

SECTION A. Project Title: SMALL-SCALE RESEARCH AND DEVELOPMENT, LABORATORY OPERATIONS AND PILOT PROJECTS

SECTION B. Project Description and Purpose:

This Environmental Compliance Permit (ECP) addresses activities through Fiscal Year (FY) 2025 that meet the intent of the Categorical Exclusion (CX) B3.6 as described in 10 Code of Federal Regulation (CFR) 1021, Appendix B to Subpart D, “Small -scale research and development, laboratory operations, and pilot projects.” Proposed activities include siting, construction, modification, operation, and decommissioning of facilities for small-scale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in the proposed activities are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial deployment.”

Idaho National Laboratory (INL) is a science-based, applied engineering national laboratory dedicated to supporting the U.S. Department of Energy (DOE) nuclear and energy research, science, and national defense missions. To support the DOE mission, INL proposes to conduct small-scale research and development (R&D) projects, conventional laboratory operations, and pilot-scale research at both on-site and off-site locations.

INL onsite locations includes campuses at the INL Site and at the Research and Education Campus (REC) in Idaho Falls, Idaho. INL desert site facilities include several primary campuses situated on an expanse of otherwise undeveloped terrain. Buildings and structures are clustered within these facilities, which are typically less than a few square miles in size and separated from each other by miles of undeveloped land. The major INL facilities at the Site are the Advanced Test Reactor Complex, Central Facilities Area, Critical Infrastructure Test Range Complex (CITRC), Idaho Nuclear Technology and Engineering Center , Materials and Fuels Complex, and Test Area North (TAN), which includes the Specific Manufacturing Capability (SMC).

Off-site locations are areas within or outside the boundaries of the INL Site or an INL facility to which the public has free and uncontrolled access. Proposed activities, as discussed in this ECP, refer to both on-site and off-site work that meets the definition and criteria set forth in 10 CFR 1021 Appendix B to Subpart D item B3.6.

Activities supporting R&D may include similar activities at off-site locations as part of research partnerships and collaborations. For R&D at off-site facilities, entities supporting INL R&D efforts would procure all necessary permits or licenses and abide by all applicable laws, regulations, and ordinances of the United States and of the state, territory, and political subdivision in which the work under contract with INL is performed and by any applicable DOE directive. Work at off-site locations will adhere to the relevant criteria and “Integral Elements” for a categorical exclusion as stated in this determination for the proposed activities.

Under the Proposed Action, INL would conduct (1) small-scale research and development projects; (2) laboratory operations; (3) pilot-scale projects conducted to verify a concept before demonstration actions (generally for less than 2 years); and (4) minor modification of existing laboratory rooms. Examples of such activities include, but are not limited to:

- sample and standards preparation
- routine chemical, physical, and/or biological analysis of samples of environmental media, wastes, products, and other materials
- routine management of reagents and materials
- treatability studies
- radiological separations studies, neutron activation, and other radiological research
- simulant development and testing
- development, testing, and demonstration of instruments; processes, such as ion exchange, filtration, and vitrification; and equipment
- shielded facilities operations
- use of specialized sampling equipment and instruments such as mass and infrared spectrometers, lasers, transmission and scanning electron microscopes, and nuclear magnetic resonance spectrometers
- radiation-monitoring equipment calibration, maintenance, characterization, and verification

- whole-body counting
- carbon management research
- robotics and automation research and development
- transportation technology research
- energy research and technology development, diagnostics, and controls
- waste-form modeling and lifecycle testing
- use of sealed radioactive sources in research and testing
- non-fueled nuclear energy research, nuclear physics research
- basic and applied chemistry
- analytical methods development of nuclear materials, materials science research, machining of R&D components, and equipment and mock-up/prototype development work
- bio-based product testing and development
- imaging technology research and testing
- industrial process efficiencies and energy utilization research
- fuels/bio-fuels development and testing
- catalysis research
- purchase/use of analytical/research instruments and equipment for bench/lab-scale use
- Small-scale, minor modifications to rooms, equipment, and instrumentation if in direct support of bench/lab-scale laboratory operations.

The proposed laboratory activities would include reasonably foreseeable actions necessary to implement the Proposed Action, such as radiological control and safety support; sample, chemical, and material transport; project closeout; waste management, transport, treatment, storage and disposal; maintenance, development, and demonstration of processes, instruments and detection; consulting and planning with sponsors and collaborators; maintenance, calibration, transport, and use of analytical and research equipment; award of grants and contracts; and obtaining associated regulatory permissions.

These routine activities would be managed in accordance to, and in compliance with, DOE orders, as well as federal and state regulations and guidelines.

Proposed activities, including those at off-site locations, must meet the DOE categorical exclusion (CX) eligibility criteria (10 Code of Federal Regulations [CFR] 1021.410) and the following criteria:

1. Activities would be conducted within existing structures that supply appropriate wastewater storage and handling, exhaust ventilation, air filtration, and additional confinement or controls appropriate to the nature of the materials and equipment used in the project.

DOE-ID NEPA CX DETERMINATION
Idaho National Laboratory

2. Each activity would comply with applicable facility safety and environmental administrative controls and permit requirements.
 3. Activities would not generate, use, or reprocess spent nuclear fuel (SNF).
 4. Activities do not include demonstration of advanced nuclear reactors or risk reduction for future demonstrations.
 5. Each activity could use hazardous and/or radioactive materials, should the use be necessary, except as excluded by bullet number 3 above. Inventories would be maintained at the lowest practicable levels while remaining consistent with continuing operations and research goals, pollution prevention measures, applicable permits and licenses, and waste minimization practices.
 6. Releases of liquid and airborne substances to the environment would be minimized and remain compliant with applicable facility, local, state, and federal regulations and DOE Orders and INL guidelines.
 7. Waste generated would be limited to wastes with an available onsite or off-site treatment, storage, and disposal pathway. Volumes of waste generated by each activity would be reduced as much as possible by pollution prevention measures and waste minimization practices. Wastes would be dispositioned in accordance with applicable local, state, and federal regulations and DOE Orders and guidelines. The Proposed Action does not include projects that would generate transuranic (TRU) waste or a new type of waste not currently managed at INL or waste with no path for disposition.
 8. Actions that are part of, or in support of, a larger project that requires either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) are not covered by this ECP.
 9. Actions for which a separate categorical exclusion is specified in 10 CFR 1021, Appendix B to Subpart D are not covered under this ECP.
10. Actions for which project-specific consultation is required to fulfill Section 106 at off-site facilities or locations require preparation of separate ECPs.

Biological and cultural resources reviews would be conducted prior to proposed activities to verify that impacts to sensitive resources are avoided or minimized. Resource review recommendations will be followed during small-scale research activities to assure there are no adverse impacts to sensitive species and resources. If the biological or the cultural resources review determines that resources may be adversely affected/impacted, the use of this CX would be reevaluated. Potential options could be, but are not limited to, changing the proposed activity location, the development of mitigation measures to render the impacts not significant, or the performance of additional National Environmental Policy Act (NEPA) analysis and review.

The proposed activities meet the eligibility criteria of 10 CFR 1021.410(b) because the Proposed Action does not have extraordinary circumstances that might affect the significance of the environmental effects, is not connected to other actions with potentially significant impacts [40 CFR 1508.25(a)(1)], is not related to other actions with individually insignificant but cumulatively significant impacts [40 CFR 1508.27(b)(7)], and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during environmental impact statement preparation.

The "Integral Elements" of 10 CFR 1021 are satisfied as discussed below:

INTEGRAL ELEMENTS, 10 CFR 1021, SUBPART D, Appendix B (1)-(4)	
<i>Would the Proposed Action:</i>	<i>Evaluation:</i>
Threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health?	The Proposed Action would not threaten a violation of regulations or DOE or Executive Orders. The Proposed Action does not include activities that would change the scope, mission, or hazard categorization of any facility.

DOE-ID NEPA CX DETERMINATION
Idaho National Laboratory

<p>Require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities?</p>	<p>No waste management facilities would be constructed under this CX. Any generated waste would be managed in accordance with applicable regulations in existing facilities. Waste disposal pathways would be identified prior to generating waste and waste generation would be minimized.</p>
<p>Disturb hazardous substances, pollutants, or contaminants that preexist in the environment such that there would be uncontrolled or unpermitted releases?</p>	<p>No preexisting hazardous substances, pollutants, or contaminants would be disturbed in a manner that results in uncontrolled or unpermitted releases. Proposed activities must comply with existing permits and facility limitations for both on-site and off-site work.</p>
<p>Involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species?</p>	<p>The Proposed Action would not involve the use of genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species (unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements).</p>
<p>Have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited, to:</p> <ul style="list-style-type: none"> • protected historic/archaeological resources • protected biological resources and habitat • jurisdictional wetlands, 100-year floodplains <p>Federal- or state-designated parks and wildlife refuges, wilderness areas, wild and scenic rivers, national monuments, marine sanctuaries, national natural landmarks, and scenic areas.</p>	<p>No environmentally sensitive resources would be adversely affected by the proposed actions. The proposed action does not include activities that disturb 1) current or potential sagebrush habitat anywhere on the INL Site outside of current facility footprints, 2) native or naturalized vegetation within the INL boundary, Sagebrush Steppe Ecosystem Reserve, or the area between SMC and TAN), 3) soil in the INL storm water corridor, or 4) disturb vegetation or soils in the CITRC area (including previously disturbed areas at CITRC).</p> <p>Cultural resource reviews would be completed as part of the Section 106 process of the National Historic Preservation Act (NHPA) as described above. The Section 106 process assesses undertakings to determine if the undertaking will have an adverse effect/impact to historic properties.</p> <p>The proposed action would not adversely affect floodplains, wetlands regulated under the Clean Water Act, national monuments, or other specially designated areas, prime agricultural lands, or special sources of water.</p> <p>Potential impacts to Biological or Cultural resources would be addressed as described above.</p> <p>Small-scale research, laboratory operations, and pilot projects are not likely to disproportionately affect low-</p>

	income or minority populations or underserved or overburdened communities.
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SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

Air emissions are not expected to increase significantly above current levels and would continue to be well within regulatory air-permit requirements. Air emissions during research operations would be compliant with applicable permits, local, state, and federal regulations, DOE orders, and INL guidelines or applicable guidelines for the off-site facility. Activities may result in chemical and radiological emissions from vents, stacks, and hoods. PELs and environmental TPOCs must evaluate each new activity with the potential to emit air toxins, criteria pollutants, or radionuclides before beginning work, through the Air Permitting Applicability Determination (APAD) process.

General laboratory APADs may be used to cover independent projects. The APAD establishes the appropriate maximum 24-hour and maximum annual emission limits for toxic pollutants used at the laboratory. Administrative controls based on inventory limits and independent Hazard Reviews for new programs would then be implemented to assure that these limits would not be exceeded.

Discharging to Surface-, Storm-, or Ground Water

This ECP does not authorize direct discharge to ground water, surface water, or the ground surface. Stormwater runoff may occur from parking lots.

Disturbing Cultural or Biological Resources

There is the potential for this work to impact vegetation and for project personnel to interact with various wildlife species. A Biological Resource Review will be arranged within two weeks prior to the initiation of any activities that might disturb soil or vegetation and again following completion of project activities. A nesting bird survey is included with the Biological Resource Review for actions occurring between April 1 - October 1 per compliance with the Migratory Bird Treaty Act. Bat surveys are also included with the Biological Resource Review in accordance with the INL Bat Protection Plan.

All biomass materials are reviewed against the list of noxious weeds identified in IDAPA 02.06.09. Importing biomass materials identified in IDAPA 02.06.09 as noxious weeds are not covered by this ECP.

Any activity that has the potential to interact, disturb or affect wildlife or their habitat (e.g., soil disturbance, vegetation removal, physical disturbance of a birds nest, etc.) must receive clearance from the Natural Resource Group before beginning the activity. The proposed action does not include activities that disturb 1) current or potential sagebrush habitat anywhere on the INL Site outside of current facility footprints, 2) native or naturalized vegetation within the INL boundary, Sagebrush Steppe Ecosystem Reserve, or the area between SMC and TAN, 3) soil in the INL storm water corridor, or 4) disturb vegetation or soils in the CITRC area (including previously disturbed areas at CITRC).

Any activity under this tent will be screened in the ERP system for input from the Cultural Resource Management Office (CRMO) to conduct a Section 106 review, which would assess the undertaking to determine if there is a potential for effects to historic properties. Actions for which project-specific consultation is required to fulfill Section 106 at off-site facilities or locations require project specific ECPs.

Generating and Managing Waste

At INL facilities, activities may generate industrial, hazardous, radiological, and mixed waste. Waste Generator Services (WGS) characterizes and manages all solid waste. WGS also monitors the handling and shipping of hazardous and radioactive material.

INL Radiological Control personnel identify safe work practices and storage requirements for radioactive materials and waste. Project personnel manage and use radioactive material in accordance with Radiological Control Manual as supported by Radiological Control personnel.

Industrial waste would be disposed of off-site or in the Bonneville County landfill.

Wash water and cooling water from in-town facilities would be discharged to the City of Idaho Falls sewer system. At INL Site facilities, wastewater would be managed per the specific facility's wastewater system and processes.

Waste at off-site locations would be managed according to and in compliance with the processes and procedures applicable to the off-site location.

Releasing Contaminants

When chemicals are used during the project there is the potential for spills that could impact the environment (air, water, soil).

Project personnel must evaluate work involving biological hazards and verify the work falls within the limits of facility requirements. In addition, project activities covered under this ECP may only involve work at Biosafety Levels 1 and 2. Work at Biosafety Levels 3 or 4 requires a separate ECP.

Project personnel would purchase, store and use chemicals in accordance with facility procedures. All chemicals will be managed in accordance with INL and applicable off-site procedures.

Using, Reusing, and Conserving Natural Resources

Project description indicates materials will need to be purchased or used that require sourcing materials from the environment. Being conscientious about the types of materials used could reduce the impact to our natural resources.

The proposed action uses fossil fuels, metals, and other resources. Project personnel will use every opportunity to recycle, reuse, and recover materials and divert waste from the landfill when possible.

Environmental Justice

According to the CEQ Climate and Economic Justice Screening Tool, the INL site as well as the Research and Education Campus in Idaho Falls, ID are located in U.S. Census tracts that are identified as disadvantaged communities. Census tracts identified as disadvantaged meet or exceed socioeconomic, environmental, health, or demographic thresholds identified by CEQ. Given that activities analyzed in this document will happen within the boundaries of existing DOE/INL land and/or facilities where there are no permanent residents, any impacts to Environmental Justice in surrounding communities are anticipated to be negligible.

Small-scale research, laboratory operations, and pilot projects are not likely to disproportionately affect low-income or minority populations or underserved or overburdened communities.

SECTION D. Determine Recommended Level of Environmental Review, Identify Reference(s), and State Justification: Identify the applicable categorical exclusion from 10 Code of Federal Regulation (CFR) 1021, Appendix B, give the appropriate justification, and the approval date.
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For Categorical Exclusions (CXs), the proposed action must not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, or similar requirements of Department of Energy (DOE) or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment or facilities; (3) disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources (see 10 CFR 1021). In addition, no extraordinary circumstances related to the proposal exist that would affect the significance of the action. In addition, the action is not "connected" to other action actions (40 CFR 1508.25(a)(1) and is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1608.27(b)(7)).

References: B3.6 "Small-scale research and development, laboratory operations, and pilot projects"

Justification: Based on the purpose and need and description of the proposed action and potential environmental impacts, the proposed action fits within the class of actions that is listed in 10 CFR 1021 Appendix B to Subpart D item B3.6. There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal. The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)) and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

Authorizing the proposed action will not (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, including DOE and/or Executive orders; (2) require siting of new facilities or expansion of existing facilities; (3) disturb hazardous substances, pollutants, or contaminants; (4) adversely affect environmentally sensitive resources; or (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species.

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) Yes No

Approved by Robert Douglas Herzog, DOE-ID NEPA Compliance Officer on: 5/23/2024