Mixed Waste Landfill.

## Site-Specific Issues

Efforts to modify how the volume of nuclear waste is recorded at WIPP continue. In December 2017, DOE published a modification to WIPP's permit with the NMED in an attempt to change the way storage is tracked so that air and empty space in waste containers are not counted against waste storage capacity.<sup>9</sup> The New Mexico Environment Department approved the permit modification in January 2019.

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<sup>9</sup> New Mexico Environment Department. (n.d.). WIPP—permit page. Retrieved from <https://www.env.nm.gov/hazardous-waste/wipp-permit-page/>.