

## Chapter 2 - Environmental Compliance Summary



Native American Tool

### Chapter Highlights

Operations at the Idaho National Laboratory (INL) Site are subject to numerous federal and state environmental statutes, executive orders, and Department of Energy (DOE) orders. As a requirement of many of these regulations, the status of compliance with the regulations and releases of nonpermitted hazardous materials to the environment must be documented. Overall, the INL Site met all its regulatory commitments in 2008, and programs are in place to address areas for continued improvement.

The *National Emission Standards for Hazardous Air Pollutants-Calendar Year 2008 INL Report for Radionuclides* report was submitted to U.S. Environmental Protection Agency, DOE Headquarters, and state of Idaho officials in June 2008, in compliance with the Clean Air Act. All Emergency Planning and Community Right-to-Know Act and Resource Conservation and Recovery Act reports were submitted as scheduled. In addition, proper notifications were made to the National Response Center and appropriate state and local authorities following three reportable environmental releases.

The *Annual National Environmental Policy Act (NEPA) Planning Summary* was issued, which informs the public of the status of ongoing and planned NEPA compliance activities.

The *2009 Site Executable Plan for Energy and Transportation Fuels Management* was completed in compliance with the new Department of Energy Order 430.2B, "Departmental Energy, Utilities, and Transportation Management." The document provides plans for providing continual energy efficiency, environmental improvements, and transportation fuels efficiency at the INL Site.

The *Idaho Hazardous Waste Generator Annual Report – Calendar Year 2008* was submitted to the state of Idaho, which is authorized by Environmental Protection Agency (EPA) to regulate hazardous waste under the Resource Conservation and Recovery Act. The state of Idaho approved closure plans for three facilities in 2008. The State also conducted a hazardous waste compliance inspection of the INL Site and issued four alleged violations, which were successfully resolved.

## 2.2 INL Site Environmental Report



In 2008, 38 INL Site projects were screened for potential impacts to archeological resources. Three archival and field investigations of INL's historic archeological sites were also conducted.

There are 54 active permits for air emissions, groundwater, wastewater, and hazardous waste compliance that have been granted to the INL Site from the city of Idaho Falls, state of Idaho, Environmental Protection Agency, and the Corps of Engineers.

## 2. ENVIRONMENTAL COMPLIANCE SUMMARY

This chapter reports the compliance status of the Idaho National Laboratory (INL) Site with environmental protection requirements. Operations at the INL Site are subject to numerous federal and state environmental statutes, executive orders, and Department of Energy (DOE) orders. These are listed in Appendix A. The programs in place to attain compliance with major acts, agreements, and orders are discussed in Chapter 3.

### 2.1 Air Quality and Radiation Protection

#### 2.1.1 Clean Air Act

The Clean Air Act is the law that forms the basis for the national air pollution control effort. Basic elements of the Clean Air Act include:

- National ambient air quality standards
- National emissions standards for hazardous air pollutants
- Mobile source program
- New source performance standards
- Acid rain program
- Stratospheric ozone protection program
- Operating permit program
- Enforcement provisions.

The Environmental Protection Agency (EPA) is the federal regulatory agency of authority, but states may administer and enforce provisions of the Clean Air Act by obtaining EPA approval of a state implementation plan. The state of Idaho has been delegated such authority for all elements of the Clean Air Act except the National Emission Standards for Hazardous Air Pollutants Program.

The Idaho Air Quality Program is primarily administered through the permitting process. Potential sources of air pollutants are evaluated against regulatory criteria to determine if the source is specifically exempt from permitting requirements or if the source's emissions of regulated air pollutants equal or exceed the significant emission rates. If emission rates are determined to be significant, several actions may occur:



- Permitting determinations to demonstrate that the project or process either is below emission thresholds or listed as exempted source categories in state of Idaho regulations allowing self-exemption.
- Submitting an application for a Permit to Construct. If emissions are determined to be major per Prevention of Significant Deterioration regulations, then a Prevention of Significant Deterioration analysis must be completed. If emissions are not determined to be significant per Prevention of Significant Deterioration regulations, an application for only a Permit to Construct, without the additional Prevention of Significant Deterioration modeling and analysis, is needed. All Permits to Construct are applied for using the state of Idaho air regulations and guidelines.
- A Title V operating permit (also known as a Tier I operating permit) is required for major sources. Major sources are sources that emit, or may emit, 100 or more tons of any regulated air pollutant per year, 10 or more tons per year of any one hazardous air pollutant, or 25 or more tons per year of any combination of hazardous air pollutants.

**Title V Operating Permit**—Title V of the 1990 Clean Air Act Amendments required EPA to develop a federally enforceable operating permit program for air pollution sources to be administered by state or local air pollution agencies or both. EPA promulgated regulations in July 1992 that defined the requirements for state programs. Idaho has promulgated regulations, and EPA has given full approval of the Idaho Tier I Operating Permit Program. The INL Site has two Tier I operating permits with effective dates of June 28, 2005, and November 15, 2006.

**National Emission Standards for Hazardous Air Pollutants**—40 Code of Federal Regulations (CFR), Part 61, Subpart H, “National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities,” applies to facilities owned or operated by DOE. Administration of this subpart has not been delegated to Idaho and is regulated by EPA. The Department of Energy Idaho Operations Office (DOE-ID) submitted the *National Emission Standards for Hazardous Air Pollutants-Calendar Year 2008 INL Report for Radionuclides* (DOE-ID 2009a) to EPA, DOE Headquarters, and state of Idaho officials in June 2009. Subpart H requires the use of an EPA-approved computer model to calculate the hypothetical maximum individual effective dose equivalent to a member of the public resulting from INL Site airborne radionuclide emissions. The calculations for this code are discussed further in Chapter 8, “Dose to the Public and Biota.” Permitted sources of air pollutants at the INL Site are listed in Table 2-1.

### **2.1.2 DOE Order 5400.5, Radiation Protection of the Public and the Environment**

DOE Order 5400.5, “Radiation Protection of the Public and the Environment” represents DOE’s objective to operate its facilities and conduct its activities so that radiation exposures to members of the public are maintained within the limits established in the Order and to control radioactive contamination through the management of real and personal property. Another DOE objective is that potential exposures to members of the public be as far below the limits as is reasonably achievable and that DOE facilities have the capabilities, consistent with the types of operations conducted, to monitor routine and nonroutine releases and to assess doses to members of

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**Table 2-1. INL Site Emergency Planning and Community Right-to-Know Act (EPCRA) Reporting Status (2008).**

<b>EPCRA Section</b>	<b>Description of Reporting</b>	<b>Status</b>
Section 304	Extremely Hazardous Substance Release Notification	Required
Section 311-312	Material Safety Data Sheet/Chemical Inventory	Required
Section 313	Toxic Chemical Release Inventory Reporting	Required

the public. In addition to providing protection to members of the public, it is DOE's objective to protect the environment from radioactive contamination to the extent practical. DOE Order 5400.5 establishes requirements for:

- Measuring radioactivity in the environment
- Applying the as low as reasonably achievable process to DOE activities and facilities that cause public doses
- Performing radiation dose evaluations to demonstrate compliance with dose limits
- Managing radioactive waste
- Releasing property with residual radioactive material
- Records management and reporting.

The Order sets public dose limits of 10 mrem/yr (0.1 mSv/yr) from airborne emissions and a total of 100 mrem/yr (1 mSv/yr) above background for all exposure pathways.

In addition to public radiation dose limits, DOE Order 5400.5 establishes Derived Concentration Guide values, which serve as reference values for conducting radiological environmental protection programs at DOE facilities and sites. The Derived Concentration Guide values are presented for each of three exposure modes: (1) ingestion of water, (2) inhalation of air, and (3) immersion in a gaseous cloud. INL Site environmental monitoring data and dose to public calculations included in this report comply with the requirements of DOE Order 5400.5. Derived Concentration Guide values are used throughout this report for comparison to and interpretation of environmental monitoring and radiological dose data.

## 2.2 Environmental Remediation and Protection

### 2.2.1 Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides the process to assess and remediate areas contaminated by the release of chemically hazardous or radioactive substances or both. Nuclear research and other operations at the INL Site left behind contaminants that pose a potential risk to human health and the environment. The INL Site was placed on the National Priorities List under CERCLA on November 29, 1989. DOE-ID, the state of Idaho, and EPA Region 10 signed the Federal Facility Agreement and



Consent Order in December 1991 (DOE 1991). The Idaho Cleanup Project (ICP) contractor, in accordance with the Federal Facility Agreement and Consent Order, is conducting environmental restoration activities at the INL Site. Specific environmental restoration activities are discussed in Chapter 3.

### ***2.2.2 DOE Order 450.1A, Environmental Protection Program***

The purpose of DOE Order 450.1A, “Environmental Protection Program” is to implement sound stewardship practices that protect the air, water, land, and other natural and cultural resources affected by DOE operations, and to cost effectively meet or exceed applicable environmental, public health, and resource protection requirements. This is accomplished through environmental management systems that are part of an Integrated Safety Management System. The environmental management system must include the goals of Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management.” These goals include energy and water conservation, renewable energy, use of alternate fuels, and other “green” initiatives. The INL Site implements the requirements of DOE Order 450.1A through various environmental monitoring and protection, integrated environmental management and safety management systems, and pollution prevention/waste minimization programs. These programs are summarized in this chapter and elsewhere in this report.

### ***2.2.3 Emergency Planning and Community Right-to-Know Act***

The Emergency Planning and Community Right-to-Know Act (EPCRA) is Title III of the 1986 Superfund Amendments and Reauthorization Act to CERCLA. EPCRA is intended to help local emergency response agencies better prepare for potential chemical emergencies and to inform the public of the presence of toxic chemicals in their communities. The INL Site’s compliance with key EPCRA provisions is summarized in the following subsections and in Table 2-1.

**Section 304**—Section 304 requires owners and operators of facilities where hazardous chemicals are produced, used, or stored to report releases of CERCLA hazardous substances or extremely hazardous substances that exceed reportable quantity limits to state and local authorities (i.e., state emergency response commissions and local emergency planning committees). In 2008, there was one release of a CERCLA-reportable chemical at the INL Site. At the Materials and Fuels Complex, 13.6 kg (30 lb) of lead pieces were discovered beyond the facility fence boundary sitting on the soil surface. The lead was removed and sent to a hazardous waste satellite accumulation area within 24 hours of discovery. The lead was considered to be a spill that exceeded the CERCLA hazardous substance reportable quantity of 4.5 kg (10 lb). Notifications were made to the National Response Center and to appropriate state and local authorities.

**Sections 311 and 312**—Sections 311 and 312 require facilities manufacturing, processing, or storing designated hazardous chemicals to make material safety data sheets describing the properties and health effects of these chemicals available to state and local officials and local fire departments. Facilities are also required to report, to state and local officials and local fire departments, inventories of all chemicals that have material safety data sheets. The INL Site satisfies the requirements of Section 311 by submitting quarterly reports to state and

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local officials and fire departments, identifying chemicals that exceed regulatory thresholds. In compliance with Section 312, the annual Emergency and Hazardous Chemical Inventory (Tier II) Report was provided to local emergency planning committees, state emergency response commissions, and local fire departments by the regulatory due date of March 1. This report includes the types, quantities, and locations of hazardous chemicals and extremely hazardous substances stored at INL Site facilities that exceeded regulatory thresholds.

**Section 313**—Section 313 requires facilities to submit a Toxic Chemical Release Inventory Form annually for each of the more than 600 Toxics Release Inventory chemicals that are manufactured, processed, or otherwise used above applicable threshold quantities. Releases under EPCRA 313 reporting include transfers to waste treatment and disposal facilities off the INL Site, air emissions, recycling, and other activities. The INL Site submitted Toxic Chemical Release Inventory Forms for benzene, lead, naphthalene, nickel, polycyclic aromatic compounds, and toluene to EPA and the state of Idaho by the regulatory due date of July 1.

**Reportable Environmental Releases**—In addition to the release reported under EPCRA Section 304, two other environmental releases were determined to be reportable to external agencies in 2008. Both releases were appropriately remediated, and neither posed significant threats to the environment or human health. The following two releases were reported:

- At Test Area North, a hydraulic hose that feeds the processor device to a trackhoe broke, causing 113.6 L (35 gal) of hydraulic fluid to spill to debris, snow, and soil. The trackhoe was placed out of service until the broken hose was replaced. The quantity of hydraulic fluid exceeded the reportable quantity of 94.6 L (25 gal). The spill was remediated within 24 hours of discovery.
- At the Advanced Test Reactor Complex, approximately 236.6 mL (8 oz) of oil leaked from a fire water pump located in Building TRA-633, to a drain that feeds to the cold industrial waste pond. The cold waste pond is unlined and receives approximately 250,000 gallons of water per day. No visible sheen was on the water. Although no reportable quantity limits were exceeded, the release was determined to be reportable because the release could not be cleaned up within 24 hours.

### **2.2.4 National Environmental Policy Act**

The National Environmental Policy Act (NEPA) requires federal agencies to consider and analyze potential environmental impacts of proposed actions and explore appropriate alternatives to mitigate those impacts, including a “no action” alternative. Agencies are required to inform the public of the proposed actions, impacts, and alternatives and consider public feedback in selecting an alternative. DOE implements NEPA according to procedures in the CFR (40 CFR 1500; 10 CFR 1021) and assigns authorities and responsibilities according to DOE Order 451.1B, “National Environmental Policy Act Compliance Program.” Processes specific to DOE-ID are set forth in its Idaho Operations Office Management System.

DOE-ID issued the Annual NEPA Planning Summary on February 8, 2008. The summary is a requirement of DOE Order 451.1B, and it is prepared to inform the public and other DOE elements of:



- The status of ongoing NEPA compliance activities
- Environmental assessments expected to be prepared in the next 12 months
- Environmental impact statements (EISs) expected to be prepared in the next 24 months
- The planned cost and schedule for completion of each NEPA review identified.

**Ongoing NEPA Reviews of INL Site Projects**—The *Idaho High-Level Waste and Facilities Disposition Environmental Impact Statement* (DOE 2002) describes the potential environmental impacts of various alternatives for treating and managing high-level radioactive waste and related radioactive wastes and facilities at the Idaho Nuclear Technology and Engineering Center (INTEC). DOE received and considered agency and public comments on a draft EIS. In response to those comments and updated information, DOE incorporated changes into the final EIS. The final EIS was issued in the fall of 2002.

DOE planned for a phased decision-making process. In December 2005, DOE issued a record of decision for the Idaho High-Level Waste and Facilities Disposition Environmental Impact Statement (HLW & FD EIS) (DOE 2005). DOE decided to:

- Treat sodium bearing liquid waste using the steam reforming technology
- Conduct performance-based closure on all existing facilities directly related to the High-Level Waste Program at INTEC, except for the INTEC Tank Farm Facility and bin sets, once their missions are complete
- Design and construct new waste processing facilities needed to implement the decisions in the record of decision consistent with clean closure methods and planned to be clean-closed when their missions are complete
- Develop high-level waste calcine retrieval demonstration process and conduct risk-based analysis, including disposal options, focused on the calcine stored at INTEC.

An amended record of decision (71 FR 228) addressing closure of the INTEC Tank Farm Facility was issued in November 2006 in coordination with the Secretary of Energy's determination and in consultation with the Nuclear Regulatory Commission, under Section 3116 of the Fiscal Year 2005 Ronald W. Reagan National Defense Authorization Act. An additional record of decision for high-level waste calcine disposition is scheduled for issuance in 2009.

The *Environmental Assessment for the Idaho National Laboratory Remote-Handled Waste Disposition* (formerly known as the Remote Treatment Project), proposes to provide heavily shielded handling services for the sodium-contaminated remote-handled (RH) waste stored at the Materials and Fuels Complex, other INL Site legacy RH waste, and, potentially, a limited quantity of sodium-contaminated RH waste from the Hanford Site. The project would provide shielded facilities with equipment for sorting, characterizing, treating, and repackaging highly radioactive transuranic, mixed, and other radioactive waste. The mission of the project is to make RH radioactive wastes ready for shipment to disposal locations. Much of the proposed action was analyzed in the *Department of Energy Programmatic Spent Nuclear Fuel*



*Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Final Environmental Impact Statement* (DOE-ID 1995) as the Remote Mixed Waste Treatment Facility Project. DOE notified the state of Idaho and Shoshone-Bannock Tribes in January 2001. The draft environmental assessment was released for public comment on December 17, 2008. The public comment period January 19, 2009.

### **2.2.5 Endangered Species Act**

The Endangered Species Act provides a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, provides a program for the conservation of such endangered species and threatened species, and takes such steps as may be appropriate to achieve the purposes of the international treaties and conventions on threatened and endangered species.

The Act requires that all federal departments and agencies shall seek to conserve endangered species and threatened species and shall use their authorities to further the purposes of this Act.

Personnel in the Environmental Surveillance, Education and Research Program conduct ecological research, field surveys, and NEPA evaluations regarding ecological resources on the INL Site. Particular emphasis is given to threatened and endangered species and species of special concern identified by the U.S. Fish and Wildlife Service and Idaho Fish and Game Department.

One federally protected species, the gray wolf (*Canis lupus*), may occasionally spend time on the INL Site. Gray wolves found in the geographical region that includes the INL Site are identified as an experimental/nonessential population and treated as a threatened species. There have been unsubstantiated sightings of gray wolves on the INL Site.

Sage-grouse and pygmy rabbits are resident INL Site species. The U.S. Fish and Wildlife Service is performing a status review of the greater sage-grouse to determine if the species should be protected under the Endangered Species Act throughout its range or any significant portion of its range. The Service is also performing a status review of the pygmy rabbit to determine whether to propose adding the species to the federal list of endangered and threatened wildlife.

### **2.2.6 Executive Order 11988 – Floodplain Management**

Executive Order 11988 requires each federal agency to issue or amend existing regulations and procedures to ensure that the potential effects of any action it may take in a floodplain are evaluated and that its planning programs and budget requests consider flood hazards and floodplain management. It is the intent of Executive Order 11988 that federal agencies implement floodplain requirements through existing procedures such as those established to implement NEPA. 10 CFR 1022 contains DOE policy and floodplain environmental review and assessment requirements through the applicable NEPA procedures. In those instances where impacts of actions in floodplains are not significant enough to require the preparation of an EIS under NEPA, alternative floodplain evaluation requirements are established through the INL Site Environmental Checklist process.



For the Big Lost River, DOE-ID has accepted the *Big Lost River Flood Hazard Study, Idaho National Laboratory, Idaho* (Bureau of Reclamation 2005). This flood hazard report is based on geomorphological models and has undergone peer review. On January 12, 2006, DOE-ID directed the ICP contractor to use this floodplain determination for any activities that require the characterization of flows and hazards associated with the Big Lost River. All activities on the INL Site requiring characterization of flows and hazards are expected to use this report.

For facilities at Test Area North, the 100-year floodplain has been delineated in a U.S. Geological Survey report (USGS 1997).

### **2.2.7 Executive Order 11990 – Protection of Wetlands**

Executive Order 11990 requires each federal agency to issue or amend existing regulations and procedures to ensure wetlands are protected in decision-making. It is the intent of this Executive Order that federal agencies implement wetland requirements through existing procedures such as those established to implement NEPA. The 10 CFR 1022 statute contains DOE policy and wetland environmental review and assessment requirements through the applicable NEPA procedures. In those instances where impacts of actions in wetlands are not significant enough to require the preparation of an EIS under NEPA, alternative wetland evaluation requirements are established through the INL Site Environmental Checklist process. Activities in wetlands considered waters of the United States or adjacent to waters of the United States may also be subject to the jurisdiction of Sections 404 and 402 of the Clean Water Act.

The only area of the INL Site identified as potentially jurisdictional wetlands is the Big Lost River Sinks. The U.S. Fish and Wildlife Service National Wetlands Inventory map is used to identify potential jurisdictional wetlands and nonregulated sites with ecological, environmental, and future development significance. In 2008, no actions took place or had an impact on potentially jurisdictional wetlands on the INL Site, and no future actions are planned that would impact wetlands. However, private parties do conduct cattle grazing in the Big Lost River Sinks area under Bureau of Land Management permits.

### **2.2.8 Executive Order 13423 – Strengthening Federal Environmental, Energy, and Transportation Management**

On January 24, 2007, President George W. Bush signed Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management.” Executive Order 13423 establishes requirements to meet or exceed the goals and objectives of the Energy Policy Act of 2005 for energy efficient, renewable energy, transportation energy, and water conservation at federal facilities. It consolidates and strengthens five executive orders and two memoranda of understanding, and establishes new and updated goals, practices, and reporting requirements for environmental, energy, and transportation performance and accountability. It also requires more widespread use of environmental management systems to manage and continually improve sustainable practices.

The new DOE Order 430.2B, “Departmental Energy, Renewable Energy, and Transportation Management,” contains requirements that DOE will accomplish to implement Executive Order 13423. DOE Order 430.2B defines an executable plan as an action plan setting forth a binding



obligation of the applicable site that:

- Commits appropriate personnel resources
- Establishes a financial plan that prioritizes the use of life-cycle cost effective private sector financing and optimizes the application of appropriations and budgeted funds
- Establishes a timeline for execution coupled with specific performance measures and deliverables designed to achieve established requirements.

DOE-ID submitted the 2009 *INL Site Executable Plan for Energy and Transportation Fuels Management* (DOE-ID 2008a) to DOE Headquarters in November 2008. This plan contains strategies and activities that will lead to continual energy efficiency, environmental improvements, and transportation fuels efficiency to facilitate the INL Site to meet the goals and requirements of Executive Order 13423, DOE Order 430.2B, and DOE Order 450.1A before the end of Fiscal Year 2015.

The INL Site as a whole spent over \$11.7 M in 2008 for facility and equipment energy. Of this total, \$11.2 M was spent for building energy, and \$500 K was spent on equipment fuel. The managed area consumes over 1.08 trillion Btu of energy and over 3.8 billion L (1 billion gal) of water annually. Energy consumption at the INL Site for 2008 on a Btu/ft<sup>2</sup> basis has been reduced by 6.6 percent when compared to the base year of 2003.

Transportation fuel use across the INL Site totaled over 3.8 M L (1 M gal) of various types of fuels for 2008. The INL Site fleet is comprised of light duty vehicles fueled by gasoline, E85, liquefied natural gas, and compressed natural gas. Heavy-duty vehicles include over-the-road buses fueled by diesel, biodiesel, and liquefied natural gas, and a complex assortment of trucks and equipment. Typically, 152.9 M km (9.5 M mi) are driven annually, and over 50,000 hours are logged on heavy equipment. Table 2-2 lists energy and water use reduction goals for the INL Site. A more detailed discussion of environmental management systems, waste minimization, and pollution prevention programs is provided in Chapter 3.

**Table 2-2. Estimated Future Energy and Water Use Reduction for the INL Site (2008).**

<b>Performance Area</b>	<b>Baseline<sup>a</sup></b>	<b>2015 Goal</b>
Total building energy use (M Btu)	981,300	702,280
Total building water use (M gal)	1,010.0	810.1

a. 2003 is the baseline year for energy use, and 2007 is the baseline year for water use.



## 2.3 Waste Management

### 2.3.1 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) established regulatory standards for generation, transportation, storage, treatment, and disposal of hazardous waste. The Idaho Department of Environmental Quality (DEQ) is authorized by EPA to regulate hazardous waste and the hazardous components of mixed waste at the INL Site. Mixed waste contains both radioactive and hazardous materials. The Atomic Energy Act, as administered through DOE orders, regulates radioactive wastes and the radioactive part of mixed wastes. The INL Site currently has two RCRA Part A permit volumes and seven Part B permit volumes (Parts A and B are considered a single RCRA permit and are comprised of several volumes).

**RCRA Reports**—As required by the state of Idaho, the INL Site submitted the *Idaho Hazardous Waste Generator Annual Report – Calendar Year 2008* (INL 2009). The report contains information on waste generation, treatment, recycling, and disposal activities at INL Site facilities.

**RCRA Closure Plan**—The state of Idaho approved closure plans for the following facilities in 2008:

- INTEC Rare Gas Plant North Gas Cell System (INTEC-055) (DOE-ID 2008b)
- INTEC CPP-601 Waste Transfer Lines to the Tank Farm Facility (INTEC-601) (DOE-ID 2008c)
- Advanced Test Reactor Complex TRA-604 Laboratory Components (VCO-5.8.d) (DOE-ID 2008d).

**Notices of Violation/Non-compliance**—On May 5–9, 2008, DEQ conducted an inspection of the INL Site. DEQ issued a warning letter to DOE-ID, the INL contractor (Battelle Energy Alliance, LLC) and the ICP contractor (CH2M-WG Idaho, LLC) on June 17, 2008, for four alleged violations. Through a series of meetings and conference calls in June and July, DOE-ID and the two contractors were able to resolve all the issues surrounding the alleged violations. On July 29, 2008, DEQ notified DOE-ID, the INL contractor, and the ICP contractor that all corrective actions to resolve items in the warning letter had been successfully completed.

### 2.3.2 Federal Facility Compliance Act

The Federal Facility Compliance Act requires the preparation of site treatment plans for the treatment of mixed wastes stored or generated at DOE facilities. Mixed waste contains both hazardous and radioactive components. The *INL Site Proposed Site Treatment Plan* was submitted to the state of Idaho and EPA on March 31, 1995. This plan outlined DOE-ID's proposed treatment strategy for INL Site mixed-waste streams, called the "backlog," and provided a preliminary analysis of potential offsite mixed low-level waste treatment capabilities. The *Federal Facility Compliance Act Consent Order and Site Treatment Plan* were finalized and signed by the state of Idaho on November 1, 1995 (DEQ 1995). A status of Site Treatment Plan milestones for 2008 is provided in Chapter 3.



### **2.3.3 Toxic Substances Control Act**

The Toxic Substances Control Act (TSCA), which is administered by EPA, requires regulation of production, use, or disposal of chemicals. TSCA supplements sections of the Clean Air Act, the Clean Water Act, and the Occupational Safety and Health Act. Because the INL Site does not produce chemicals, compliance with TSCA is primarily directed toward use and management of certain chemicals, particularly polychlorinated biphenyls (PCBs). PCB-containing light ballasts are being removed at buildings undergoing demolition. The ballasts are disposed off the INL Site in a TSCA-approved disposal facility.

### **2.3.4 DOE Order 435.1, Radioactive Waste Management**

DOE Order 435.1, "Radioactive Waste Management," was issued to ensure that all DOE radioactive waste is managed in a manner that protects the environment, and worker and public safety and health. This Order, effective July 1, 1999, replaces DOE Order 5820.2A, "Radioactive Waste Management," and includes the requirements that DOE facilities and operations must meet in managing radioactive waste. Change 1 was added to the Order in August 2001. INL Site activities related to this Order are discussed in Chapters 3 and 6.

### **2.3.5 1995 Settlement Agreement**

On October 16, 1995, DOE, the U.S. Navy, and the state of Idaho entered into an agreement that guides management of spent nuclear fuel and radioactive waste at the INL Site. The agreement (DOE 1995) limits shipments of DOE and Naval spent nuclear fuel into the state and sets milestones for shipments of spent nuclear fuel and radioactive waste out of the state. DOE must have all Idaho spent nuclear fuel in dry storage by 2023 and all spent nuclear fuel out of Idaho by 2035.

The INL Site continues to ship transuranic waste to the Waste Isolation Pilot Plant in Carlsbad, New Mexico, in compliance with the Settlement Agreement requirement to ship a running average of no fewer than 2,000 m<sup>3</sup> (2,616 yd<sup>3</sup>) of transuranic waste per year out of Idaho. The running average over the past three years is 6,863 m<sup>3</sup> (8,969 yd<sup>3</sup>). In calendar year 2008, 5,036 m<sup>3</sup> (6,581 yd<sup>3</sup>) of transuranic waste was shipped out of Idaho. This amount included 43 m<sup>3</sup> (56 yd<sup>3</sup>) of remote-handled transuranic waste.

The INL Site received seven truck cask shipments containing a combined total of 0.0891 metric tons (196 lb) of spent nuclear fuel. This included spent nuclear fuel from the DOE Hanford Site (three shipments), DOE Sandia National Laboratories (two shipments), and Romania (two shipments). By the end of the calendar year 2008, 2,337 of 3,186 fuel handling units identified in the ICP contract had been moved to dry storage.

## **2.4 Water Quality and Protection**

### **2.4.1 Clean Water Act**

The Clean Water Act (CWA), passed in 1972, established goals to control pollutants discharged to U.S. surface waters. Among the main elements of the CWA are effluent limitations, set by EPA, for specific industry categories and water quality standards set by states. The CWA also provided for the National Pollutant Discharge Elimination System (NPDES) permit program, requiring permits for discharges into regulated surface waters.



The INL Site complies with two CWA permits through the implementation of procedures, policies, and best management practices. The first permit covers discharges from Idaho Falls facilities to the city of Idaho Falls publicly owned treatment works. The second permit, NPDES General Permit for Storm Water Discharges from Construction Activities, provides protective requirements for construction activities located within the INL Site storm water corridor (63 FR 31). These permits are discussed further in sections below.

**Administrative Order**—In August, 2007, analysis of samples taken from the CPP-2018 monitoring well at INTEC detected petroleum products in the groundwater. An investigation of the source of the petroleum products determined it likely to be weathered diesel No. 2, the source of which was most likely the CPP-701A Diesel Tank that had leaked in 2006 and had been repaired. On April 1, 2008, DEQ gave DOE and the ICP contractor an Administrative Order to assess the extent of the contamination and to develop corrective actions if necessary. On December 9, 2008, ICP submitted a Schedule and Criteria document to outline the investigation and any further actions that may be necessary. DEQ tentatively accepted the Schedule and Criteria on February 2, 2009, pending DOE and ICP submission and approval of a groundwater monitoring plan and any proposed corrective actions on March 23, 2009. DOE and ICP will continue to monitor the CPP-2018 well and surrounding wells for indications of petroleum products.

**National Pollutant Discharge Elimination System Permits**—The city of Idaho Falls is authorized by the NPDES permit program to set pretreatment standards for nondomestic discharges to publicly owned treatment works. This program is set out in the Municipal Code of the city of Idaho Falls regulations in Chapter 1, Section 8. The INL Research Center is the only facility that is required to have an Industrial Wastewater Acceptance Permit. The Industrial Wastewater Acceptance Permit contains special conditions and compliance schedules, prohibited discharge standards, reporting requirements, monitoring requirements, and effluent concentration limits for specific parameters. All discharges from Idaho Falls facilities in 2008 were within compliance levels established on the acceptance permit.

**Storm Water Discharge Permits for Construction Activity**—DOE-ID obtained coverage for the INL Site under the General Permit for Storm Water Discharges from Construction Sites issued in June 1993. The coverage under the general permit has been renewed twice. INL Site contractors obtain coverage under the general permit for individual construction projects. Storm water pollution prevention plans are completed for individual construction projects. Only construction projects that are determined to have a reasonable potential to discharge pollutants to a regulated surface water are required to have a storm water pollution prevention plan and general permit. Inspections of construction sites are performed in accordance with permit requirements.

#### **2.4.2 Safe Drinking Water Act**

The Safe Drinking Water Act establishes primary standards for water delivered by systems supplying drinking water to 15 or more connections or 25 individuals for at least 60 days per year. The INL Site drinking water supplies meet these criteria for public water systems and are classified as either nontransient noncommunity or transient noncommunity systems. The INL

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Site has 12 active public water systems, one of which serves the Naval Reactors Facility. All INL Site facilities sample drinking water as required by the state of Idaho and EPA. Chapter 5 contains details on drinking water monitoring.

### **2.4.3 State of Idaho Wastewater Reuse Permits**

Wastewater consists of spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter. To protect public health and prevent pollution of surface and ground waters, state of Idaho regulations require anyone wishing to land-apply or otherwise use wastewater to obtain a Wastewater Reuse Permit according to Idaho Administrative Procedures Act (IDAPA) 58.01.17 (“Rules for the Reclamation and Reuse of Municipal and Industrial Wastewater”). DEQ is responsible to issue Wastewater Reuse Permits in the state. Two types of Wastewater Reuse Permits are issued—industrial and municipal. Industrial Wastewater Reuse Permits regulate reuse of wastewater from such operations as food processing facilities. Municipal Wastewater Reuse Permits regulate reuse of wastewater that contains treated sewage. All Wastewater Reuse Permits specify both standard and site-specific conditions. Land application of wastewater is one method of reusing treated wastewater. It is a natural way of recycling by which wastewater is applied to land for irrigation and is absorbed by the crop or assimilated into the soil structure. Reuse is the broader topic of which land application is but one method. Other methods of reuse include commercial toilet flushing, dust control, and fire suppression. DEQ modified the program in 2007 and changed the permit name from Wastewater Land Application Permit to Wastewater Reuse Permit.

Applications for Wastewater Reuse Permits have been submitted to DEQ for all existing INL Site land application facilities. DEQ has issued permits for:

- Central Facilities Area Sewage Treatment Plant
- Advanced Test Reactor Complex Cold Waste Ponds
- Combined INTEC Sewage Treatment Plant effluent and service wastewater for disposal at the INTEC New Percolation Ponds.

DEQ is reviewing a permit application for the Materials and Fuels Complex Industrial Waste Pond. The Test Area North/Technical Support Facility Sewage Treatment Plant was also permitted but was closed in 2008 under a DEQ-approved Closure Plan (ICP 2007).

## **2.5 Cultural and Historic Resources Protection**

### **2.5.1 National Historic Preservation Act**

Preservation of historic properties on lands managed by DOE is mandated under Section 106 of the National Historic Preservation Act of 1966. A historic property is defined as a district, site, building, structure, or object significant in American history, architecture, engineering, archaeology, or culture at the national, state, or local level, that has integrity, and that meets the National Register criteria. Section 106 provides the legal process used to determine if adverse effects to historic properties will occur and if so, the nature and extent of these adverse effects. The Idaho State Historic Preservation Office and interested parties are then consulted to mitigate



these effects. Significant survey and research efforts were also conducted to further DOE-ID obligations under Section 110 of the National Historic Preservation Act to develop a broad understanding of all INL Site archaeological resources, not only those located in active project areas.

The INL Site Cultural Resource Management Plan (DOE-ID 2009b) was written specifically for site resources, providing a tailored approach to comply with Section 106 of the National Historic Preservation Act. The Cultural Resources Management Plan is reviewed and updated annually. Additionally, a Programmatic Agreement between DOE-ID, the Advisory Council on Historic Preservation, and the Idaho State Historic Preservation Office, dated July 2004, Concerning Management of Cultural Resources on the INL Site (DOE-ID 2004), formally implements the Cultural Resources Management Plan.

**Cultural Resources Surveys**—Table 2-3 summarizes the cultural resources surveys performed at the INL Site by the INL Cultural Resources Management Program. In 2008, 38 INL projects were screened for potential impacts to archaeological resources. In many of these cases, archival information indicated that no archaeological resources would be affected by the activities proposed. In 23 cases, INL Cultural Resources Management (CRM) staff provided feedback on archaeological sensitivity for large-scale siting studies or worked directly with project managers in the field to protect 113 archaeological sites (70 newly recorded in 2008, 43 previously recorded) that were potentially threatened by proposed project activities in specific areas. In 20 cases, field investigations ranging from 0.4 to 37.4 hectares (1 to 80 acres) in area were conducted on lands that had never been archaeologically surveyed or in areas where previous surveys were completed more than a decade ago. Approximately 176.4 hectares (436 acres) were intensively examined during these project surveys, and 70 new archaeological sites were identified and recommended for avoidance or other protective measures during project implementation.

The largest project-related field surveys of 2008 were completed in relatively remote, undeveloped areas to assess the potential impacts of the expansion of safety fans associated with three INL gun and security test ranges. Numerous archaeological sites were identified around the perimeters of the new safety fans, and all were avoided during installation of new signage. The INL CRM Office continues to work with project managers to ensure that these sensitive sites are not adversely impacted by yearly maintenance of the signs. Avoidance was

**Table 2-3. Cultural Resources Surveys Performed at the INL Site (2008).**

National Historic Preservation Act Section	Surveys Performed
Section 106	38 <sup>a</sup>
Section 110	3 <sup>b</sup>

a. Does not include those surveys performed related to INL Cultural Resources Management Office research interests.  
 b. Includes a survey project, a mapping project, and an archival investigation.

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also accomplished for significant archaeological sites located in a 32-hectare (80-acre) project area near the Big Lost River where INL and National Oceanic and Atmospheric Administration researchers proposed to conduct a series of atmospheric dispersion tests.

After a decade of drought conditions in eastern Idaho, it is not surprising that INL firefighters were called to respond to another range fire in 2008. In a third sizeable 2008 project survey, approximately 32 hectares (80 acres) of fire-breaks were surveyed within and around a newly burned area, and three sensitive archaeological sites were identified. Work to protect the identified resources during future rehabilitation and revegetation will continue into 2009. Several smaller project surveys less than 13 hectares (32 acres) in area also contribute to the totals reported in this section. Proposed activities included road improvements, powerline testing, cellular towers, temporary wind towers, ecological sampling, wells, various test pads, and miscellaneous cleanup activities. INL project managers and CRM staff cooperated to ensure that no sensitive archaeological resources were threatened by these smaller projects.

The results of project-specific INL CRM surveys and other activities are documented in a number of ways per the guidelines of the INL Cultural Resource Management Plan. Recommendations tailored to specific projects and any archaeological resources that may require consideration become part of the project's NEPA-driven Environmental Checklist and permanent record. In 2008, 38 of these recommendations were issued. For larger projects, external technical reports are often prepared to synthesize archaeological information and recommendations, but none of these more detailed documents were required in 2008. However, INL CRM staff feedback on archaeological sensitivity did appear in several technical reports, such as *Site Selection Study for the High Temperature Gas-Cooled Reactor Component Test Facility* (INL 2008). Feedback is also incorporated into environmental assessments and EISs prepared to support NEPA compliance.

Section 110 archival and field investigation of INL's historic archaeological sites also continued. The INL CRM Office spent a major portion of their Section 110 effort on a multi-year project exploring and documenting human lacustrine and riverine adaptations on the Eastern Snake River Plain. In 2008, field surveys were focused on 242.8 hectares (600 acres) along the Big Lost River and playa margins where 65 archaeological resources spanning some 12,500 years were recorded. In 2009, the results of this long-term project will be compiled into a final report.

In one significant effort, state-of-the-art geophysical tools were employed in an ongoing investigation of an important stage station from the late 19th century. Results of this investigation will be published in conference proceedings in 2009. Regional archival holdings (identified in Big Lost River Irrigation Company records and General Land Office Tract records) were also visited to support an ongoing investigation of late 19th and early 20th century homesteading activities on what is now the INL Site. Among the early records, INL CRM staff identified 56 homestead claims that can be added to the INL Site inventory. In the future, these claims will be investigated in the field to determine if any archaeological materials are present.

**Cultural Resources Monitoring**—The INL CRM Office implements a yearly program of cultural



resource monitoring that includes many archaeological resources. In 2008, 43 archaeological localities were revisited, including two sites of heightened Shoshone-Bannock tribal sensitivity, four lava tube caves, 31 prehistoric archaeological sites, two historic stage stations, two historic homesteads, a portion of Goodale's Cutoff of the Oregon Trail, and a portion of historic trail T-2. Although no significant impacts were observed during the annual monitoring, investigations were completed for incidents, including new graffiti, evidence of surface artifact collection, and bioturbation at three lava tube caves. The Experimental Breeder Reactor-I National Historic Landmark and several active INL project areas were also monitored in 2008.

The Powell Stage Station is one of only two historic stage stations known to have existed within the INL Site boundary. Because of its central location on the Snake River Plain between central Idaho mining camps and eastern Idaho railroad depots, it played a key role in late 19th century transportation and economic development. Surface structures and features at the stage station today show only a small footprint of what would have been a major stopover and resting place for stagecoach customers and freighters. Additionally, early photographs from the 1890s suggest that there might have been more buildings at the site than the foundations exposed on the surface today illustrate. In an attempt to identify unknown subsurface features, INL CRM staff employed geophysical equipment at the site in 2008. The cart-mounted ground-penetrating radar used to survey the site has revealed a hidden road and an additional foundation. Data used from this activity will improve resource protection and management and guide future investigations.

### ***2.5.2 Native American Graves Protection and Repatriation Act***

The INL Site is located on the aboriginal territory of the Shoshone and Bannock people. The Shoshone-Bannock Tribes are major stakeholders in INL Site activities. They are particularly concerned with how the remains of their ancestors and culture are treated by DOE-ID and its contractors. The Native American Graves Protection and Repatriation Act provides for the protection of Native American remains and the repatriation of human remains and associated burial objects. Repatriation refers to the formal return of human remains and cultural objects to the Tribes with whom they are culturally affiliated.

In 2008, several sites of tribal sensitivity were monitored, with tribal participation. Sites included caves, buttes, craters, and locations of known remains. No evidence of unauthorized human activity was observed, and details of sites are kept to a minimum to ensure protection of ancestral properties and resources.

## **2.6 Summary of Environmental Permits**

Table 2-4 summarizes active and pending permits for the INL Site through year-end 2008 that were issued for sitewide and/or individual facility operations that have been referenced in previous sections of this chapter.

Table 2-4. Environmental Permits for the INL Site (2008).

Permit Type	Active Permits
Air Emissions:	
Permit to Construct	15
Title V Operating Permit	2
Groundwater:	
Injection Well	22
Well Construction	1
Surface Water:	
Wastewater Reuse Permit	4
Industrial Wastewater Acceptance	1
Resource Conservation and Recovery Act:	
Part A	2
Part B <sup>a</sup>	7

a. A Part B permit is a single permit comprised of several volumes.

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