Site Description

The now renamed Idaho National Environmental and Engineering Laboratory (INEEL) site, owned by the U.S. Department of Energy (DOE), covers 890 square miles in southeastern Idaho, near Idaho Falls. The Atomic Energy Commission set up the National Reactor Testing Station on the grounds in 1949 to build, test, and operate various nuclear reactors, fuel processing plants, and support facilities. Earlier, parts of the site were used by the Department of Defense (DOD). In 1974, the facility changed its name to the Idaho National Engineering Laboratory (INEL) to reflect the broad scope of engineering activities it conducts.

INEEL consists of a number of major facilities, which contribute contaminants to, and draw water from, the Snake River Plain Aquifer. Approximately 17,300 tons of hazardous materials were deposited at one area through an injection well extending 100 feet into the Snake River Plain Aquifer. It also discharged liquid effluents into numerous unlined ponds and an earthen ditch. Waste materials disposed of in this area included chromium-contaminated cooling tower blow-down water, waste solvents, acids, radionuclides, and laboratory wastes. The Snake River Plain Aquifer, designated a sole source aquifer, is the source of all water used at the INEEL and surrounding communities, and is an important water resource in southeastern Idaho. Although facilities at the INEEL are several miles apart,
they are grouped together for site cleanup due to the extent of contamination. Over 3,000 people draw water from wells located within a 3-mile radius of the site. The facility employs approximately 10,500 people. The nearest large population center is Idaho Falls, which is located approximately 30 miles east of the site.

**Site Responsibility:** This site is being addressed through federal actions.

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<th>NPL Listing History</th>
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### Threats and Contaminants

**Media Affected:** *Groundwater, Soil & Sludges*

Hexavalent chromium, I-129, tritium and other contaminants have been detected in monitoring and drinking water wells in the Snake River Plain Aquifer at the Test Reactor and Central Facilities Area at the INEEL. Tests conducted in 1987, by INEEL and the U.S. Geological Survey at the Radioactive Waste Management complex on the site indicate that carbon tetrachloride and trichloroethylene (TCE) have migrated from where they were buried to the Snake River Plain Aquifer. Soils are contaminated with heavy metals such as lead and mercury, VOCs, and radionuclides. Potential health risks may exist from ingesting or coming in direct contact with the contaminated groundwater and soil. The Snake River Plain Aquifer is also impacted at the Test Area North from a trichloroethylene contaminant plume over 2 miles long.

### Cleanup Progress

Of the 357 areas listed in the site investigation, over 2/3 have been closed
out. To date 20 of 23 planned Records of Decision (RODs) have been signed. This site is being addressed in eleven stages: early actions, and ten long-term actions focusing on the Test Area North of the INEEL, the Test Reactor Area, the Idaho Chemical Processing Plant, the Central Facilities Area, the Power Burst Facility/Auxiliary Reactor Area, Borax-I and SL-I Burial Grounds, the Radioactive Waste Management Complex, the Vadose Zone, the Naval Reactors Facility, miscellaneous soils, and remaining site areas.

Early Actions: An early cleanup action was undertaken by DOE in the Fall of 1993 to locate, detonate, and dispose of unexploded munitions and associated shrapnel; and to characterize, remove, and incinerate soils contaminated with explosive residues at six specific areas at the INEEL. During the course of this action, over 100 ordnance items were exploded, and approximately 185 cubic yards of contaminated soils were taken off-site for incineration.

Test Area North of INEEL: An early action was selected in the Fall of 1992 to address treatment of the groundwater in the vicinity of the injection well at the Technical Support Facility. Operation of the interim water treatment system began in early 1994. A final action for groundwater cleanup was signed in mid-1995 and pilot-scale field studies conducted to evaluate whether alternatives to the default pump and treat system were more cost effective. A decision to amend the 1995 ROD is anticipated in the Summer 2001.

Long-Term Actions: The site has been divided into "Waste Area Groups" to facilitate study and remediation.

Waste Area Group 1: Test Area North (TAN): The RI/FS for the comprehensive investigation was completed in 1998. The Record of Decision for the comprehensive site investigation was signed by the Agencies in December 1999. Selected remedies consist of excavation, treatment and disposal of soils and underground radiologically contaminated tanks. Some contaminated surface soils have been excavated. The removal
of the radiologically contaminated tanks is scheduled for the summer of 2002.

Waste Area Group 2: Test Reactor Area: The Test Reactor Area (TRA) houses extensive facilities for studying the effects of radiation on materials, fuels, and equipment. In late 1992, a study conducted by DOE of perched water beneath the TRA facility led to a decision to take no further action. This area will continue to be monitored. An early action for the TRA Warm Waste Pond Area, which involved consolidation of approximately 23,000 cubic yards of low-level radioactive waste material, was completed by DOE in early 1994. This remedy was implemented after treatability testing revealed that chemical/physical contaminant separation was not effective due to site conditions. In late 1997 an area wide Record of Decision was completed for the TRA. Selected remedies consisted primarily of isolation, or excavation of contaminants along with institutional controls. Remedial action has been completed and the Remedial Action Report was issued in June of 2000.

Waste Area Group 3: Idaho Chemical Processing Plant: In early 1994, DOE began an investigation of 94 potential release sites and the contaminated perched water under the Chemical Processing Plant. The remedial investigation and baseline risk assessment were completed in December, 1996. The public comment period on the RI/FS ran from October to November 1998. A Record of Decision was signed in September 1999 and remedial design for the seven Operable Unit Groups is underway to include the design and construction of an on-site stabilization, evaporation and sizing treatment facility, a 500,000 cy capacity mixed waste landfill complex; contaminated soil and tank/container wastes excavation, treatment and disposal.

Waste Area Group 4: Central Facilities Area: DOE began an investigation into the nature and extent of contamination at the motor pool pond of the Central Facilities Area in late 1991. In late 1992, it was determined that no cleanup action was necessary in this area. Other studies of the Central Facilities Area began in early 1993, with the primary focus being
investigation of the nature and extent of contamination at three landfills. DOE evaluated the study's findings and capping of the landfills was selected as the remedy in late 1995. DOE completed construction of the landfill caps in 1997. A comprehensive Remedial Investigation/Feasibility Study (RI/FS) which identified the nature and extent of the remaining contamination at this site began in 1997 and a final Record of Decision was signed in July 2000. Selected remedies include excavation and disposal of lead contaminated soil to an off-site facility, capping of an old sewage drainfield containing radiologically contaminated soil, and excavation and disposal of mercury contaminated soil to the on-site mixed waste landfill complex planned for construction at INTEC. The Remedial Design/Remedial Action work plan for cleanup of the lead contaminated soil was finalized March 2001.

Waste Area Group 5: Power Burst/Auxiliary Reactor Area: In late 1991, DOE began studies of the contamination at the Power Burst Facility evaporation pond and the Auxiliary Reactor area chemical pond. In 1992, DOE selected a final cleanup remedy for the evaporation pond that included sediment removal. Cleanup activities began in 1993, and were completed in early 1995. DOE evaluated the study's findings and determined that no further actions were required for the chemical ponds. A comprehensive investigation to determine the nature and extent of contamination at this site began in May, 1997, and a Record of Decision signed in January 2000. Selected remedies include radiological tank waste removal, treatment and disposal and contaminated soil excavation, treatment and on-site disposal. Remedial action has been completed on Phase I of the cleanup and a Remedial Action Report issued in January 2002.

Waste Area Group 6: Borax-I and SL-I Burial Grounds: DOE completed an investigation into the nature and extent of contamination at these areas in 1995. In early 1996, a remedy was selected that included capping of the burial grounds. Capping was completed in November 1996. A review completed by EPA in August of 2001 found that the remedy continued to be protective.

Waste Area Group 7: Radioactive Waste Management Complex: The
primary focus of the studies at the Radioactive Waste Management complex is the Subsurface Disposal Area (SDA). It includes numerous pits, trenches, and vaults where radioactive and organic wastes were stored, as well as a large pad (Pad A) where waste was placed above grade and covered. An early action was selected in the Fall of 1993 that entails excavation and treatment of radioactive wastes in Pit 9, a one acre pit containing transuranic mixed wastes. The Pit 9 project is still under design. Studies for the remaining pits and trenches in the SDA are on-going and the draft Remedial Investigation/Feasibility Study for these pits and trenches is scheduled for March 2002. The Pad A remedial action, cap maintenance, ROD was signed in 1994. To protect groundwater, DOE began an investigation into the nature and extent of contamination at the Vadose Zone and determined that the area was contaminated with various organics. DOE completed the design of the soil vapor extraction system with catalytic oxidation in 1995, and installed it in 1996. By January 2001 over 82,000 pounds of organics have been removed.

Waste Area Group 8: Naval Reactors Facility: Areas of concern at the Naval Reactors Facility include landfills, old spills, wastewater disposal systems, and storage areas. DOE completed studies at the 3.2-mile-long Industrial Waste Ditch at the Naval Reactor Facility. In the Fall of 1994, it was determined that no cleanup action was required at the ditch. A remedy was selected that called for capping of three landfills followed by soil gas and groundwater monitoring. DOE completed construction of the landfill caps in 1996. A Five-Year Review of the landfill remedy was completed February 2001. A comprehensive Remedial Investigation/Feasibility Study which identified the nature and extent of the remaining contamination at this site was completed and a final Record of Decision was signed in September 1998. The selected remedy will be implemented in two phases; Phase I includes excavation and on-site consolidation of radiologically contaminated soil and debris and Phase II involves capping of consolidated soils. The Phase I Remedial Design/Remedial Action work plan was finalized September 1999.

Waste Area Group 9: Argonne National Laboratory-West: In 1996 a
A comprehensive Remedial Investigation/Feasibility Study was initiated to evaluate 39 release sites at ANL-W. Eight of these sites consisting of a sewage lagoon, industrial waste pond, several ditches, and a canal, were found to have an unacceptable risk and were identified for remedial action (phytoremediation) in a ROD signed in September 1998. This project is currently in the midst of remediation. It is projected that cleanup will be completed within two years.

Waste Area Group 10: Remaining areas not addressed through other cleanup actions are addressed by the WAG-10 investigation. The investigation addressing sitewide ecological risk and remaining miscellaneous sites has been completed and a Proposed Plan was issued for public comment in January of 2002. Proposed remedies include combinations of removal, containment, and institutional controls to address unexploded ordnance, related contaminants, and metals. Sitewide groundwater impacts to the Snake River Plain Aquifer will be addressed in an investigation scheduled to be completed in 2004.

Regional Contacts

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Information pertaining to this site is housed at the following location(s):
INEEL Technical Library (Administrative Records)
DOE-ID Public Reading Room
1776 Science Center Drive
Idaho Falls, ID 83415
208-526-1185

University of Idaho (Administrative Records)
University of Idaho Campus
Moscow, ID 83843
208-885-6344

Albertsons Library (Administrative Records)
Boise State University Campus
1910 University Drive
Boise, ID 83725
208-385-1621

Administrative Records also available on the Internet at:
http://ar.inel.gov/home.html