

Nevada Offsites

This fact sheet provides information about the **Nevada Offsites**. These sites are managed by the **U.S. Department of Energy Office of Legacy Management**. The Office of Legacy Management is responsible for long-term surveillance and maintenance.

Information

The Nevada Offsites program manages 10 sites in five states where underground nuclear tests and weapons-related experiments were planned outside the boundaries of the Nevada National Security Site (formerly the Nevada Test Site). The tests, experiments, and other support activities took place in the 1960s and 1970s by the U.S. Atomic Energy Commission (AEC), a predecessor agency to the U.S. Department of Energy (DOE). The 10 sites that make up the Nevada Offsites are Amchitka and Chariot (Alaska), Central Nevada Test Area, Shoal and Tonopah Test Range (Nevada), Rio Blanco and Rulison (Colorado), Gasbuggy and Gnome-Coach (New Mexico), and Salmon (Mississippi).

These tests had four distinct purposes:

- Research peaceful applications of nuclear energy (e.g., stimulating natural gas production) under the Plowshare Program.
- Improve the ability of the U.S. to detect, identify, and locate underground nuclear explosions, which was a defense-related program under the Vela Uniform Program.
- Gather data on nuclear devices, which was usually conducted jointly with the U.S. Department of Defense as part of weapons-related testing.
- Study the dispersal of radionuclides in the environment following no-yield (i.e., non-critical) nuclear tests.

Peaceful applications tests were conducted with industry partners. Underground nuclear detonations were conducted at all Nevada Offsites except the Chariot and Tonopah Test Range (TTR) sites. The TTR sites were used for aboveground, no-yield nuclear tests. After testing was complete, surface facilities were decommissioned in accordance with chemical and radiation protection standards in place at the time. Chariot was identified as a potential location to excavate a harbor using a series of nuclear explosions. Work at the Project Chariot site was canceled because of strong public opposition. No nuclear explosions were conducted at the site and no nuclear devices were ever brought to the site. Operations at all Nevada Offsites had ceased by the late 1970s.

DOE created the Environmental Management program in 1989 to evaluate and mitigate the risks and hazards posed by the legacy of nuclear weapons production and testing. This prompted a re-evaluation of sites that were not remediated through formal regulatory programs.

Nevada Offsites surveillance and maintenance activities are conducted in a way that is consistent with the state regulatory agency requirements in which they are located. Surface cleanups have been completed and site-specific environmental sampling programs are established to monitor subsurface contamination associated with the underground nuclear tests. This includes establishing institutional controls for the sites, which broadly define the instruments (documents) and mechanisms (physical features) that are maintained to prevent improper access to residual contamination and ensure long-term protectiveness at these sites.



Nevada Offsites Locations.

Nevada Offsites Descriptions

The Nevada Offsites comprise the following:

- **Amchitka** site on Amchitka Island, Alaska, at the western end of the Aleutian Island chain: Three underground nuclear tests were conducted; two were weapons related (Milrow and Cannikin) and one (Long Shot) was performed under the Vela Uniform program. Cannikin was the largest underground test in United States history.
- **Central Nevada Test Area** in Nye County, Nevada: Three underground nuclear tests were planned for weapons-related testing, but only one test was performed to evaluate the suitability of the site for high-yield, underground nuclear testing.
- **Chariot** site in northwest Alaska: No nuclear test was conducted due to technical issues and stakeholder concerns. Several bioenvironmental tests were carried out and a five-day radioactive tracer test was conducted jointly by AEC and the U.S. Geological Survey (USGS).
- **Gasbuggy** site in Rio Arriba County, New Mexico: One nuclear device was detonated underground as part of the Plowshare Program in an attempt to stimulate production of natural gas from the deeply buried, low-permeability formations below the site.
- **Gnome-Coach** site in Eddy County, New Mexico: One nuclear device was detonated in an underground salt formation as part of the Plowshare Program to collect data for the peaceful application of nuclear energy and to collect seismic measurements. Separate from the underground nuclear test, the USGS conducted a groundwater tracer test using four dissolved radionuclides.
- **Rio Blanco** site in Rio Blanco County, Colorado: Three underground nuclear devices were detonated nearly simultaneously in a single borehole as part of the Plowshare Program to study the potential for recovering natural gas from the low-permeability geologic formations beneath the site.
- **Rulison** site in Garfield County, Colorado: One underground nuclear test was performed as part of the Plowshare Program in an attempt to release commercially marketable quantities of natural gas from low-permeability geologic formations beneath the site.
- **Salmon** site in Lamar County, Mississippi: Two underground nuclear tests (Salmon and Sterling) were performed under the Vela Uniform program to study seismic signals from detonations in a salt medium (the Tatum Salt Dome). Two methane-oxygen explosions (Diode Tube and Humid Water) were conducted in the detonation cavity created by the Salmon test.
- **Shoal** site in Churchill County, Nevada: One underground nuclear test was performed under the Vela Uniform program in a seismically active region to improve the U.S. ability to detect, identify, and locate underground nuclear detonations.
- **Tonopah Test Range** in Nye County, Nevada: Four no-yield nuclear tests were conducted to evaluate the dispersal of plutonium in the environment from the chemical explosion of plutonium-bearing devices. Extensive support facilities and operations also contributed to contamination at the test sites.

The DOE Office of Legacy Management (LM) assumed responsibility for the underground test sites and the Chariot site in 2006. Tonopah Test Range responsibility transferred to LM Sept. 30, 2020. Responsibilities include implementing environmental monitoring programs, inspecting the sites and maintaining institutional controls, reviewing and reporting environmental monitoring data, managing site records and data, and maintaining the sites' integrity to be protective of human health and the environment.

Regulatory Setting

In most instances, LM has established agreements with state agencies to support LM's long-term surveillance and maintenance activities at the Nevada Offsites. The Alaska sites (Amchitka and Chariot) are managed in consultation with the Alaska Department of Environmental Conservation, following its Contaminated Sites Voluntary Cleanup Program for the surface cleanups. The surface and subsurface of the three sites in Nevada (Central Nevada Test Area, Shoal, and the Tonopah Test Range) are managed under the Federal

Facility Agreement and Consent Order, which is administered by the Nevada Division of Environmental Protection. The Colorado sites (Rio Blanco and Rulison) are managed in partnership with the Colorado Oil and Gas Conservation Commission. The surface at the two sites in New Mexico (Gasbuggy and Gnome-Coach) are managed under the Voluntary Remediation Program of the New Mexico Environment Department. LM remains responsible for monitoring project related subsurface contamination. Ownership of the Salmon site was transferred to the state of Mississippi, which operates the area as a demonstration forest. LM remains responsible for managing residual project-related contamination. LM collaborates with the Mississippi Department of Health regarding operations and management of the Salmon site.

Legacy Management Activities

Surface remediation has been completed at all Nevada Offsites, and environmental monitoring programs have been established to maintain protectiveness from any residual

contamination that remains at these sites. Long-term Surveillance activities include site inspections, sampling, and maintaining institutional controls to ensure that no inadvertent intrusions occur that would create a pathway for access to any remaining contamination at the sites.

Surface cleanups and long-term management of the sites have involved state agencies, stakeholder organizations, elected officials, and members of the public. Long-term surveillance and maintenance programs include reporting of the environmental sampling data. Reports and other site records inform state agencies and stakeholders about LM activities at the Nevada Offsites. Long-term management of the Nevada Offsites are designed to demonstrate the continuing protectiveness of the environmental remedy and protection of human health and the environment.



CONTACT INFORMATION

**IN CASE OF AN EMERGENCY AT THE SITE,
CONTACT 911**

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