Underground Test Area Project

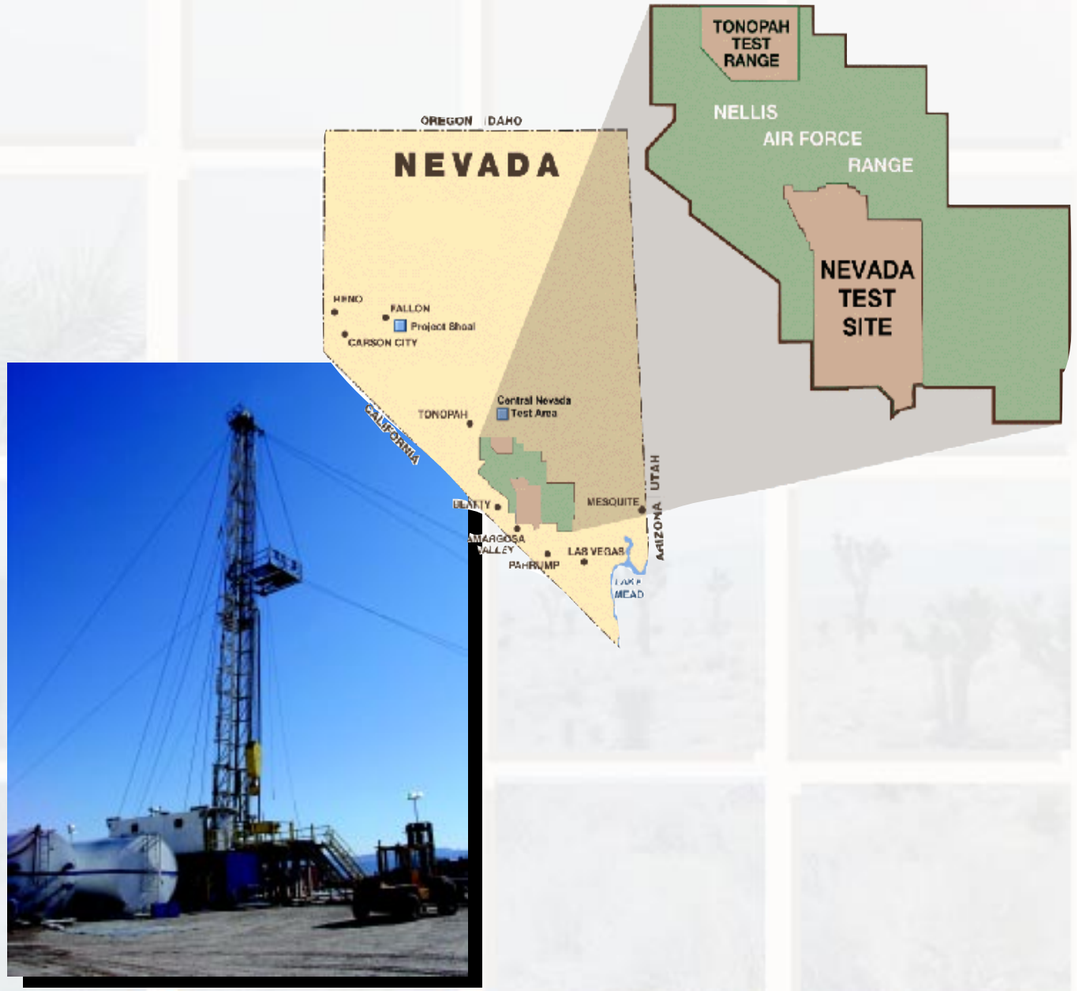
Questions and Answers

U.S. Department of Energy
Nevada Site Office

Like most Nevadans, we at the U.S. Department of Energy Nevada Site Office (DOE/NSO) are interested in protecting our State's valuable groundwater resources. The Underground Test Area, or UGTA Project, was formed to help us better understand the behavior of groundwater at the Nevada Test Site(NTS) and develop the best tools to protect the public, our workers, and the environment.

The geologic complexity of the historic NTS presents unusual challenges for the scientists who are gathering information about the area's groundwater flow and the possible movement of contaminants. The UGTA Project is working cooperatively with the State and the scientific community to find the most practical, technologically advanced ways to approach these challenges.

To explain more about how UGTA works, we offer answers to these frequently asked questions:



Q. What will be the total cost of the UGTA Project?

A. The total cost of this 141-year effort is projected at $2.2 billion, which includes 100 years of monitoring. During its first 10 years (1989-2000), the UGTA Project has spent approximately $205 million. For the period between 2000 and 2030, when characterization activities will be completed, the NSO estimates the cost at $500 million. Between 2030 and 2130, NSO calculates that the total cost will be $1.5 billion to construct the 56 wells that are needed and conduct long-term monitoring. NSO may revise the number of wells up or down once additional data becomes available as a result of the current modeling efforts. By conducting modeling now, NSO hopes to optimize its long-term monitoring efforts by judiciously placing monitoring wells in locations where they will be of maximal value.

Q. When will the UGTA Project be completed?

A. The UGTA Project is scheduled to be completed by 2130. Between 1989 and 2030, NSO will drill wells, conduct computer modeling of groundwater movement, analyze data, and install new monitoring wells based on data collected during modeling. In 2030, the long -term monitoring phase will begin and these wells will be continuously monitored and replaced every 25 years for a total of 100 years.

Q. Does the NSO test for any contaminants other than tritium?

A.

NSO actively tests for a variety of contaminants in addition to tritium, including chlorine, helium, iodine, strontium, uranium, neptunium, technetium, carbon, cesium, plutonium, and krypton.

Q. If you *do* find contamination in the groundwater, what do the NSO and the State of Nevada plan to do about it?

A.

The NSO's Environmental Monitoring Program is designed to identify and respond to situations in which elevated levels of contaminants are found. If contamination is suspected, additional analyses will be conducted to determine whether or not contamination actually exists. Should contamination be verified, especially in private wells or community water systems, NSO would request that the wells be shut down and an investigation would begin into an alternative water supply.

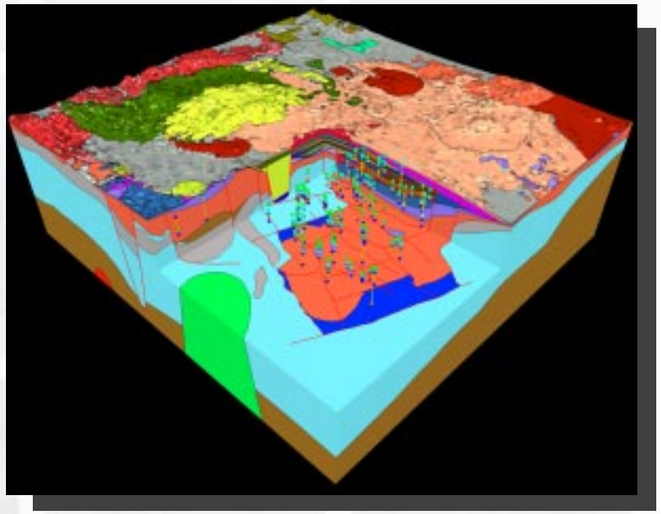
A groundwater flow and transport model is a computer-generated, three-dimensional, mathematical representation of a process that defines how water and radioactivity move through rock.

Q. What is the current NSO strategy for dealing with groundwater contamination?

A.

Currently, there is no technology available that would allow for the cleanup of deep, extensive groundwater contamination. Knowing that cleanup is not feasible, NSO's strategy is to identify contaminant boundaries and implement an effective, long-term monitoring system.

The first phase of the strategy (already complete) consisted of a regional evaluation, which explored the groundwater pathways over the entire NTS. The second phase (currently in progress) will help scientists determine contaminant movement and the boundaries that are unique to each of the underground test areas. Both of these phases incorporate various components, such as sampling, contaminant characterization, computer modeling, and process validation.



Q. What is the problem that the UGTA Project is trying to address?

A.

Since the 1950s, the United States has conducted more than 800 underground nuclear tests at the NTS as part of the nation's nuclear weapons testing program. Approximately one-third of these tests occurred near or below the water table, resulting in some radioactive contamination of the groundwater. The goal of the UGTA Project is to identify where radiological risks may exist in the groundwater, predict the movement of potentially contaminated groundwater, and define the extent of this migration. Ultimately, the information derived from these analyses will be used to establish a long-term monitoring network, consisting of new and existing wells both on and off the NTS.

It is important to note that the regional water flow systems from which Las Vegas and Pahrump draw water are separate and distinct from the water flow system associated with the NTS. As a result, neither Las Vegas nor Pahrump are at risk from contaminant migration caused by underground testing.

Q. Is there an immediate risk to the public?

A.

The NSO does not believe that there is an immediate risk to the public. The contamination associated with NSO activities is believed to be confined to areas on the NTS where nuclear tests were conducted. Based on historical information and ongoing monitoring, the movement of radioactive material from these test areas has been minimal. Where contaminant migration has occurred, it has been encountered within the immediate vicinity of the test cavities. More details on the extent of this contamination will be determined by ongoing UGTA activities as outlined in the UGTA strategy, the goal of which is to define the contaminant boundaries and protect workers and the public.

Q.

Has any groundwater contamination gone beyond the NTS boundaries?

A.

No groundwater contamination has been found beyond the boundaries of the NTS. This determination is based on the periodic sampling of approximately 40 water sources (i.e., wells and springs) surrounding the NTS. Sampling results from the majority of wells *on* the NTS have not shown any contamination either.

Q.

Should contamination migrate off the NTS, where would it go?

A.

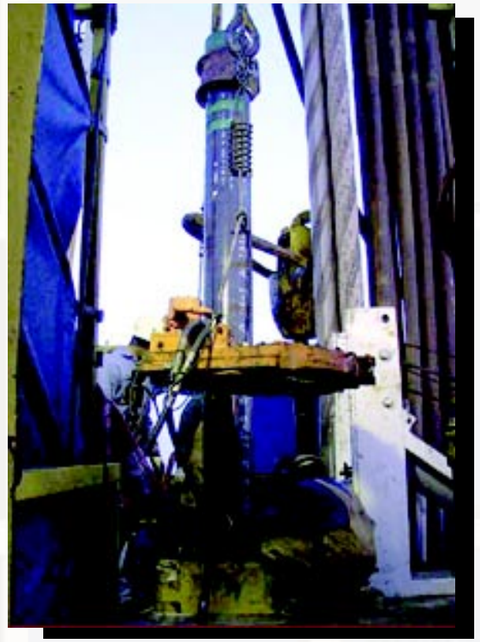
The NSO believes that contamination, should it move off the NTS, would first occur in the area of Western Pahute Mesa, located in the northwest portion of the NTS. Once off the site, migration would most likely occur in the direction of Oasis Valley, due in part to the proximity of that area to Pahute Mesa. Consequently, Pahute Mesa is the location of the greatest number of monitoring wells.

Q.

What background tritium levels have been found?

A.

Because tritium can be measured at very low concentrations (far below the regulatory standard), it serves as a sensitive indicator of groundwater contamination. Background levels of tritium in the NTS groundwater are typically below detection limits when using standard laboratory techniques, which can reliably identify tritium at levels around 1,000 picocuries per liter. When using ultra-sensitive analytical techniques, tritium can be detected at extremely low levels (a few picocuries). Based on these more sensitive analyses, it has been determined that background levels of tritium around the NTS can range from 0-30 picocuries per liter. As a means of comparison, the *Safe Drinking Water Act* standard for tritium is 20,000 picocuries per liter–meaning that water is considered safe up to this limit and poses no health risk.



Q.

Does NSO have an early warning system in place?

A.

By actively analyzing water samples from the NTS and monitoring surrounding public areas, NSO has a continuous early warning system in place. At present, NSO regularly monitors 24 wells on Pahute Mesa and another 17 in Oasis Valley, most of which have been drilled as part of the UGTA Project. The UGTA wells are used to obtain additional information regarding the geology of the area, learn more about how water moves through rock fractures, and to try to determine if contamination from the test cavities has moved to those well locations. Once characterization and modeling are complete, the wells may be turned over to NSO's Environmental Monitoring Program for inclusion in a long-term monitoring effort.

For further information about the UGTA Project and issues relating to groundwater at the Nevada Test Site, contact:

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