# Chapter 2: Environmental Compliance Summary

## CHAPTER 2

Operations at the Idaho National Laboratory (INL) Site are subject to numerous federal and state environmental statutes, regulations, executive orders, and U.S. Department of Energy (DOE) directives. As a requirement of many of these regulations, the status of compliance with the regulations and releases of non-permitted hazardous materials to the environment must be documented. Environmental permits have been issued to the INL Site, primarily by the state of Idaho (Table 2-5). There were two reportable environmental spill releases at the INL Site during calendar year 2023. In 2023, the U.S. Department of Energy Idaho Operations Office (DOE-ID) operated in compliance with most of the requirements defined in governing documents. Instances of noncompliance were reported to regulatory agencies and resolved. Environmental compliance status for 2023 is provided in Table 2-1.

## 2. ENVIRONMENTAL COMPLIANCE SUMMARY

This chapter presents the compliance status for operations at the INL Site and DOE-ID programs that are subject to federal and state environmental protection requirements, such as statutes, regulations, acts, agreements, executive orders, and DOE directives.

### 2.1 Enforcement and Compliance History Online Database

The U.S. Environmental Protection Agency (EPA) developed the Enforcement and Compliance History Online website (https://echo.epa.gov/) that provides integrated compliance and enforcement that can be used to search and view information on permit data, inspection dates and findings, violations, enforcement actions, and penalties assessed for INL Site operations. The Enforcement and Compliance History Online website also allows users to sort and analyze data in many ways, according to their individual needs.

### 2.2 Compliance with Requirements

INL Site activities must adhere to environmental standards established by federal, state, and local regulations; DOE directives, permits, and compliance; and settlement agreements where applicable. The EPA and Idaho Department of Environmental Quality (DEQ) are the principal regulating agencies that issue permits, review compliance reports, and participate in joint monitoring programs, inspect facilities and operations, and enforce compliance with applicable requirements as identified in Table 2-1.

*Table 2-1. Federal, state, and local laws and regulations established for protection of human health and the environment.*

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| **AIR QUALITY AND PROTECTION** | | |
| ***40 Code of Federal Regulations (CFR) 61, "National Emission Standards for Hazardous Air Pollutants," 42 USC 7401 et seq.***<br>The Clean Air Act (CAA) is the basis for national air pollution control. Emissions of radioactive hazardous air pollutants are regulated by the EPA via the National Emission Standards for Hazardous Air Pollutant (40 CFR 61, Subpart H). | The EPA has not delegated the 40 CFR Part 61, Subpart H, regulations, and is the primary agency to which DOE-ID reports compliance. Idaho DEQ incorporates the requirements of the subpart into the site-wide permit to construct (PTC)-facility emission cap (FEC) and is therefore included in all reporting and noncompliance occurrences. The INL Site is in compliance, as reported in compliance report, "National Emission Standards for Hazardous Air Pollutants – Calendar Year 2023" (DOE-ID 2024a). | 4.2<br>4.3<br>8.2.1 |
| ***40 CFR 84, "Phasedown of Hydrofluorocarbons"***<br>In October 2021, EPA issued regulations to decrease the production of hydrofluorocarbons (HFCs) over the next 15 years, thereby decreasing the supply. HFCs were developed and manufactured to replace chlorofluorocarbons, which damage the stratospheric ozone layer. HFC uses include refrigerants, solvents, fire suppressants, and aerosols. Through these regulations, EPA seeks to reduce HFC consumption and production to 15% of a 2011–2013 baseline by 2036. These regulations do not prevent entities from using equipment containing HFCs that have already been purchased and are currently in use. However, as the phasedown progresses, these HFCs will become less available and more expensive. In October 2023, the EPA issued regulations to restrict the use of some HFCs in specific applications; compliance dates vary depending on the application. | A summary of the INL Site contractors' HFC uses, replacements, procurement, and proactive measures taken as a result of the HFC phasedown can be found in Section 4.5. | 4.5 |
| ***Clean Air Act (1970), 42 USC 7401 et seq.***<br>The CAA provides the EPA with broad authority to implement and enforce regulations to reduce air pollutant emissions with an emphasis on cost-effective methods. In addition to the EPA, states, tribes, and local governments play a key role in the implementation of the CAA. | Idaho DEQ has been delegated authority to implement the CAA through the development of an EPA-approved state implementation plan and is codified in Idaho Administrative Code, Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01). DOE-ID holds a synthetic minor, site-wide, air quality permit from Idaho DEQ. This PTC contains an FEC component that enforces a limit on emissions of criteria air pollutants (CAP) and hazardous air pollutants to less than major source | 4.3<br>8.2 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| *Other environmental statutes and regulations apply, in whole or in part:*<br>• 40 CFR 50, "National Primary and Secondary Ambient Air Quality Standards." | thresholds. Without the synthetic limits on site-wide CAP emissions, the INL Site would be considered a major source for CAP emissions and would require a Tier I/Title V permit. This permit covers all the non-exempt air emission sources located on the INL Site but does not cover air-emitting sources located at the Research and Education Campus (REC) in Idaho Falls, Idaho. All air emission sources located at the REC have been determined to be minor and have been exempted from the permitting requirements in IDAPA 58.01.01. As reported in the annual compliance report required by the PTC-FEC, the INL Site emitted CAP and hazardous air pollutants emissions significantly below the permitted limits in calendar year 2023.<br><br>Idaho DEQ performed an air quality inspection of the Idaho Nuclear Technology and Engineering Center (INTEC) facility on October 30, 2023; Central Facilities Area (CFA) on November 16, 2023; and Specific Manufacturing Capability facility on December 5, 2023. Sources inspected were found to be in compliance for these facilities. | |
| **CULTURAL AND ENVIRONMENTAL RESOURCES PROGRAMS** | | |
| ***Endangered Species Act (1973), 16 USC 1531-1544***<br>The Endangered Species Act requires that all federal departments and agencies seek to conserve endangered and threatened species and use their authorities to further the purposes of this act.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• 50 CFR 17, "Endangered and Threatened Wildlife and Plants"<br>• 50 CFR 226, "Designated Critical Habitat"<br>• 50 CFR 402, "Interagency Cooperation – Endangered Species Act of 1973, as Amended" | There are currently no resident INL Site species listed as threatened or endangered under the Endangered Species Act and there is no designated critical habitat on the INL Site. In 2014, DOE-ID entered into a voluntary candidate conservation agreement with the U.S. Fish and Wildlife Service to conserve and protect Greater sage-grouse and sagebrush habitat on the INL Site prior to the Service determining the species was not warranted for listing. In 2023, DOE-ID published an annual report of sage-grouse and sagebrush monitoring activities and held an annual meeting with the U.S. Fish and Wildlife Service and other stakeholders to discuss the report and progress towards achieving conservation objectives.<br><br>In 2018, the DOE-ID produced a Bat Protection Plan for the INL Site and has since produced an annual report providing current information on the conservation of bats and their habitat on the INL Site. The INL Natural Resources Group also conducts ecological research, field surveys, and National Environmental Policy Act (NEPA) evaluations regarding resources on the INL Site. | 9.1.2<br>9.1.3 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| • 50 CFR 424, "Listing Endangered and Threatened Species and Designating Critical Habitat"<br>• 50 CFR 450-453, "Endangered Species Exemption Process." | These program activities complied with all requirements. Details of related activities can be found in Chapter 9. | |
| ***Executive Order 11988, "Floodplain Management"***<br>Executive Order (EO) 11988 requires federal agencies to consider, evaluate, and avoid to the extent possible, adverse impacts associated with the occupancy and modification of floodplains, to reduce the risk of flood loss, to minimize the impacts of flood on human safety, health, and welfare, and to restore and preserve the natural and beneficial values of floodplains.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• 10 CFR 1022, "Compliance with Floodplain and Wetland Environmental Review Requirements." | It is the intent of EO 11988 that federal agencies implement floodplain requirements through existing procedures, such as those established to implement NEPA. The 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 Environmental Impact Statement under NEPA, alternative floodplain evaluation requirements are established through the INL Site Environmental Checklist (EC) process.<br>DOE-ID has accepted the "Big Lost River Flood Hazard Study" (Bureau of Reclamation 2005). This flood hazard report is based on geomorphological models and has undergone peer review. All activities on the INL Site requiring characterization of flows and hazards are expected to use this report.<br>A study titled "Estimated 100-Year Peak Flows and Flow Volumes in the Big Lost River and Birch Creek at the Idaho National Engineering Laboratory, Idaho" (Kjelstrom and Berenbrok 1996), was conducted by the U.S. Geological Survey. This study provided an estimated extent of the 100-year floodplain for the Big Lost River (BLR) and Birch Creek on the INL Site. The facility that was included in this study was Test Area North (TAN). A few years later, another study was completed by Bureau of Reclamation on the INL Site, titled "Big Lost River Flood Hazard Study" (Ostenaa and O'Connell 2005). The objective of this study was to develop probabilistic flood stage estimates for specific facility locations at INTEC and Test Reactor Area (TRA). According to the study, CFA and Materials and Fuels Complex (MFC) are not within the 100-year or 500-year floodplain of the BLR. The probabilistic flood stage estimates that were created from this study are to be used for all future BLR flood hazard characterization efforts for INTEC and TRA. Together, the above-mentioned studies are to be used to characterize and identify the floodplains for their respective facilities on the INL Site. | N/A |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| ***Executive Order 11990, "Protection of Wetlands"***<br>EO 11990 requires federal agencies to identify potential impacts on wetlands resulting from proposed activities and to minimize the destruction, loss, or degradation of wetlands and preserve and enhance the natural and beneficial values of wetlands. | The only areas of the INL Site currently identified as potentially jurisdictional wetland are the BLR corridor and BLR Sinks. The U.S. Fish and Wildlife Service National Wetlands Inventory Map is used to identify potential jurisdictional wetlands and non-regulated sites with ecological, environmental, and future development significance.<br><br>In 2023, there were no reviews or evaluations performed by the U.S. Army Corps of Engineers for the INL Site. No new actions have taken place within potential wetland areas on the INL Site that would require additional review by the U.S. Army Corps of Engineers or an update to an existing Jurisdictional Determination. | N/A |
| ***Executive Order 13751, "Safeguarding the Nation from the Impacts of Invasive Species"***<br>This EO calls on federal agencies to prevent the introduction, establishment, and spread of invasive species, as well as to eradicate and control populations of invasive species that are established.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• Federal Noxious Weed Act (1974), 7 USC 2801<br>• IDAPA 02.06.09, "Rules Governing Invasive Species and Noxious Weeds"<br>• Idaho Statute Title 22, Chapter 19, "The Idaho Invasive Species Act of 2008"<br>• Idaho Statute Title 22, Chapter 24, "Noxious Weeds." | INL Site contractors implement a site-wide plan for managing invasive species. This site-wide plan addresses each requirement of federal agencies as outlined in EO 13112, as amended by EO 13751. Additionally, federal agency requirements outlined in The Federal Noxious Weed Act of 1974 and state of Idaho requirements related to invasive species and noxious weeds are met with compliance of EO 13112, as amended by EO 13751. For more detail on how this plan is carried out and how requirements are met, see Section 9.4.3. | 9.4.3 |
| ***Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad"***<br>The purpose of EO 14008, "Tackling the Climate Crisis at Home and Abroad," is to make climate considerations an essential element of U.S. foreign policy and national security planning, and to understand how domestic policy can address the implications of climate change. Overarching goals for domestic policy include strengthening clean air and water protections, | At INL, EO 14008 is addressed with multiple methods. This includes activities as diverse as evaluating infrastructure to identify opportunities to increase efficiency in electricity and water use, assessing the materials supply chain to reduce INL's carbon footprint, aligning land use/land stewardship objectives with ecosystems resilience and ecosystem services priorities. The evolving priorities for sustainability are incorporated into the annual update of sustainability are incorporated into the annual update of the "Idaho National Laboratory Site Sustainability Plan" (DOE-ID 2023a) at the beginning of each new | Chapter 3<br>Chapter 9 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| holding polluters accountable, delivering environmental justice, and driving the mitigation of climate-related risks in our economy. | fiscal year (FY). It describes the overall sustainability strategy for the INL Site contractors during the current FY and includes a performance status in the areas of greenhouse gas (GHG) emission reduction, energy management, water management, waste management, fleet management, clean and renewable energy, sustainable buildings, and other areas for the completed FY.<br><br>With respect to ecological resource conservation, INL implements several conservation plans. Land stewardship activities prioritize conserving and restoring native communities to maximize ecosystem services such as carbon sequestration. Ecological monitoring activities are conducted to continuously evaluate the condition of natural resources and ensure the local sagebrush steppe ecosystem remains healthy and resilient in its ability to respond to the stresses associated with climate change. See Chapter 9 for a more thorough discussion of the ecological aspects of implementing EO 14008 on the INL Site.<br><br>Concerning site resiliency, INL is taking actions to bolster adaptation and increase the resilience of DOE-ID facilities and operations as documented in the issued "Vulnerability Assessment and Resiliency Plan" (INL 2022), which documents climate vulnerabilities and implementable solutions, lays out a path to institutionalize climate adaptation policies, provides climate adaptation tools, and socializes the need to deploy emerging climate technologies. Idaho Cleanup Project (ICP) contractor is taking similar measures, as documented in its "Climate Change Vulnerability and Resilience Plan for the IEC-Managed Facilities at INL" (Burton, B., memorandum to J. Anderson, CCN 329542). The performance status of current sustainable activities and additional details of new initiatives are further discussed in Chapter 3. | |
| ***Migratory Bird Treaty Act (1918), 16 USC 703-712***<br>The Migratory Bird Treaty Act prohibits taking any migratory bird, or any part, nest, or egg of any such bird, without authorization from the U.S. Department of the Interior. Permits may be issued for scientific collecting, banding and marking, falconry, raptor propagation, depredation, import, export, taxidermy, waterfowl sale and disposal, and special purposes. | DOE-ID has a U.S. Fish and Wildlife Service Special Purpose Permit for limited nest relocation and destruction and the associated take of migratory birds for mission-critical activities if all other means to prevent such take have been explored and/or exhausted. DOE-ID and INL Site contractors also have permits from the Idaho Department of Fish and Game to manage migratory birds and collect other wildlife specimens for scientific research. All stipulated reporting requirements were met for 2023. | 7.2.8<br>7.2.9<br>9.1.5<br>9.4.4 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| *Other environmental statutes and regulations apply, in whole or in part:*<br>• EO 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds"<br>• Bald and Golden Eagle Protection Act (1940), 16 USC 668-668d<br>• Idaho Statute Title 36, Chapter 1, 106 e.5. | One instance of a take was reported in 2023 and is further discussed in Chapter 9. | |
| ***National Environmental Policy Act (1969), 42 USC 4332(2)***<br>NEPA requires federal agencies to consider potential environmental impacts of proposed actions in the decision-making process. Federal agencies are required to provide a detailed statement on proposals for major federal actions significantly affecting the quality of the human environment. The purpose and function of NEPA is satisfied if federal agencies have considered relevant environmental information and the public has been informed regarding the decision-making process.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• 10 CFR 1021, "National Environmental Policy Act Implementing Procedures"<br>• 40 CFR 1500-1508, "National Environmental Policy Act (NEPA) Purpose, Policy, and Mandate." | As a federal agency, DOE complies with the NEPA requirements (procedural provisions, 40 CFR 1500 through 1508) as outlined in DOE's "NEPA Implementing Procedures" (10 CFR 1021). DOE fulfills its obligation to comply with NEPA by providing timely and appropriate analysis of proposed activities in accordance with current guidance and implementing regulations. The analysis undertaken is always dependent on the action being proposed. DOE NEPA compliance officers work closely with INL NEPA subject matter experts, program environmental leads, environmental subject matter experts, and project personnel to determine the appropriate level of review for each proposed action. The collective processes in place to help facilitate these reviews to provide the most effective and timely outcomes are referred to as the INL Environmental Review Process (ERP). The ERP is in place to both ensure compliance to statutory compliance to NEPA and other environmental requirements, and to be used as a planning tool providing useful and relevant information that can help professionals achieve the best possible project outcomes.<br>Project initiators from the INL contractor enter the scope for proposed projects into the ERP electronic workflow, an electronic system developed specifically for INL, in which project personnel, laboratory environmental staff, and other identified personnel can review the scope to determine/recommend coverage under DOE NEPA Implementing Regulations, identify potential impacts, prescribe hold points and project-specific instructions, and ensure the project is compliant with applicable environmental and cultural laws and policies. In 2023, 704 activities were entered into the ERP for review. | 9.4.1 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| | The output of the ERP is documentation of a review which may result in the issuance of an Environmental Compliance Permit (ECP) if required. An ECP states the INL NEPA team's recommended level of NEPA compliance for the proposed activity, as well as project-specific instructions that project personnel must follow, to ensure regulatory compliance. Of the approximately 704 projects reviewed in 2023, 80 were issued a new ECP and DOE categorical exclusion determination under NEPA. Other projects were covered under existing categorical exclusion determinations (i.e., facility improvements), existing Environmental Assessments (EAs) or Environmental Impact Statements (EISs) (i.e., "Environmental Assessment for Use of DOE-Owned High-Assay Low-Enriched Uranium Stored at Idaho National Laboratory" [DOE-ID 2019]), or were determined to be administrative actions that did not require further NEPA review (see 10 CFR 1021 subpart D, Appendix A). DOE-ID actions categorically excluded from EA- or EIS-level review can be viewed at https://www.energy.gov/nepa/categorical-exclusion-determinations-idaho-operations-office.<br><br>The ICP contractor uses an EC that captures the purpose and need of a project proposal and identifies environmental aspects associated with the project. The EC identifies project-specific instructions the project is required to follow to meet NEPA compliance to regulatory requirements. The ICP contractor reviewed 17 ECs, all of which were covered by existing EAs, EISs, Records of Decision, or other previously approved NEPA documents.<br><br>DOE signed a Finding of No Significant Impact for the Molten Chloride Reactor Experiment (MCRE) EA in 2023. MCRE is intended to confirm key physics phenomena relevant to the design and safe operation of fast-spectrum molten salt reactors and reduce the uncertainty associated with predicting those phenomena. The experiment will be located within existing facilities at the MFC on the INL Site. The MCRE EA Finding of No Significant Impact was signed October 12, 2023. | |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| ***National Historic Preservation Act (NHPA) (1966), as amended, 54 USC 300101 et seq.***<br>The NHPA requires federal agencies to establish programs to identify, record, and protect cultural resources and to assess the impacts of proposed projects on historic or culturally important sites, structures, or objects within the area of potential effect for a proposed project. The NHPA further requires federal agencies to assess archaeological sites, historical buildings, and objects on such sites to determine their qualification for inclusion in the National Register of Historic Places. In addition, NHPA requires federal agencies to consult with State Historic Preservation Offices, affected Indian tribes, the Federal Advisory Council on Historic Preservation, and other interested parties, as appropriate, when determining whether the proposed actions would adversely affect properties eligible for listing on the National Register of Historic Places. Compliance is achieved via adherence to Sections 106 and 110 of the NHPA.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• The Archaeological Resources Protection Act (1979), 16 USC §470aa-470mm<br>• 36 CFR 79, "Curation of Federally Owned and Administered Archaeological Collections"<br>• 36 CFR 800, "Protection of Historic Properties"<br>• 43 CFR 7, "Protection of Archaeological Resources"<br>• Native American Graves Protection and Repatriation Act (1990), as amended, 25 USC 3001-3013<br>• American Indian Religious Freedom Act (1996), 42 USC 1996 Religious Freedom Restoration Act (1993), 42 USC §200bb-200bb4 | The INL Cultural Resource Management Office (CRMO) works with DOE-ID's Cultural Resource Coordinator to steward archaeological and architectural cultural resources across INL. During 2023, the CRMO continued to operate under the "Idaho National Laboratory Cultural Resource Management Plan" (DOE-ID 2016a), which was developed through a programmatic agreement with the Idaho State Historic Preservation Office and the Advisory Council on Historic Preservation in 2004. A new programmatic agreement was executed on May 8, 2023. The programmatic agreement was negotiated among DOE-ID, Idaho State Historic Preservation Office, Advisory Council on Historic Preservation, the Shoshone-Bannock Tribes, and other consulting parties to tailor the Section 106 process to the current needs of the INL Site. The CRMO has been integrated into the NEPA ERP since April 2022, allowing better coordination with NEPA reviews and greater streamlining of the Section 106 review process. Archaeologists conducted multiple field surveys to identify and record or re-record archaeological resources that would be impacted by proposed INL activities under Section 106. Additionally, archaeologists surveyed 444 acres and recorded 12 isolates and 28 sites, and re-recorded eight archaeological resources pursuant to Section 110.<br>Work continued on the built environment inventory update. Individual resources and historic districts constructed prior to 1980 were surveyed, recorded, and evaluated to determine which were eligible for inclusion on the National Register. Inventory updates for the Advanced Test Reactor (ATR) Complex, CFA, Critical Infrastructure Test Range Complex, Experimental Breeder Reactor-I, Boiling Water Reactor Experiment Facilities, INTEC, and the MFC were completed by the Center for Environmental Management of Military Lands, with final revisions made by the INL CRMO staff. DOE-ID submitted these inventories to the State Historic Preservation Office on April 30, 2023. Concurrence was received on May 23, 2023.<br>The CRMO continues to support DOE-ID with their government-to-government consultation efforts with the Shoshone-Bannock Tribes under the Agreement-in-Principle (AIP). DOE-ID, CRMO, and the Shoshone-Bannock Heritage Tribal Office collaborate regularly and tribal representatives contribute to Sections 106 and 110 projects in the field, as report co-authors and reviewers, and lead visits for tribal members. DOE-ID and CRMO provided an annual program update to | 9.5 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| • EO 13007, "Indian Sacred Sites"<br>• EO 13175, "Consultation and Coordination with Indian Tribal Governments." | the Fort Hall Business Council on June 29, 2023, and facilitated meetings of the INL Site Cultural Resource Working Group. | |
| **HAZARDOUS MATERIALS AND WASTE MANAGEMENT** | | |
| ***Comprehensive Environmental Response, Compensation, and Liability Act (1980), (amended by the Superfund Amendments and Reauthorization Act [SARA]), 40 CFR 300, 42 USC 9601 et seq***<br>The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides the process to assess and remediate areas contaminated by the release or threat of release of chemically hazardous, radioactive substances, or both.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• 40 CFR 300, "National Oil and Hazardous Substance Pollution Contingency Plan." | 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. The DOE-ID, Idaho DEQ, and the EPA Region 10 signed the Federal Facility Agreement and Consent Order (FFA/CO) in December of 1991 (DOE 1991).<br>Environmental restoration is conducted under the FFA/CO, which outlines how the INL Site will comply with CERCLA. It identifies a process for DOE-ID to work with its regulatory agencies to safely execute the cleanup of past release sites.<br>The INL Site is divided into ten Waste Area Groups (WAGs) as a result of the FFA/CO, and each WAG is further divided into smaller cleanup areas called operable units (OUs). Field investigations are used to evaluate potential release sites within each WAG and OU when existing data are insufficient to determine the extent and nature of contamination. After each investigation is completed, a determination is made regarding whether a "No Action" or "No Further Action" listing is possible, or whether it is appropriate to proceed with an interim cleanup action, the OU 10-08 Plug-In Remedy action, or further investigation using a remedial investigation/feasibility study (RI/FS). Results from the RI/FS form the basis for risk assessments and alternative cleanup actions. This information, along with the regulatory agencies' proposed cleanup plan, is presented to the public in a document called a proposed plan. After consideration of public comments, DOE, EPA, and Idaho DEQ develop a record of decision (ROD) that selects a cleanup approach from the alternatives evaluated. Cleanup activities can then be designed, implemented, and completed.<br>Since the FFA/CO was signed in December of 1991, the INL Site has cleaned up release sites containing asbestos, petroleum products, acids and bases, radionuclides, unexploded ordnance and explosive residues, polychlorinated biphenyls, heavy metals, and other hazardous materials. All 24 RODs that were | Table 2-2<br>6.5 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| | scheduled have been signed and are being implemented or have been completed. Comprehensive RI/FSs have been completed for WAGs 1–5, 7–9, and 6/10 (6 is combined with 10). Active remediation is completed at WAGs 2, 4, 5, 6, 8, and 9. Institutional controls (ICs) and operations and maintenance activities at these sites (except for WAG 8, which is managed by the Naval Reactors Facility) are ongoing and will continue to be monitored under the "Site-Wide Institutional Controls and Operations and Maintenance Plan for CERCLA Response Actions" (DOE-ID 2024b). The status of ongoing active remediation activities at WAGs 1, 3, 7, and 10 are described in Table 2-2.<br><br>Documentation associated with the remedial actions and other removal actions are publicly available in the CERCLA Administrative Record and can be accessed at https://idahoenvironmental.com/ARIR/.<br><br>Decontamination and decommissioning activities are also performed at the INL Site in accordance with the CERCLA (42 USC 9601 et seq.), as amended by the "Superfund Amendments and Reauthorization Act of 1986" (Public Law 99-499), and in accordance with the "National Oil and Hazardous Substances Pollution Contingency Plan" (40 CFR 300). Decontamination and decommissioning activities are consistent with the joint DOE and EPA "Policy on Decommissioning of Department of Energy Facilities Under the Comprehensive Environmental Response, Compensation, and Liability Act" (DOE and EPA 1995), which establishes the CERCLA non-time critical removal action process as an approach for decommissioning pursuant to CERCLA, Section 104(a), and EO 12580, "Superfund Implementation," as recognized by Section 5.3 of the FFA/CO (DOE 1991). In accordance with 40 CFR 300.415(j) and DOE guidance, INL Site removal actions conducted under CERCLA are required to meet applicable or relevant and appropriate requirements to the extent practicable considering the exigencies of the situation. This approach satisfies environmental review requirements and provides for stakeholder involvement, while providing a framework for selecting the decommissioning alternative. | |
| ***DOE Order 435.1***<br>The Atomic Energy Act of 1954 (42 U.S.C § 2011 1954) Section 161(i) authorizes DOE to regulate activity involving certain | The INL contractors manage all radioactive waste generated at INL facilities. The Waste Management Program provides the structure for integrating/dispositioning radioactive waste and is the lead organization for ensuring compliant cradle-to- | 2.5 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| radioactive materials, including radioactive waste, to "protect human health and minimize danger to life or property." This authority is implemented through DOE O 435.1, "Radioactive Waste Management," and the accompanying DOE Manual 435.1-1, "Radioactive Waste Management Manual," which set forth the requirements for assuring the safety of the generation, treatment, storage, and disposal of DOE-owned radioactive waste.<br>These DOE directives ensure that radioactive waste management activities are systematically planned, documented, executed, and evaluated. Specifically, the Order and the manual:<br>• Establish requirements to implement DOE regulating authority and responsibilities for radioactive waste management<br>• Define DOE radioactive waste types: (1) high-level waste (HLW), (2) transuranic (TRU) waste, and (3) low-level waste (LLW)<br>• Emphasize management for disposal and establish requirements for waste characterization, waste certification, and waste acceptance criteria<br>• Identify performance-based requirements<br>• Require life-cycle management (i.e., from generation planning to disposal)<br>• Rely on existing nuclear safety philosophies (e.g., Integrated Safety Management System, Graded Approach, Defense-in-Depth)<br>• Require a DOE-approved Radioactive Waste Management Basis to ensure hazards have been identified, analyzed, and mitigated. | grave waste management of containerized waste as described in PDD-17000, "Waste Management Program." The INL contractor maintain facility-specific Radioactive Waste Management Basis documents to demonstrate DOE O 435.1 compliance.<br>The INL Site contractors manage all hazardous, mixed low-level waste, LLW, TRU waste, HLW, remote-handled, recyclable waste, waste with no identified path to disposal, industrial, Toxic Substances Control Act (TSCA), Comprehensive Environmental Response Compensation, and Liability (CERCLA) waste, and universal waste streams that are generated and stored at the INL Site and approved offsite-INL Site waste streams. Management activities include, but are not limited to, controls for waste characterization, waste certification, waste acceptance criteria compliance, storing waste, treating waste, and transporting and disposing of waste. The overall responsibility for managing waste at INL contractor facilities resides in the INL contractor's Waste Management Programs organization, according to LWP-17000, "Waste Management" and the ICP contractor manages waste that is generated and stored at the ICP facilities, and approved offsite waste streams per PDD-234, "Waste Management Program." All waste management activities described herein are conducted in compliance with all applicable provisions of DOE O 435.1.<br>The ICP uses DOE M 435.1, Change 2, to meet contractual requirements. The contract will be updated in the future to reflect Change 3.<br>See Table 2-3 for information on wastes managed at the INL Site by INL Site contractors.<br>See Table 2-3 for the status of each phase of the LLW management process for facilities managed at the INL Site by INL Site contractors. | |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| *Other environmental statutes and regulations apply, in whole or in part:*<br>– DOE O 435.1, Change 2, "Radioactive Waste Management"<br>– DOE Manual 435.1, Change 3, "Radioactive Waste Management Manual (January 2021)." | | |
| ***Federal Facility Compliance Act of 1992, as amended.*** Enacted by Congress on October 6, 1992, the *Federal Facility Compliance Act of 1992* amends Section 6001 of the Resource Conservation and Recovery Act of 1976 (RCRA) to specify that the U.S. waives sovereign immunity from civil and administrative fines and penalties for RCRA violations.<br>In addition, RCRA requires EPA to conduct annual inspections of all federal facilities. Authorized states are given authority to conduct inspections of federal facilities to enforce compliance with state hazardous waste programs. DOE-ID is required to submit and receive approval of the INL Site Treatment Plan from Idaho DEQ. | The INL Site contractors manage all mixed waste generated at their respective facilities. The Waste Management Program is the lead organization for ensuring compliant cradle-to-grave management of INL containerized mixed waste as described in PDD-17000, "Waste Management Program." Waste Management at ICP facilities is described in PDD-234, "Waste Management Program." The INL Site contractors maintain facility-specific Radioactive Waste Management Basis documents to demonstrate DOE O 435.1 compliance. DOE-ID submitted the FY 2024 "Site Treatment Plan Annual Update and FY 2023 Site Treatment Plan Annual Report" to Idaho DEQ in November 2023 in accordance with Sections 2.3.3 and 2.3.4. DOE-ID and INL Site contractors met quarterly with Idaho DEQ to discuss the status of milestones, treatment projects, and other activities conducted under the Site Treatment Plan. | 2.5 |
| ***Federal Insecticide, Fungicide, and Rodenticide Act (1996), 7 USC 136 et seq.*** The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) is the federal statute that governs the registration, distribution, sale, and use of pesticides in the U.S. The FIFRA regulations found in 40 CFR parts 150-189 are promulgated and administered by the EPA.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• IDAPA 02.03.03, "Rules Governing Pesticide and Chemigation Use and Application"<br>• Idaho Statute Title 22 Chapter 34, "Idaho Pesticides and Chemigation Law." | All pesticide applications on the INL Site are conducted in accordance with the specific pesticide label instructions in accordance with the FIFRA. Additionally, all appropriate records associated with pesticide applications are kept for a minimum of three years by each pesticide applicator in accordance with IDAPA 02.03.03, "Rules Governing Pesticide and Chemigation Use and Application." For details on pesticide application on the INL Site, see Section 9.4.3. | 9.4.3 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| ***Resource Conservation and Recovery Act (1976), 40 CFR 259-282, 42 USC 6901 et seq.***<br>The RCRA established regulatory standards for generation, transportation, storage, treatment, and disposal of hazardous waste.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• 40 CFR 270.13, "Contents of Part A of the Permit Application"<br>• 40 CFR 262, "Standard Applicable to Generators of Hazardous Waste"<br>• 40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste"<br>• 40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities"<br>• 40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities"<br>• 40 CFR 266, "Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Units"<br>• 40 CFR 267, "Standard for Owners and Operators of Hazardous Waste Facilities Operating Under a Standardized Permit"<br>• 40 CFR 268, "Land Disposal Restrictions"<br>• 40 CFR 270, "EPA Administered Permit Programs: The Hazardous Waste Permit Program" | *RCRA Permits:* Form 8700-23, along with maps, drawings, and photographs, as required by 40 CFR 270.13, is included with the Part A permit application (Volume 1) and in each Part A application included with the partial Part B permits. The INL Site currently has one RCRA permit (Volume 1) for the interim status unit, INTEC Tank Farm Facility (Volume 1). An interim status unit is a Part A (interim status) unit that has not been RCRA closed or has not been permitted under a Part B hazardous waste permit application. The INL Part B permits are considered a single RCRA permit that comprises several volumes, all under a single EPA ID number, ID 4890008952. Therefore, each of the six Part B Permit volumes is called a partial permit. Each partial Part B Permit includes the Part A application specific to the permitted units in that Part B and the Part B of the RCRA hazardous waste permit that contains detailed, site-specific information and hazardous waste operations as described in applicable Sections of 40 CFR 262 through 270.27. The INL currently has one RCRA post-closure permit. Post-closure permits ensure that appropriate monitoring and maintenance activities will be conducted on those units/land disposal units that leave hazardous waste in place closure (i.e., cannot clean close).<br>*RCRA Reports.* As required by Idaho DEQ, the INL Site submitted the 2023 Idaho Hazardous Waste Generator Annual Report (CCN 332128) on the types and quantities of hazardous wastes generated, shipped for treatment and disposal, and remain in storage. Federal regulations require large quantity generators to submit a report every two years regarding the nature, quantities, and disposition of hazardous waste generated at their facility. The EPA refers to this as the National Biennial RCRA Hazardous Waste Report or biennial report. The biennial report form (EPA form 8700-13A/B) is submitted to Idaho DEQ by March 1 of every even-numbered year for the previous calendar year. The biennial report was submitted to the electronic RCRA Info Industry Application (Reno [CCN 332285]) for 2023.<br>*RCRA Closure Plan.* The "Sodium Components Maintenance Shop Carbonation Vessel Partial HWMA/RCRA Closure Certification Report," EPA ID No. ID 48900008952, was submitted (CCN 254825) to and subsequently approved by | N/A |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| • 40 CFR 273, "Standards for Universal Waste Management"<br>• 40 CFR 279, "Standards for the Management of Used Oil." | Idaho DEQ in 2023. Idaho DEQ also approved closure of the Advanced Mixed Waste Treatment Project (AMWTP) Transuranic Storage Area (TSA) Retrieval Enclosure Interim Status Unit (WMF-636, TSA 1/R) on May 23, 2023. Additionally, Idaho DEQ approved closure of the Radioactive Waste Management Complex (RWMC) - Accelerated Retrieval Project (ARP) Hazardous Waste Management Act (HWMA)/RCRA storage and treatment units on November 24, 2023.<br><br>*RCRA Inspection.* For FY 2023, Idaho DEQ performed a RCRA inspection from May 8–11, 2023. On July 19, 2023, Idaho DEQ issued a warning letter to DOE-ID and ICP related to five previously self-disclosed events resulting in permit noncompliances noted by Idaho DEQ during the May inspection.<br><br>*RCRA Consent Order.* Due to DOE-ID's inability to meet commitments to initiate waste treatment in the Integrated Waste Treatment Unit (IWTU) and cease the use of the INTEC interim status tanks, Idaho DEQ assessed a penalty to DOE-ID pursuant to the provisions under Section VII of the fifth modification to the Notice of Noncompliance-Consent Order, in the amount of $2,190,000 for the period of noncompliance from March 31, 2022, to March 30, 2023. Supplemental environmental projects were utilized in lieu of the original payment. | |
| **OTHER ENVIRONMENTAL REQUIREMENTS** | | |
| ***DOE Order 231.1B, "Environmental, Safety, and Health Reporting"***<br>Environmental, Safety, and Health Reporting requires the timely collection and reporting of information on environmental issues that could adversely affect humans and the safety of the public and the environment at DOE sites.<br>*Other environmental statutes, regulations, and directives apply, in whole or in part:*<br>• DOE O 458.1, Change 4, "Radiation Protection of the Public and the Environment." | This report, "2023 Idaho National Laboratory Annual Site Environmental Report," fulfills DOE O 231.1B, the radiation protection requirements of DOE O 458.1, and documents and communicates the environmental performance to members of the public living near the INL Site and to other interested parties. | All chapters |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| ***DOE Order 232.2A, "Occurrence Reporting and Processing of Operations Information"***<br>In accordance with DOE O 232.2A, Occurrence Reporting and Processing of Operations Information, the INL Site ensures DOE personnel are notified of events that could adversely affect the health and safety of workers, the public, the environment, DOE's missions, or the credibility of DOE. Events are provided report levels (e.g., High, Low, Informational) to reflect the impact associated with a given occurrence in terms of health, safety and security. INL has a Tailoring Agreement in place that allows reporting most Informational events to DOE-ID through the INL issues management software (LabWay). Other events are also reported to DOE Headquarters through the Occurrence Reporting and Processing System (ORPS). | From January 1, 2023, to December 31, 2023, INL Site contractors did not report any events related to an environmental release under ORPS criteria in Group 5 – Environmental. | N/A |
| ***Emergency Planning and Community Right-to-Know Act (1986), 42 USC 11001, et seq.***<br>The Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 was created to help communities plan for emergencies involving hazardous substances. The Act helps increase the public's knowledge and access to information on chemicals at individual facilities, their uses, and releases into the environment. States and communities, working with facilities, can use the information to improve chemical safety and protect public health and the environment.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• IDAPA 58.01.02.851, "Petroleum Release Reporting, Investigation, and Confirmation." | The INL Site's 2023 compliance with key EPCRA provisions is summarized below.<br>• *Section 304: Extremely Hazardous Substance Release Notification* – There were no CERCLA-reportable chemicals released at the INL Site during 2023.<br>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).<br>• *Section 311-312: Safety Data Sheet/Chemical Inventory* – Extremely hazardous substances, such as cyclohexylamine, nitric acid, nitrogen dioxide, and sulfuric acid were among the chemicals reported in 2023.<br>Sections 311 and 312 require facilities manufacturing, processing, or storing designated hazardous chemicals to make 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 inventories of all chemicals that have safety data sheets to state and local officials and local fire departments. The INL Site satisfies the requirements of | 2.6.1 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| | Section 311 by submitting a quarterly report to state and 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 is provided to local emergency planning committees, the state emergency response commission, 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 the INL Site and Idaho Falls facilities that exceed regulatory thresholds. In 2023, the chemical inventory report included 77 individual chemicals at INL Site facilities and 9 at Idaho Falls facilities. The INL Site also stores extremely hazardous substances, a category of chemicals that could cause serious irreversible health effects from accidental releases.<br>• *Section 313: Toxic Chemical Release Inventory Reporting* – The INL Site submitted Toxics Release Inventory Forms for chromium, lead, manganese, mercury, naphthalene, nickel, nitrate compounds, and nitric acid, to the EPA by the regulatory due date of July 1.<br>Section 313 requires facilities to submit a Toxics Release Inventory Form annually for regulated 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.<br>• *Reportable Environmental Releases* – INL had two reportable spills for INL Site contractors in 2023. See Section 2.6.1. | |
| ***DOE Order 436.1A, "Departmental Sustainability"***<br>The Order defines requirements and responsibilities for managing sustainability withing DOE and to ensure that the department carries out its missions in a sustainable manner that addresses national energy security and global environmental challenges, and advances sustainable, efficient and reliable energy for the future.<br>*Other environmental statutes and regulations apply, in whole or in part:* | In 2023, DOE Order 436.1A, "Departmental Sustainability," was issued. The EO advances sustainable, efficient, reliable, and resilient energy for the future; promotes conservation of natural resources; and ensures DOE achieves its sustainability goals pursuant to applicable law, regulations, and EOs.<br>DOE Order 436.1A requires INL Site contractors to maintain an Environmental Management System (EMS) either by being certified for use or in conformance with the ISO 14001:2015 standard following the accredited registrar provisions or self-declaration instructions. The ISO 14001:2015 model uses a system of policy | Chapter 3 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| • EO 13990, "Protecting Public Health and the Environmental and Restoring Science to Tackle the Climate Crisis"<br>• EO 14008, "Tracking Climate Crisis at Home and Abroad"<br>• EO 14057, "Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability"<br>• Energy Act of 2020<br>• Energy Independence and Security Act of 2007. | development, planning, implementation, operation, checking, corrective action, and management review.<br><br>Each contractor's EMS has been certified to the ISO 14001 Standard since 2005 and is certified by an external registrar every three years. Chapter 3 contains details on contractor EMS. | |
| ***Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations"***<br>The purpose of this EO is to focus federal attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• EO 14008, "Tackling the Climate Crisis at Home and Abroad"<br>• EO 14057, "Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability." | DOE-ID and INL evaluate the potential for environmental justice (EJ) matters as part of the review processes implemented to identify potential environmental impacts from any and all proposed federal actions routinely as part of the NEPA compliance program. Consideration of EJ in NEPA analysis is driven by EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," and is further supported by EO 14008. The EOs effectively direct federal agencies to identify disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority, low-income, and minority and low-income populations and to take action to address such impacts. Section 2.3 contains details of DOE-ID and INL Site promotion of EJ and the outreach efforts that were taken in 2023. | 2.3 |
| **RADIATION PROTECTION** | | |
| ***DOE Order 458.1, Change 4, "Radiation Protection of the Public and the Environment"***<br>"Radiation Protection of the Public and the Environment" was established to protect the public and the environment against undue risk from radiation associated with radiological activities conducted under the control of DOE and DOE contractors. | The Order sets the public dose limit at a total effective dose not to exceed 100 mrem/yr (1 mSv/yr) above background radiation levels. Chapter 8 presents dose calculations for INL Site releases for 2023. The annual dose to the maximally exposed individual in 2023, as determined using CAA Assessment Package 88-PC, was 0.029 mrem (0.29 µSv). | Chapter 4<br>Chapter 5<br>Chapter 6<br>Chapter 7<br>Chapter 8<br>Appendix A |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| | DOE standard DOE-STD-1196-2022 (DOE 2022), "Derived Concentration Technical Standard," supports the implementation of DOE O 458.1. The standard defines the quantities used in the design and conduct of radiological environmental protection programs at DOE facilities and sites. These quantities, known as Derived Concentration Standards, represent the concentration of a given radionuclide in either water or air that results in a member of the public receiving 100 mrem (1 mSv) effective dose following continuous exposure for one year via each of the following pathways: (1) ingestion of water, (2) submersion in air, and (3) inhalation.<br><br>Measurements of radionuclides in environmental media sampled on and around the INL Site were all below applicable Derived Concentration Standards.<br><br>DOE O 458.1 specifies the limits for unrestricted release of property to the public. INL Site contractors use a graded approach for release of material and equipment for unrestricted public use. Material has been categorized so that in some cases an administrative release can be accomplished without a radiological survey. Such material originates from controlled areas and includes the following:<br><br>• Personal items or materials<br>• Documents, mail, diskettes, compact disks, and other office media<br>• Paper, cardboard, plastic products, aluminum beverage cans, toner cartridges, and other items for recycling<br>• Office trash<br>• Non-radiological area housekeeping materials and associated waste<br>• Breakroom, cafeteria, and medical wastes<br>• Medical and bioassay samples<br>• Other items with an approved release plan.<br><br>Items originating from radiological areas within the INL Site's controlled areas not in listed categories are either surveyed prior to release to the public, or a process knowledge evaluation is conducted to verify the item has not been exposed to radioactive material or beams of radiation capable of creating radioactive material. In some cases, both a radiological survey and a process knowledge evaluation are | |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| | performed (e.g., a radiological survey is conducted on the outside of the item, and a process knowledge form is signed by the custodian for inaccessible surfaces).<br><br>When the process knowledge approach is employed, the history of the material confirms that no radioactive material has passed through or contacted the item. Items advertised for public sale via an auction are also surveyed by the contractor prior to shipment to the INL Site property/excess warehouse, where the materials are again resurveyed on a random basis by personnel prior to release, giving further assurance this material is not released with inadvertent contamination.<br><br>All contractors complete material surveys prior to release and transport to the state-permitted landfill at CFA. The only exception is for items that could be internally contaminated; these items are submitted to Waste Generator Services for disposal using one of the offsite treatment, storage, and disposal facilities that can accept low-level contamination. DOE-ID, using a graded approach, provides oversight of the INL clearance processes.<br><br>For the 2023 calendar year, the INL contractor had 1,326 releases of personal property items with over 99% of these releases being for reuse at INL (i.e., instruments for calibration, miscellaneous tools, and equipment). Those that were not released for reuse were released for appropriate disposal.<br><br>The ICP contractor diverted 158,920 lbs of carbon steel and aluminum scrap and 479,440 lbs of mixed-metal scrap from onsite landfills in 2023 by sending it to an offsite recycling facility. The scrap metal was accumulated during the deactivation and decommissioning of the Submarine 1st Generation Westinghouse prototype at the Naval Reactors Facility. Before their release, these materials were characterized to ensure they were not a hazardous waste and that they were deemed free of radioactive contamination based on surveys performed by Radiological Protection personnel.<br><br>On January 12, 2000, the Secretary of Energy established a DOE moratorium on the unrestricted release of all volumetrically contaminated metals.<br><br>On July 13, 2000, DOE suspended “the unrestricted release for recycling of scrap metal from radiological areas within DOE facilities” (DOE Secretarial | |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| | Memorandum: Release of Surplus and Scrap Materials; Memorandum from Bill Richardson to Heads of Departmental Elements).<br><br>The moratorium and suspension of the release of metals from DOE sites remain in effect. INL Site contractors continue to follow the requirements of these Secretarial Memorandums. No scrap metal directly released from radiological areas is recycled. | |
| ***Toxic Substance Control Act (1976), 15 USC 2601 et seq***<br>The TSCA, which is administered by the EPA, requires the regulation of production, use, or disposal of chemicals. TSCA supplements sections of the CAA, Clean Water Act (CWA), and Occupational Safety and Health Act.<br><br>*Other environmental statutes and regulations apply, in whole or in part:*<br><br>• 40 CFR 761, Subpart J, "General Records and Reports." | Because the INL Site does not produce chemicals, compliance with the TSCA is primarily directed towards the use and management of certain chemicals—particularly polychlorinated biphenyls (PCBs). The INL Site manages radioactive mixed waste containing PCBs received from other DOE sites many years ago for disposal. Environmental remediation activities include the reprocessing of these waste materials for disposition offsite. In addition, PCBs were used in the manufacture of many different items and materials, including liquid-filled electrical equipment such as transformers and capacitors, paint, and caulking. Whenever any of these items or materials are discovered, they are disposed of off the INL Site at a TSCA-approved disposal facility. Requirements for the reporting of PCB-related activities are found in 40 CFR 761, Subpart J, "General Records and Reports."<br><br>The INL contractor manages TSCA Risk-based Disposal Approvals (RBDAs) at the ATR Complex, which establishes an agreement with the EPA to properly dispose of and/or decontaminate PCB waste in accordance with 40 CFR 761. TSCA RBDAs are situational based off discovery with the intention of minimizing risk to human health and the environment. TRA-641 was developed to address painted surfaces in the empty canal under 40 CFR 761.62(c) for paint, and under 40 CFR 761.61(c) for PCBs, that may have penetrated the concrete. TRA-619 was developed to address the short-term cleanup and disposal of applied PCB paint and interim cleanup of PCBs that have penetrated the concrete flooring from the application of PCB paint under 40 CFR 761.61(c).<br><br>The ICP contractor holds RBDAs, granted by EPA Region 10, which allow for processing of PCB-contaminated legacy sludge wastes from the Rocky Flats Plant | N/A |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| | at two of the facilities located at RWMC; however, the RBDA for ARP VIII was closed in 2023. Per 40 CFR 761.20(c)(2)(ii), processing activities that are primarily associated with and facilitate treatment or disposal require TSCA PCB approval. Work performed under these RBDAs ensures that these wastes can be accepted for disposal at the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. | |
| **WATER QUALITY AND PROTECTION** | | |
| ***Clean Water Act (1972), 40 CFR 109-140, 33 USC 1251, et seq.***<br>The CWA established goals to control pollutants discharged to U.S. surface waters. Among the main elements of the CWA are effluent limitations for specific industry categories set by EPA, as well as regulating water quality standards for surface water. The CWA also provided for the National Pollutant Discharge Elimination System permit program, requiring permits for discharges into regulated surface waters.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• IDAPA 58.01.16, "Wastewater Rules"<br>• IDAPA 58.01.25, "Rules Regulating the Idaho Pollutant Discharge Elimination System Program." | Idaho DEQ is authorized by the EPA as the permitting authority over the National Pollutant Discharge Elimination System program. The Idaho DEQ program is called the Idaho Pollutant Discharge Elimination System (IPDES). INL Site contractors do not currently hold any IPDES permits but in-town facilities discharge to the city of Idaho Falls wastewater treatment plant, which is required by the IPDES permit program to set pretreatment standards for nondomestic discharges to publicly-owned treatment works. The INL Research Center (IRC) complied with an Industrial Wastewater Acceptance permit that was in effect until March 15, 2023, for discharges to the city of Idaho Falls. This program is set out in Title 8, Chapter 1 of the Municipal Code of the city of Idaho Falls. All discharges in 2023 were within levels established in the IRC Industrial Wastewater Acceptance permit. The city of Idaho Falls did not perform an inspection in 2023. On March 15, 2023, the city of Idaho Falls notified INL that based on review of INL's flow data, sampling data, water savings, and low pollutant levels, the city no longer considers IRC to be a Significant Industrial User, so a permit is no longer required for discharge into the city of Idaho Falls publicly-owned treatment works (Henricksen 2023). | N/A |
| ***Idaho Reuse Permits***<br>Idaho defines recycled water as water that has been treated by a wastewater treatment system and is used in accordance with the Recycled Water Rules.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• IDAPA 58.01.11, "Ground Water Quality Rule" | Wastewater is the spent water or effluent from activities and processes occurring in dwellings, commercial buildings, industrial plants, institutions, and other establishments. If the wastewater contains sewage, it is considered municipal wastewater. If it does not contain sewage, it is considered industrial wastewater.<br>Recycled water is wastewater effluent that is treated, if necessary, and then reused for other purposes. Idaho DEQ encourages reuse, which is the practice of using recycled water for irrigation, ground water recharge, landscape | Chapter 5<br>Chapter 6<br>Appendix A |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| • IDAPA 58.01.16, "Wastewater Rules"<br>• IDAPA 58.01.17, "Recycled Water Rules." | impoundments, toilet flushing in commercial buildings, dust control, and other beneficial uses.<br><br>Idaho DEQ requires anyone choosing to use recycled water to obtain a reuse permit. Reuse permits consider the site-specific conditions of each facility and include site-specific limits and conditions, as applicable, to protect public health and the environment, including groundwater. Idaho DEQ issues these permits in accordance with IDAPA 58.01.17, "Recycled Water Rules;" IDAPA 58.01.16, "Wastewater Rules;" and IDAPA 58.01.11, "Ground Water Quality Rule." The following facilities have reuse permits at the INL Site:<br>• ATR Complex Cold Waste Ponds (I-161-03)<br>• INTEC New Percolation Ponds (M-130-06)<br>• MFC Industrial Waste Pond (I-160-02).<br><br>Idaho DEQ did not inspect the INL Site contractors reuse systems in 2023. All reuse systems at the INL Site were operated in substantial compliance with permit requirements during 2023. | |
| ***Safe Drinking Water Act (1974), 40 CFR 141-143, 42 USC 300f, et seq.***<br>The Safe Drinking Water Act establishes primary standards for public water supplies to ensure it is safe for consumption.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• 40 CFR 141, "National Primary Drinking Water Regulations"<br>• 40 CFR 143, "National Secondary Drinking Water Regulations"<br>• IDAPA 58.01.08, "Idaho Rules for Public Drinking Water Systems." | INL Site drinking water complied with all applicable federal and state water quality standards in 2023. Eleven potable water systems are permitted by Idaho DEQ. Each potable water system is sampled according to a monitoring cycle that identifies specific contaminants and sampling frequency, ranging from monthly, quarterly, or once every 1, 3, 6, or 9 years.<br><br>In addition to regulatorily required sampling, INL Site contractors performed additional surveillance monitoring for bacteriological contaminants, radiological contaminants, and per- and poly-fluoroalkyl substances in 2023.<br><br>DEQ conducted sanitary surveys of the ATR Complex, MFC, TAN Contained Test Facility, INTEC, and NRF D&D public water systems in 2023. No significant deficiencies were found. | 6.7 |

***Table 2-1. continued.***

| REGULATORY PROGRAM DESCRIPTION | 2023 COMPLIANCE STATUS | REPORT SECTIONS |
|---|---|---|
| **QUALITY ASSURANCE** | | |
| ***10 CFR 830, Subpart A, "Quality Assurance Requirements"***<br>10 CFR 830, Subpart A, establishes quality assurance requirements for contractors conducting activities, including providing items or service that affect, or may affect, the nuclear safety of DOE nuclear facilities.<br>*Other environmental statutes and regulations apply, in whole or in part:*<br>• DOE O 414.1D, Change 2, "Quality Assurance." | Quality assurance and quality control programs for environmental surveillance monitoring were maintained in 2023 by INL Site contractors and laboratories performing environmental analyses. Results are summarized in Chapter 10, Section 10.4. Field sampling elements, laboratory measurements, and performance evaluation samples were reviewed and evaluated for each INL contractor laboratory. Together, this information was used to assess the quality of data provided to INL Site contractors, and to follow-up and/or conduct corrective action to improve processes when necessary. This multi-faceted approach to quality assurance and quality control added value to each INL Site contractor's monitoring program by providing confidence that all laboratory data reported in this report are reliable and of acceptable quality. | Chapter 10 |

*Table 2-2. 2023 status of active WAGs.*

| WAG | FACILITY | STATUS |
|---|---|---|
| 1 | Test Area North | Groundwater cleanup of trichloroethene for OU 1-07B continued through 2023 in accordance with EPA- and Idaho DEQ-approved plans (DOE-ID 2022a, 2022b). The New Pump and Treat Facility generally operated four days per week, except for downtime due to maintenance, to maintain trichloroethene concentrations in the medial zone below specified targets. The in-situ bioremediation (ISB) transitioned into a rebound test in 2012 to determine the effectiveness of the remedy to date. The revised test plan was finalized in early 2017 to establish how the groundwater cleanup at TAN will continue. Two ISB injection wells were constructed in 2015 to further ISB efforts, while one monitoring well was constructed in 2017 to better monitor the plume at its distal edge. During 2021, one ISB injection well was constructed, and further ISB continues in a specific area where previous efforts had not achieved the desired reduction in contaminant levels. All ICs and operations and maintenance (O&M) requirements were maintained during 2023 (DOE-ID 2024c). |
| 3 | Idaho Nuclear Technology and Engineering Center | The Idaho CERCLA Disposal Facility, located southwest of INTEC, disposes of contaminated soils and debris from CERCLA remediation operations for the protection of human health and the environment. Operations and monitoring at the Idaho CERCLA Disposal Facility (ICDF) are carried out in accordance with EPA- and Idaho DEQ-approved plans (DOE-ID 2018a, 2023a, 2023b). The consolidation of waste at the ICDF reduces the risk of exposure to contaminants for human and ecological receptors, and the use of an engineered facility with leachate collection protects the underlying Snake River Plain Aquifer. The ICDF functions as an INL Site-wide disposal facility for CERCLA soils and debris from other WAGs in compliance with strict waste acceptance criteria. The facility continues to receive small amounts of liquid and solid waste periodically for disposal in the ICDF evaporation ponds and disposal cells, respectively. The ICDF evaporation ponds and the Snake River Plain Aquifer are sampled annually; results are sent to the EPA and Idaho DEQ.<br><br>Remedial actions and monitoring required by the WAG 3, OU 3-14 ROD (DOE-ID 2007a) are implemented through EPA- and Idaho DEQ-approved plans (DOE-ID 2018b, 2018c). Remedial actions at the Tank Farm Facility (TFF) are designed to reduce water infiltration that potentially could transport contaminants from the vadose zone and the perched water to the underlying aquifer. An interim low-permeability asphalt barrier was placed over the western two-thirds of the TFF during 2017 to further reduce infiltration of precipitation water until a final cover is constructed over the TFF after closure of the final four tanks. Perched and groundwater monitoring under and near the TFF will continue until the risk posed by contamination left in place is below target levels. All ICs and O&M requirements were maintained in 2023. |
| 7 | Radioactive Waste Management Complex | WAG 7 includes the Subsurface Disposal Area (SDA), a 97-acre radioactive waste landfill that is the major focus of remedial response actions at RWMC (Figure 2-3). Waste was buried in approximately 35 of the 97 acres within 21 unlined pits, 58 trenches, 21 soil vault rows, and, on Pad A, an above-grade disposal area. Disposal requirements have changed in accordance with laws and practices current at the disposal time. Initial operations began in 1952 and were limited to shallow, landfill disposal of waste generated at the INL Site. Beginning in 1954, the DOE Rocky Flats Plant near Boulder, Colorado, was authorized to send waste to RWMC for disposal. The Rocky Flats Plant was a nuclear weapons production facility with peak operations during the Cold War era.<br><br>Various types of radioactive waste streams were disposed of, including process waste (e.g., sludge, graphite molds and fines, roaster oxides, evaporator salts), equipment, and other waste incidental to production (e.g., contaminated gloves, paper, clothing, |

***Table 2-2. continued.***

| WAG | FACILITY | STATUS |
|---|---|---|
| | | other industrial trash). Much of the Rocky Flats Plant waste was contaminated with TRU isotopes and solvents (e.g., carbon tetrachloride). In 1970, burial of TRU waste was prohibited. In 1984, disposal practices were modified to eliminate disposal of mixed waste. Since 1984, only LLW was disposed of in the SDA at the Active LLW Disposal Facility (ALLWDF). Disposal of waste from offsite generators was discontinued in the early 1990s, and disposal of contact-handled waste was discontinued at the end of FY 2008. Disposal operations at the ALLWDF were completed in May 2021, and interim closure of the ALLWDF was completed in August 2022 (MacRae 2022). Final closure of the SDA and ALLWDF is addressed under the OU 7-13/14 ROD.<br><br>The OU 7-13/14 ROD (DOE-ID 2008a) is consistent with DOE's obligations for TRU waste removal under the "Agreement to Implement U.S. District Court Order Dated May 25, 2006," between the Idaho DEQ and DOE-ID, effective July 3, 2008 (U.S. District Court 2008). The ROD calls for exhuming and packaging a minimum of 6,238 $m^3$ (8,159 $yd^3$) of targeted waste from a minimum combined area of 5.69 acres. Targeted waste for retrieval contains TRU elements (e.g., plutonium), uranium, and collocated organic solvents (e.g., carbon tetrachloride). Targeted waste retrievals in specific areas of the SDA commenced in 2005 and were completed in December 2021. The retrieved targeted waste is packaged, certified, and shipped out of Idaho. A total of 10,417.5 $m^3$ (13,625.58 $yd^3$) of targeted waste was retrieved and packaged for offsite shipment.<br><br>In addition to targeted waste retrieval, the ROD addresses the remaining contamination in the SDA through a combination of vapor-vacuum extraction and treatment of solvent vapors from the subsurface (completed in August 2020; RPT-1904) and in-situ grouting of specified waste forms containing mobile contaminants (completed in 2010; DOE-ID 2011a). Quarterly monitoring of the solvent vapors in the vadose zone will continue in accordance with the Operations & Maintenance Plan (DOE-ID 2023c). However, most of the vapor ports used for monitoring within the SDA footprint have been removed in preparation for the third phase of the ROD. The third and final phase of the ROD includes constructing an evapotranspiration surface barrier over the entire SDA landfill, followed by long-term management and control after construction is complete. Demolition and decommissioning of structures within the SDA have commenced in preparation for construction of the SDA cap. |
| 10 | 10-04 INL Site-wide Miscellaneous Sites and Comprehensive RI/FS | OU 10-04 addresses long-term stewardship functions—ICs and O&M for sites that do not qualify for Unlimited Use/Unrestricted Exposure—and explosive hazards associated with historical military operations on the INL Site. All ICs and O&M requirements were maintained in 2023, under the Site-wide IC/O&M Plan (DOE-ID 2022c). The fourth Site-wide CERCLA five-year review covering the period from 2015 through 2019 was finalized in January 2021. The purpose of the CERCLA 5-year review is to verify that implemented cleanup actions continue to meet cleanup objectives documented in the RODs. The next CERCLA 5-year review will begin in late 2024. |
| | 10-08 INL Site-wide Groundwater, Miscellaneous Sites, and Future Sites | OU 10-08 addresses Site-wide groundwater, miscellaneous sites, and future sites (DOE-ID 2009). Response actions for OU 10-08 are mostly complete, and ongoing activities include groundwater monitoring and evaluating and remediating potential new sites that are discovered. Biennial groundwater monitoring was performed in 2023 (DOE-ID 2021) to verify there is no unacceptable threat to human health or the environment from commingled plumes or along the southern INL Site boundary. |

## 2.3 Environmental and Energy Justice

DOE defines EJ as the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (energy.gov). Several EOs require federal departments to address EJ: EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," Section 1-1; EO 14008, "Tackling the Climate Crisis at Home and Abroad," Section 219; and EO 14057, "Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability," Section 402.

Additionally, the federal government established the Justice Initiative with a goal that 40% of the overall benefits of certain federal investments flow to disadvantaged communities, which have been marginalized, underserved, and overburdened by pollution. The seven categories of investment include (1) climate change, (2) clean energy and energy efficiency, (3) clean transit, (4) affordable and sustainable housing, (5) training and workforce development, (6) remediation and reduction of legacy pollution, and the (7) development of critical clean water and wastewater infrastructure. Through the Inflation Reduction Act, Bipartisan Infrastructure Law, and the American Rescue Plan, federal agencies are making historic levels of investment to advance EJ.

DOE and INL identify disadvantaged communities using the methodology prescribed by the President's Council on Environmental Quality. The Council on Environmental Quality Climate and Economic Justice Screening Tool (CEJST) methodology identifies a community (2010 U.S. census tract) as disadvantaged if it meets both a socioeconomic burden threshold and an environmental burden threshold. Types of environmental burdens include climate change, health, housing, transportation, pollution, energy, workforce development, and water. A tract is also considered disadvantaged if it overlaps an Indian reservation. Of the eighty 2010 U.S. census tracts in the INL region of influence, 27 of them are identified as disadvantaged. Tracts surrounding and overlapping the INL Site, as well as the tract encompassing the INL REC are considered disadvantaged. There are also several tracts in Pocatello, Idaho Falls, and rural unincorporated areas that exceed one or more of the burden thresholds (Figure 2-1). Although many tracts meet more than one threshold, and there are a variety of burdens impacting the INL region of influence, climate change impacts more communities than any other threshold. Much of this is due to the economic risks facing agriculture in the area (i.e., cold snaps, wind, and drought) and the health risks facing lower-income communities (older houses at risk of flood or with inadequate heating and cooling). Notably, there are no communities that meet any water thresholds within the region of influence. Common socioeconomic burdens in the INL region of influence include a high percentage of households below 100% of the federal poverty line and a large number of individuals who do not hold a high school diploma or equivalent. For more information on methodology and sources, please visit the CEJST website.

### 2.3.1 Initiatives

The INL Site established an Environmental Justice Program in 2021, which recognizes that communities across the globe will be tackling similar challenges in the transition to clean energy. The INL Site aspires to be an EJ leader, setting an example of how to incorporate multiple voices and viewpoints in efforts to ensure a just energy transition inclusive of EJ priorities and community engagement. The program focuses on the sustainable stewardship of natural resources through relationships between humans and environmental systems.

In support of INL's EJ efforts, a two-day Intertribal Engagement Meeting was held on September 13-14, 2023. This collaborative event involved the INL's Center for Advanced Energy Studies (CAES), University of Idaho, and three out of five Idaho Tribes, as well as one Oregon Tribe. The purpose of the meeting was to explore the inclusion of Indigenous science and knowledge in INL Research. The Tribes had the opportunity to introduce their culture, traditions, and thoughts on incorporating Indigenous science into research methods. The INL contractor, in turn, provided tours of the CAES center, INL Site, Energy Systems Laboratory, and Collaborative Computing Center to showcase scientific research. Representatives from the university also shared research and work related to Indigenous and local knowledge in science. Breakout sessions were held to foster collaborative discussions about Indigenous science and western science efforts, and whether inclusion is feasible. The discussions were impactful, and all attendees expressed enthusiasm for continuing this effort and expressed hope that INL will move forward with this endeavor.

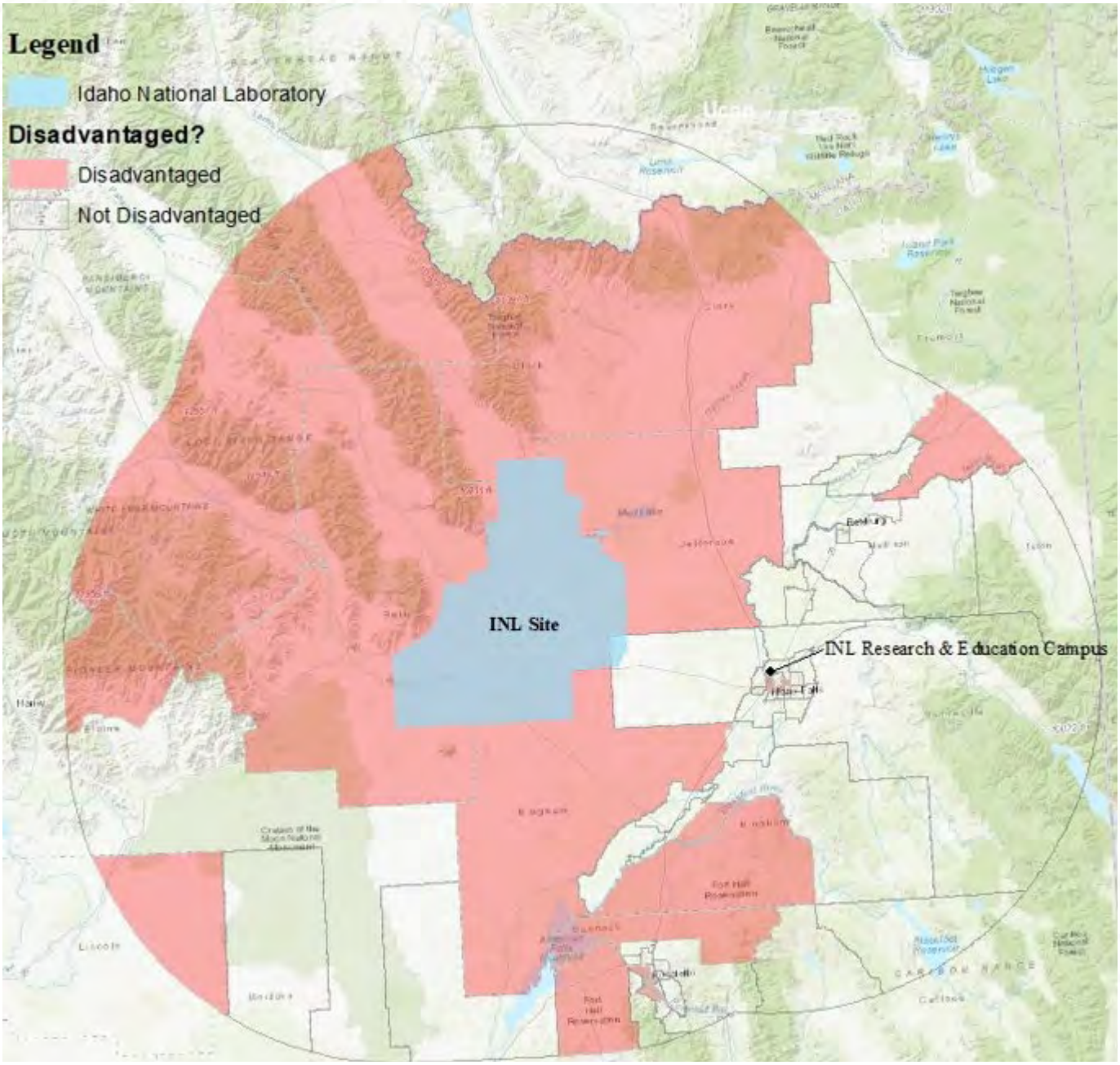


***Figure 2-1. Disadvantaged communities near the INL region.***

DOE-ID established a Working Agreement with the Shoshone-Bannock Tribes in 1992 that was later developed into an AIP. DOE-ID and the Tribes have negotiated multiple five-year AIPs since that initial Working Agreement, the latest of which was signed in September 2022 (https://idweb.id.doe.lcl/IDMSOther/PDF/AIP_Signed.pdf). The AIP is designed to promote increased interaction and cooperation on issues of mutual concern. This AIP reflects the understanding and commitment between the parties to increase the tribes' level of assurance that activities conducted at the INL Site protect the health, safety, environment, and cultural resources and address the tribal interests in DOE-administered programs. It is applicable to actions and operations of DOE-ID and its contractors on the lands of the INL Site that affect original ancestral territory and tribal lands. DOE-ID considers the AIP as an important mechanism through which environmental and energy justice matters are addressed. Annual funding from DOE-ID through Cooperative Agreements support the Tribal DOE and Office of Emergency Management programs.

The INL Site made significant progress toward meeting the goals and milestones of the laboratory's memorandum of understanding (MOU) with the Shoshone-Bannock Tribes in three main topics areas: (1) science, technology, engineering, and mathematics (STEM)-adjacent workforce development; (2) STEM school designation; and (3) STEM internships and scholarships. Established in 2021, the MOU with the Shoshone-Bannock School District #537 is a close collaboration with the Tribes to create meaningful education and career pathways for tribal students. This MOU creates a place-based, culturally responsive program designed to both bring opportunities to tribal schools and bring students to the laboratory for work-based learning. The K–12 Education team assisted the faculty and administration of the Shoshone-Bannock School District #537 to design culturally responsive teaching and learning through project-based, place-based, and service-learning approaches as they worked towards STEM school designation:

- Built a sweat lodge and surrounding seating, enhancing opportunities for the Shoshone-Bannock community to participate in traditional customs.
- Built a gazebo and picnic benches for students to eat lunch at, refurbished portions of various athletics facilities, and built a memorial bench to commemorate a teacher who recently passed away. All of these projects improved accessibility and enhanced the student experience at Shoshone-Bannock Jr./Sr. High School.
- Designed and built a display box to hold a scale model of traditional Shoshone-Bannock structures and lands designed by eighth-grade students.
- Performed maintenance and repairs on school buses and community members' vehicles, improving transportation reliability for students and the community.

Second year coursework was successfully delivered in both the industrial mechanics and construction trades pathways. Shoshone-Bannock High School Career technical students studying either industrial mechanics or construction trades were eligible to participate in a six-week paid summer internship at the INL Site, working under the supervision of instructors and safety personnel through the INL Site Future Corps Program. In 2023, the second cohort of nine Shoshone-Bannock-High School students for the Work-Based Learning Program spent six weeks working onsite with mentors from INL Site's Facilities and Site Services and MFC directorates to explore trades, crafts, fabrication, and operations. The coursework and Work-Based Learning Program prepares students with the skills and experience necessary for entry-level trades and crafts positions at the INL Site.

The INL Site K–12 Education team collaborated with the INL Site's CRMO to sponsor Earth Day activities for every age group, including an art contest, a traditional native ceremony, a cultural resource tour of the Middle Butte Cave, and a Shoshone-Bannock-led dancing exhibition at CFA for nearly 85 Shoshone-Bannock Tribal members and students (Figure 2-2).

INL partnered with the Tribes for the annual Shoshone-Bannock Indian Festival, a celebration of Shoshone-Bannock culture and traditions. The event attracts thousands of attendees from both Indian country and other populations.

The INL Site's K–12 Education team hosted community STEM nights at the Shoshone-Bannock High School and staged career exploration events for Tribal Youth Education Programs on the Fort Hall Indian Reservation for students and their families with interactive STEM-learning activities.

***Figure 2-2. Traditional Shoshone-Bannock tribal dancer celebrating Earth Day at CFA.***

The DOE-ICP is working towards the end-state and long-term stewardship (LTS) of the INL Site. It is commonly accepted amongst DOE, tribes, and stakeholders that LTS is the actions that survey/monitor and maintain Land Use Controls and ensures the protection of human and health and the environment is accomplished in perpetuity. In FY 2022, DOE-ICP provided funding for the Shoshone-Bannock Tribal DOE and Air Quality Program and Heritage Tribal Office cultural resources program involvement in LTS activities to develop and implement a Tribal LTS Program on the INL Site. The Tribal LTS Program will work to integrate culturally based knowledge and principles into existing ICP LTS plans and activities. The Tribal LTS Program will form a "Tribal LTS Collaborative Group" to ensure the Tribes' goals are implemented in coordination with the Fort Hall Business Council, Tribal Departments, and the DOE-ICP.

The DOE-ID and INL Site evaluate the potential for EJ matters as part of the review processes implemented to identify potential environmental impacts from all proposed federal actions routinely as part of the NEPA compliance program. Consideration of EJ in NEPA analysis is driven by EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," and is further supported by EO 14008. The EOs effectively direct federal agencies to identify disproportionately high and adverse human health or environmental effects of federal programs, policies, and activities on minority populations and low-income populations and to take action to address such impacts. Although EJ has been a part of the INL Site NEPA processes since President Clinton signed EO 12898 in 1994, the INL Site's NEPA team and EJ program have made significant efforts in recent months to become a leader in EJ within the national laboratory system.

In the sustainability realm, the DOE Bioenergy Technologies Office, Argonne National Laboratory, and the INL Site K–12 Education Team created and promoted a bioenergy toolkit for educators as part of the Bioenergy Research and Education BRIDGES project. The toolkit translates DOE scientific bioenergy research to the classroom, providing equitable access to high-quality learning materials and easing the transition from academics to industry as part of a workforce development and diversity, equity, and inclusion initiative. The INL Site field-tested two case studies aligned to the laboratory's Bioenergy Science and Technology portfolio and industry needs, called "Regional Feedstocks: Are They the Answer to Achieving Net Zero?" and "Solid Waste to Energy: Traditional Ecology and Environmental Justice," and trained teachers on how to implement the case studies in their classrooms. The case studies draw inspiration from Bioenergy Technologies Office science and technology research for long-term adaptation, resiliency, and sustainable practices and policies for historically marginalized communities across the U.S. BRIDGES is built on a framework that allows for place-based learning and culturally responsive teaching, supporting diversity, equity, and inclusion initiative.

## 2.4 INL Site Agreements

DOE-ID has four major site agreements that contain regulatory commitments and milestones. These major site agreements are known as the Federal Facility Agreement and Consent Order (FFA/CO) (DOE 1991), Site Treatment Plan (DOE-ID 2023d), the Idaho Settlement Agreement (ISA) (DOE 1995), and the Notice of Noncompliance/Consent Order (NON/CO) (CCN 317575).

***Federal Facility Agreement and Consent Order***

Past INL Site activities, since its inception in 1949, resulted in suspected and confirmed releases of contaminants to the environment. As a result, the INL was added to the EPA's National Priority List of CERCLA sites in 1989. The FFA/CO is a CERCLA-based legally binding cleanup agreement that was signed in 1991 by Idaho DEQ, EPA, and DOE.

As a CERCLA site, DOE conducts risk-based cleanup, which is subject to DEQ and EPA approval in accordance with the FFA/CO. This means that if a confirmed contaminant release to soil and/or groundwater poses an unacceptable risk to either humans or the environment, it requires cleanup or the establishment of controls to keep people, plants, or animals from coming into contact with the waste. If a site poses little to no risk, either limited action or no action is taken.

Since 1991, EPA, DEQ, and DOE have signed 25 RODs on individual contaminant release sites and entire facilities at the INL. Cleanup actions continue at TAN, INTEC, and RWMC. The FFA/CO subdivided the INL into 10 WAGs to facilitate remediation. These groups contain individual sites that are organized into OUs based on proximity or similar characteristics. WAGs 1-9 comprise the major facilities at the INL, while WAG 10 encompasses the remaining portions of the INL Site and INL Site-wide groundwater issues. Each WAG has a comprehensive ROD that addresses human and ecological risk and has actions to restore or protect groundwater within 100 years.

***Site Treatment Plan***

The Federal Facility Compliance Act of 1992 requires the preparation of site treatment plans for the treatment of mixed waste stored or generated at DOE facilities. Mixed waste contains both hazardous and radioactive components. The Federal Facility Compliance Act Consent Order and Site Treatment Plan was finalized and signed by the state of Idaho on November 1, 1995, and is updated annually (DEQ 1995). This plan outlines DOE-ID's proposed treatment strategy for mixed waste streams, called the backlog, and identifies onsite and offsite mixed LLW treatment capabilities.

During 2023, DOE-ID completed two Site Treatment Plan milestones, including one associated with the treatment of remote-handled waste and the other to commence operation of the Sodium Bearing Waste Facility. DOE-ID made a request to Idaho DEQ to extend milestones for the Sodium Bearing Waste Treatment Facility, original volume transuranic reclassified as mixed LLW (associated with sludge reprocessing), the original volume transuranic waste certification, and the Calcine Disposition Project. All milestone requests were determined to have good cause and were subsequently approved. Current milestones can be seen in the FY 2024 Site Treatment Plan.

***Idaho Settlement Agreement (ISA)***

On October 16, 1995, DOE-ID, the U.S. Navy, and Idaho DEQ entered into an agreement (also known as the ISA) that guides management of spent nuclear fuel (SNF), HLW, and TRU waste at the INL Site. The agreement (DOE 1995) limits shipments of DOE-ID and Naval SNF into the state and sets milestones for shipments of SNF and radioactive waste out of the state.

The ISA, as related to requirements found in the agreement, dated May 25, 2006, required the exhumation of TRU waste from the SDA at the RWMC. The DOE and ICP workforce safely completed the required 5.69-acre exhumation and removal of associated targeted waste ahead of the regulatory milestone due date.

The Site Treatment Plan and ISA required DOE-ID to process and ship all covered waste out of Idaho by December 31, 2018, respectively, stored as TRU waste on the INL Site in 1995, when the agreements were signed. The estimated volume of that waste was 65,000 $m^3$ (85,016 $yd^3$). This milestone was not achieved; however, revised Site Treatment Plan milestones were agreed upon with Idaho DEQ; an addendum to the ISA was signed on November 6, 2019, to address the milestone.

As of December 31, 2023, approximately 5,600 $m^3$ of original volume TRU-contaminated waste remains onsite. DOE-ID made 386 shipments of TRU waste to WIPP in calendar year 2023, comprised of 53 shipments of ISA legacy waste and 333 shipments of ARP exhumed waste.

The ICP contractor manages and operates several projects to facilitate the disposition of radioactive waste as required by the ISA and Site Treatment Plan. The AMWTP performs retrieval, characterization, treatment, packaging, and shipment of TRU waste currently stored at the INL Site. Most of the waste processed at the AMWTP resulted from the manufacture of nuclear components at DOE's Rocky Flats Plant in Colorado. This waste is contaminated with TRU radioactive elements (primarily plutonium).

***Notice of Noncompliance/Consent Order (NON/CO)***

The final agreement, the NON/CO and recent modification, in conjunction with the Site Treatment Plan, requires the treatment of sodium-bearing waste to be stored at the INTEC Tank Farm at the IWTU. To meet the milestones in the NON/CO and Site Treatment Plan, DOE-ID and its ICP contractor implemented a methodical approach to start-up the IWTU in early 2017 which was completed in 2023 when the facility began processing the remaining 3,407,000 L (900,000 gal) of liquid waste stored at INTEC. This waste is stored in three stainless steel underground tanks, while a fourth is always kept empty as a spare. All four tanks will be closed in compliance with hazardous waste regulations. A total of 11 other liquid storage tanks have been emptied, cleaned, and closed. The waste was originally scheduled to begin processing in 2012, but several technical problems delayed the IWTU.

The IWTU completed a facility outage implementing needed facility modifications in preparation for supporting sustained radiological waste treatment operations in July 2021. Following successful completion of readiness verification activities, the IWTU commenced a final confirmatory run-on simulant waste feed in late 2021. Technical challenges delayed completion of the final confirmatory run until mid-2022. These issues were adequately resolved, and the facility re-commenced its test run-in May. The facility successfully completed the final confirmatory run-in late July 2022 along with

a final round of readiness assessments for radiological operations. The facility processed 137,000 gallons of simulated waste over 65 days of continuous operation filling 125 product canisters. The facility shut down and entered a planned outage to inspect process vessels/components, conduct maintenance, and make minor modifications, which concluded in November. The facility-initiated plant start-up for simulant testing in late 2022 and radiological operations began in April 2023. With completion of system performance testing in August 2023, IWTU transitioned out of interim operation status. From April to September 2023, IWTU safely treated ~ 68,000 gallons of sodium-bearing waste from the INTEC TFF. IWTU suspended operations, shut down and entered a maintenance period in September 2023 to replace expended media (which had become saturated with mercury) in the granular activated carbon vessels in accordance with operating permit requirements.

## 2.5 Low-Level and Mixed Radioactive Waste

In 2023, approximately 306 $m^3$ (400 $yd^3$) of mixed low-level waste and 211 $m^3$ (276 $yd^3$) of LLW was shipped off the INL Site for treatment, disposal, or both, by the ICP contractor. In 2023, no LLW was disposed of at the SDA (Figure 2-3).

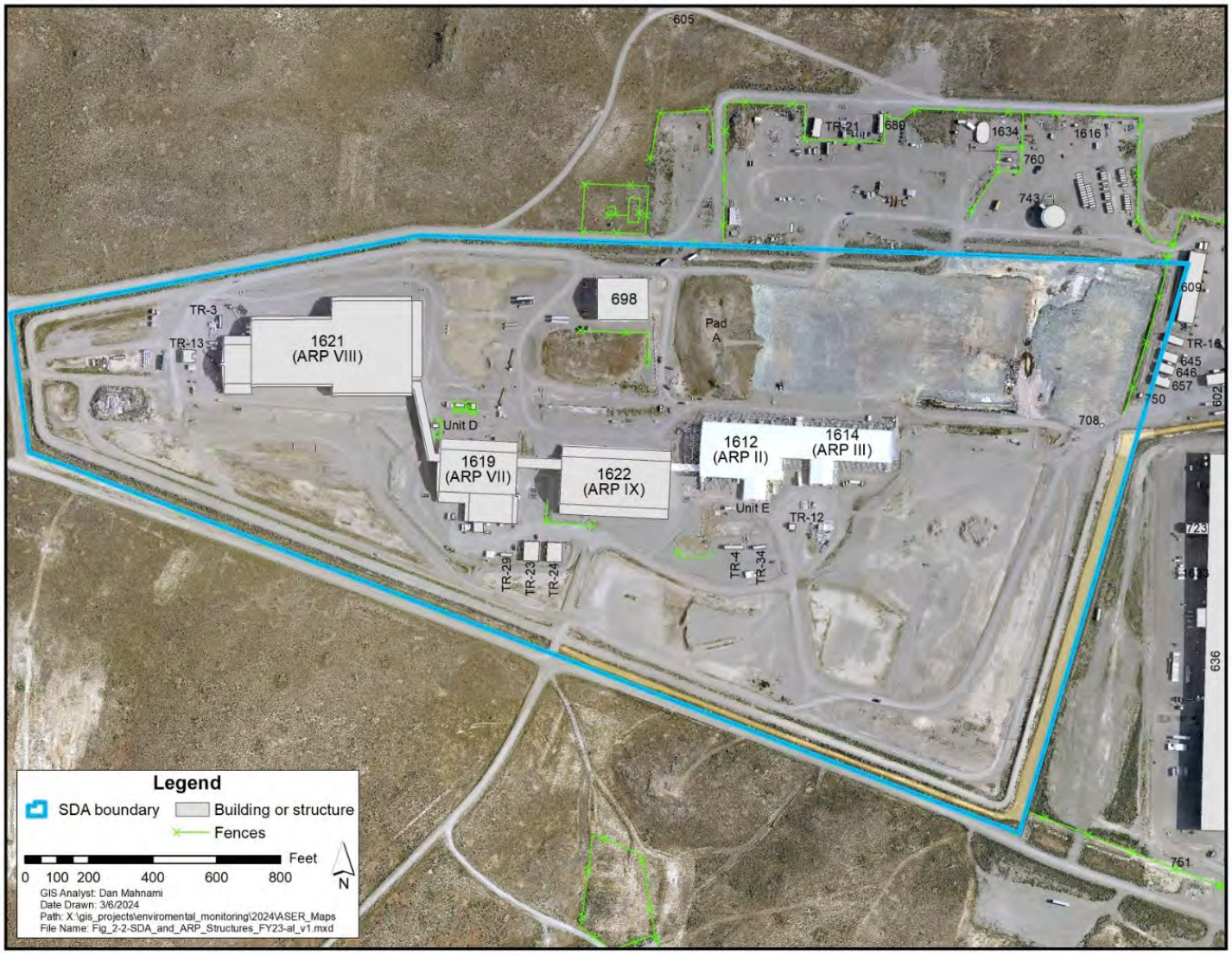


***Figure 2-3. RWMC SDA (2023).***

Table 2-3 lists waste types managed at the INL Site by INL Site contractors.

*Table 2-3. Radioactive wastes managed at the INL Site.*

| FACILITY | GENERATION | TREATMENT | STORAGE | DISPOSAL |
|---|---|---|---|---|
| **INL CONTRACTOR** | | | | |
| ATR Complex | LLW, RHLLW | — | LLW, RHLLW | — |
| CFA | LLW | — | LLW | — |
| MFC/INTEC | TRU, LLW, RHLLW | LLW | TRU, LLW, RHLLW | — |
| Material Security and Consolidation Complex | LLW | — | LLW | — |
| RHLLW Disposal Facility | RHLLW | — | RHLLW | RHLLW |
| REC | LLW | — | LLW | — |
| Specific Manufacturing Capability | LLW | LLW | LLW | — |
| **ICP CONTRACTOR** | | | | |
| AMWTP | TRU, LLW | TRU, LLW | TRU, LLW | — |
| ICDF | — | — | — | LLW |
| INTEC Calcined Solids Storage Facility | — | RHLLW | HLW, RHLLW | — |
| INTEC Interim Storage Areas | | | RH-TRU/LLW | |
| INTEC TFF | — | — | HLW | — |
| INTEC Waste Management Facilities | | RH-TRU/LLW | RH-TRU/LLW | |
| IWTU | — | HLW | HLW | — |
| RWMC Accelerated Retrieval Project | TRU, LLW | TRU, LLW | TRU, LLW | — |
| RWMC ALLWDF | — | — | — | LLW |

The status of each phase of the LLW management process for facilities managed at the INL Site by the INL Site contractors is shown in Table 2-4.

*Table 2-4. Status of each phase of the LLW management process for sites authorized to manage a LLW facility.*

| PHASE | RHLLW DISPOSAL FACILITY | RWMC ACTIVE LLW DISPOSAL FACILITY | ICDF |
|---|---|---|---|
| Performance Assessment | DOE/ID-11421 (DOE-ID 2018d), "Performance Assessment for the Idaho National Laboratory Remote-Handled Low-Level Waste Disposal Facility" | DOE/NE-ID-11243 (DOE-ID 2007b), "Performance Assessment for the RWMC Active Low-Level Waste Disposal Facility at the Idaho National Laboratory Site" | DOE/ID-10978 (DOE-ID 2011b), "Performance Assessment for the Idaho CERCLA Disposal Facility Landfill" |
| Composite Analysis | DOE/ID-11422 (DOE-ID 2016b), "Composite Analysis for the Idaho National Laboratory Remote-Handled Low-Level Waste Disposal Facility" | DOE/NE-ID-11244 (DOE-ID 2008b), "Composite Analysis for the RWMC Active Low-Level Waste Disposal Facility at the Idaho National Laboratory Site" | DOE/ID-10979 (DOE-ID 2003), "Composite Analysis for the INEEL CERCLA Disposal Facility Landfill" |

*Table 2-4. continued.*

| PHASE | RHLLW DISPOSAL FACILITY | RWMC ACTIVE LLW DISPOSAL FACILITY | ICDF |
|---|---|---|---|
| Closure Plan | PLN-3370, "Preliminary Closure Plan for the Idaho National Laboratory Remote-Handled Low-Level Waste Disposal Facility" | RPT-576, "Interim Closure Plan for the RWMC Active Low-Level Waste Disposal Facility at the Idaho National Laboratory Site" | A preliminary closure plan was developed for the entire ICDF Complex closure. This plan was included in the "ICDF Complex Remedial Action Work Plan" (DOE/ID-10984) (DOE-ID 2012) |
| Performance Assessment/ Composite Analysis Maintenance Program | PLN-3368, "Maintenance Plan for the Remote-Handled Low-Level Waste Disposal Facility Performance Assessment and Composite Analysis" | RPT-431, "Performance Assessment and Composite Analysis Maintenance Plan for the RWMC Active Low-Level Waste Disposal Facility" | RPT-791, "Performance Assessment and Composite Analysis Maintenance Plan for the Idaho CERCLA Disposal Facility" |
| Latest Annual Performance Assessment/ Composite Analysis Summary Report | INL/RPT-23-70876 (INL 2023), "Annual Summary Report for the Remote-Handled Low-Level Waste Disposal Facility – FY 2022" | RPT-2160, "Annual Summary Report: Review for Continued Adequacy of the Performance Assessment, Composite Analysis, and Supporting Documents for the Active Low-Level Waste Disposal Facility at the RWMC – FY 2023" | RPT-2161, "Annual Summary Report: Review for Continued Adequacy of the Performance Assessment, Composite Analysis, and Supporting Documents for the ICDF Landfill – FY 2023" |
| Disposal Authorization Statement | Bishop, T., memorandum to R. Provencher, May 22, 2018, "Operating Disposal Authorization Statement for the Remote-Handled Low-Level Waste Disposal Facility Idaho National Environmental Laboratory, Idaho," U.S. DOE-NE, May 22, 2018 | Marcinowski, F., memorandum to E. Sellers, January 30, 2008, "Revision of the Disposal Authorization Statement for the Idaho National Laboratory Active Low-Level Waste Disposal Facility within the Radioactive Waste Management Complex," CCN 323845 | Kristen G. Ellis, memorandum to Connie M. Flohr, September 22, 2023, "Revision of the Disposal Authorization Statement for the Idaho Comprehensive Environmental Response, Compensation, and Liability Act Disposal Facility," 9266728 |

### 2.5.1 Spent Nuclear Fuel

SNF is nuclear fuel that has been withdrawn from a nuclear reactor following irradiation and the constituent elements have not been separated. SNF contains unreacted uranium and radioactive fission products. Because of its radioactivity (primarily from gamma rays), it must be properly shielded. DOE-ID's SNF is from the development of nuclear energy technology (including foreign and domestic research reactors), national defense, and other programmatic missions. At the INL Site, SNF is managed by the ICP contractor at INTEC, the Naval Nuclear Propulsion Program at the Naval Reactors Facility, and the INL contractor at the ATR Complex and MFC.

The ISA put milestones into place for the management of SNF at the INL Site:

- DOE-ID shall complete the transfer of spent fuel from wet storage facilities by December 31, 2023 (Paragraph E.8). This milestone was completed March 17, 2023.
- DOE-ID shall remove all spent fuel, including naval spent fuel and Three Mile Island spent fuel, from Idaho by January 1, 2035 (Paragraph C.1).

Meeting these remaining milestones comprise the major objectives of the SNF program.

## 2.6 Environmental Releases, Response, and Reporting at the INL Site

Federal guidelines stipulate that certain environmental discharges and spills must be communicated to regulatory agencies. Releases that are subject to reporting are those discharges of hazardous substances to the environment that are not authorized by state or federal regulations. Per CERCLA Section 103, any release of a hazardous substance that reaches or surpasses predetermined reportable quantities must be reported. This includes ongoing releases that have a consistent quantity and rate, yet surpass established thresholds. These reporting obligations cover releases into the soil, groundwater or surface water, or into the atmosphere, in instances where such releases pose a threat to human health or the environment.

### 2.6.1 Spills

INL Site contractors had two reportable spills in 2023. Approximately 44 gallons of gasoline leaked from a 15,000-gallon, double-walled, fiberglass-reinforced underground storage tank to the soil at CFA-1607. The leak was confirmed on February 27, 2023, after a tightness test failed. Idaho DEQ was notified February 28, 2023, and initial site characterization efforts commenced. Final cleanup and disposal of contaminated soil occurred December 7, 2023. A Site-Specific Risk Evaluation report was revised in January 2024 (CCN 254848).

On February 5, 2023, an estimated 150 gallons of diesel fuel were discovered to have been released to the gravel and soil west of CPP-1696. During the response, it was concluded that a fuel pump had been left on while a subcontractor was filling a 2,000-gallon day tank. Idaho DEQ was notified the day the release was discovered. It was established that no immediate impact occurred to INTEC stormwater systems, monitoring wells, surface water, or water supply wells. The surface spill was contained and cleaned up in accordance with ICP contractor safety procedures. Forty cubic yards of contaminated soil were sent for disposal at the ICDF during the initial excavation, which occurred on March 7, in August 2023. With Idaho DEQ concurrence, final excavation activities were delayed until July 2023 when the area of the spill was excavated to a depth of 6 ft. A clean-up summary and confirmation sample results were submitted to Idaho DEQ on September 28, 2023 (Francis 2023 [CCN 331587]). Idaho DEQ determined that no additional assessment or corrective action was required on December 1, 2023 (Summers 2023 [CCN 331899]).

### 2.6.2 Unplanned Releases

INL Site contractors had no unplanned releases of hazardous substances or any events that resulted in emissions exceeding reporting thresholds that would require notification to be made to regulatory agencies in 2023. All radiological emissions were accounted for in the dose received by the MEI (see Chapter 8).

## 2.7 Environmental Permits/Agreements

Table 2-5 presents the complete list of all active federal and state permits and/or agreements during 2023 for INL Site operations. This table includes those pertaining to air emissions, ecological, groundwater, RCRA, and surface water.

***Table 2-5. Environmental permits/agreements for the INL Site (2023).***

| ACTIVE PERMIT/AGREEMENT NAME | PERMIT/ AGREEMENT NUMBER | REGULATORY AGENCY | EXPIRATION DATE |
|---|---|---|---|
| **AIR EMISSIONS** | | | |
| INL Permit to Construct (PTC) with a Facility Emissions Cap (FEC) | P-2020.0045 | DEQ | 01/29/2026 |
| **ECOLOGICAL** | | | |
| Special Purpose – Miscellaneous | MB04294B | USFWS | 03/31/2025 |
| Scientific Collecting | MB13633C | USFWS | 03/31/2025 |
| Scientific Collecting | 31612 | IDFG | 12/31/2023 |
| Scientific Collecting | 30400 | IDFG | 12/31/2023 |

*Table 2-5. continued.*

| ACTIVE PERMIT/AGREEMENT NAME | PERMIT/ AGREEMENT NUMBER | REGULATORY AGENCY | EXPIRATION DATE |
|---|---|---|---|
| **GROUNDWATER** | | | |
| Permit for the Operation of Injection Well | 25W-062-001 | IDWR | 02/14/2028 |
| Water Right Agreement | PER[a]-154 | IDWR | NA |
| **RCRA[b]** | | | |
| Advanced Mixed Waste Treatment Project HWMA/RCRA Permit | PER[a]-153 | DEQ | 03/19/2029 |
| HWMA/RCRA Partial Permit for Storage at the Calcined Solids Storage Facility at the INTEC on the INL | PER[a]-114 | DEQ | 06/26/2027 |
| HWMA/RCRA Post-closure Permit for the INTEC on the INL | PER[a]-112 | DEQ | 03/14/2034 |
| HWMA/RCRA Storage and Treatment Permit for the MFC | PER[a]-116 | DEQ | 10/01/2025 |
| HWMA Storage and Treatment Permit for the INTEC Waste Management Operations on the INL | PER[a]-109 | DEQ | 06/27/2034 |
| Part A Permit App, Interim Status Facility, Tank Farm Facility at INTEC | PER[a]-101 | DEQ | NA |
| Partial Permit for HWMA Storage and Treatment for the Liquid Waste Management System at the INTEC on the INL | PER[a]-111 | DEQ | 11/20/2024 |
| **RECYCLED WATER** | | | |
| ATR Complex Cold Waste Ponds Reuse Permit | I-161-03 | DEQ | 10/10/2029 |
| MFC Industrial Waste Pond Reuse Permit | I-160-02 | DEQ | 01/25/2027 |
| Reuse Permit for the INTEC New Percolation Pond | M-130-07 | DEQ | 06/25/2025 |
| **SURFACE WATER** | | | |
| Idaho National Laboratory Research Center, city of Idaho Falls Industrial Wastewater Acceptance Permit | IF-8733-54171-1 | city of Idaho Falls | 03/15/2023[c] |
| **TOXIC SUBSTANCES CONTROL ACT** | | | |
| Advanced Test Reactor Complex's (ATR) Test Reactor Area Raw Water Pumphouse Building RBDA (TRA-619) | NA[d] | EPA | NA[e] |
| TSCA RBDA for the Risk-Based Disposal Plan for PCB Paint in the TRA Fluorinel Dissolution Process Mockup and Gamma Facilities Canal at the INL Site | NA[d] | EPA | NA |
| Toxic Substance(s) Control Act Risk-Based Disposal Approval for Management of Transuranic Polychlorinated Biphenyl Remediation Waste at the Advanced Mixed Waste Treatment Project Facility | NA[d] | EPA | NA |

a. PER is the INL document-type used for regulatory permits.
b. Part A interim status units are those units with Part A permit applications (interim status) that have not been RCRA closed. Partial Part B permits include the Part A application and Part B application. Part A addresses each of the permitted units in Part B, while Part B includes specific details and permit operating requirements. A partial permit that includes the unit-specific Part A and Part B is considered a RCRA partial Part B permit. There are six RCRA partial Part B permits for the INL Site.
c. On March 15, 2023, the city of Idaho Falls notified INL that the city no longer considers IRC to be a Significant Industrial User and a permit is not required to discharge into the city of Idaho Falls publicly-owned treatment works (Henricksen 2023).
d. RBDAs are permit-like documents granted by the EPA.
e. In effect until the buildings are decommissioned and dispositioned.

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