Environmental Restoration

safety ❖ performance ❖ cleanup ❖ closure

The Environmental Restoration Project, which is the responsibility of the U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office Environmental Management Program, is charged with assessing the environmental impacts that resulted from atmospheric and underground nuclear tests conducted from 1951 to 1992 on the Nevada Test Site and Nevada Test and Training Range (which includes the Tonopah Test Range).

Once the nature and extent of contamination is determined, the cleanup strategies and/or corrective actions are developed. In all, the Project is responsible for nearly 3,000 corrective actions in Nevada. To ensure efficiency in managing these corrective actions, the sites are grouped according to location, physical and geological characteristics, and contaminants.

Map showing the location of the Nevada Test Site and the Nevada Test and Training Range, which includes the Tonopah Test Range.

Demolition of the Reactor Maintenance, Assembly, and Disassembly decontamination building at the Nevada Test Site.

Definitions

Computer Groundwater Model: A computer program that can integrate various forms of raw data to ultimately produce three-dimensional representations of the subsurface environment.

Contaminant Boundary: A perimeter that outlines the location of radionuclide migration over a specific period of time.

Contaminant: Substance that is not naturally found in a particular environment. Examples include radioactive materials, oils, solvents, gasoline, heavy metals (such as lead), and unexploded ordnance.

Corrective Actions: Actions taken to remediate and/or characterize contaminated sites. Examples include excavation and removal, demolition, dismantlement, entombment, administrative controls, or a combination of these techniques.

Decontamination and Decommissioning: A closure process used for facilities that have no current or future mission. The process involves collecting information about the site to learn about possible contamination (characterization), choosing the appropriate cleanup method (design), and actual site cleanup (remediation).

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Industrial Sites

Industrial Sites are facilities and land on the Nevada Test Site and Nevada Test and Training Range that include disposal wells, inactive tanks, contaminated waste sites, inactive ponds, muck piles, spill sites, drains and sumps, and ordnance sites. Once the extent of contamination (if any) is determined, an appropriate closure approach is selected to complete the corrective action. Closure approaches may entail the removal and disposal of debris (such as old batteries and paint containers), complete excavation of the site, decontamination and decommissioning activities, and/or subsequent monitoring.

Soils

Surface soils at various sites on the Nevada Test Site and the Nevada Test and Training Range were contaminated with radioactivity as a result of nuclear testing. The surface soils at these test locations were contaminated to varying degrees. All of these sites require some form of corrective action, ranging from removal of soil to closure in place with restricted access controls.

Underground Test Area

Scientists with the Underground Test Area sub-project study the effects of historic underground nuclear detonations on the groundwater at the Nevada Test Site and surrounding areas. Investigations focus on the geology and hydrology of the Nevada Test Site to determine how contaminants are transported by groundwater flow. A regional three-dimensional computer groundwater model has been developed to identify any immediate risk to the workers, the public, and the environment and to provide a formulation for developing site-specific models. Groundwater models of these individual test areas will be used to identify contaminant boundaries based on the maximum extent of contaminant migration over a 1,000 year time period. Results of the site-specific groundwater models will be used to refine a monitoring network, which is currently maintained both on and off the Nevada Test Site to ensure public health and safety. Groundwater monitoring is expected to continue in perpetuity.

Laws and Regulations

The Nevada Site Office's Environmental Restoration Project is addressing environmental contamination using a systematic remediation strategy. This strategy directs corrective actions be performed in compliance with applicable regulatory guidelines and requirements. The following are the primary laws and regulations which apply to Nevada Site Office Environmental Restoration Project activities:

- The Resource Conservation and Recovery Act is a comprehensive program for regulating and managing hazardous wastes, non-hazardous solid wastes, underground storage tanks, and promoting the use of recycled and recovered materials.

- The Federal Facility Agreement and Consent Order is an agreement among the Nevada Site Office, the State of Nevada, and the U.S. Department of Defense. It is the dominant regulatory driver for Nevada Site Office Environmental Restoration Project activities and establishes a framework for identifying, prioritizing, investigating, remediating, and monitoring the contaminated sites covered by the agreement.

- The National Environmental Policy Act requires federal agencies to fully consider and document all environmental consequences before beginning new programs or constructing new facilities.

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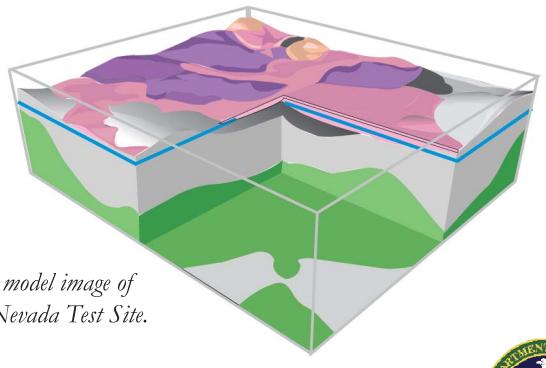

Groundwater computer model image of Frenchman Flat at the Nevada Test Site.

For information on all Nevada Site Office Environmental Management activities visit:
www.nv.doe.gov/envmgt

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