

U.S. Department of Energy- Idaho Operations Office
National Environmental Policy Act
Categorical Exclusion Determination

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

Project Description and Purpose:

This Environmental Compliance Permit (ECP) addresses activities that meet the intent of the Categorical Exclusions (CX) B3.6 and B3.15 as described in 10 Code of Federal Regulation (CFR) 1021, Appendix B, “Small-scale research and development, laboratory operations, and pilot projects” and “Small-scale indoor research and development projects using nanoscale materials.” This ECP will be reviewed, and updated as necessary, on a routine basis.

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, and

- Siting, construction, modification, operation, and decommissioning of facilities for indoor small-scale research and development projects and small-scale pilot projects using nanoscale materials in accordance with applicable requirements (such as engineering, worker safety, procedural, and administrative regulations) necessary to ensure the containment of any hazardous materials. Construction and modification activities would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible).

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 include 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 items B3.6 and B3.15.

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); (4) minor modification of existing laboratory rooms, and (5) small-scale pilot projects using nanoscale materials. 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

U.S. Department of Energy- Idaho Operations Office
National Environmental Policy Act
Categorical Exclusion Determination

- 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 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
- Nanoscale materials research

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 as found in the 10 Code of Federal Regulations [CFR] 1021.102, Application of categorical exclusions (categories of actions that normally do not require EAs or EISs), and the following criteria:

- Each activity would comply with applicable facility safety and environmental administrative controls and permit requirements, and in accordance with applicable local, state, and federal regulations and DOE Orders and guidelines.
- Activities would not generate, use, or reprocess spent nuclear fuel (SNF). Activities do not include projects that would generate transuranic (TRU) waste or waste with no path for disposition, Greater Than Class C (GTCC) waste, GTCC mixed waste, GTCC-Like waste, or GTCC-like mixed waste.
- Activities do not include the development or demonstration of reactors. Separate NEPA analysis will be required for all reactor projects.
- 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.

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.

Project will provide waste volume generation estimates for industrial waste, hazardous waste, contact handled low-level radioactive waste (CH-LLW), remote handled low-level radioactive waste (RH-LLW), contact handled mixed low-level waste (CH-MLLW), remote handled mixed low-level waste (RH-MLLW), any sodium waste (by radioactive waste type), and any beryllium reflector waste (including an activation analysis demonstrating the NRC low-level radioactive waste classification).

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).

CULTURAL: 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, radioactive, PCB, and mixed waste. The BEA Waste Management Program's (WMP) Waste Generation Services (WGS) subcontractor assists projects in characterizing and managing waste. WGS brokers handling and shipping of hazardous and radioactive waste.

If any industrial waste, hazardous waste, contact handled low-level radioactive waste (CH-LLW), remote handled low-level radioactive waste (RH-LLW), contact handled mixed low-level waste (CH-MLLW), remote handled mixed low-level waste (RH-MLLW), contact handled transuranic radioactive waste (CH-TRU), remote handled transuranic radioactive waste (RH-TRU), contact handled mixed transuranic radioactive waste (CH-MTRU), remote handled mixed transuranic radioactive waste (RH-MTRU), Greater Than Class C (GTCC) waste, GTCC mixed waste, GTCC-like waste, or GTCC-like mixed waste is expected to be generated, provide an impact statement based on an evaluation on the current support scope of the BEA Waste Management Program (WMP) and the WMP's Waste Generation Services (WGS) subcontractor. If a valid evaluation indicates minimal impact, the project can state "It is expected the volume and complexity of waste packaging and disposition will not be a significant impact to WMP or WGS activities.

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.

**U.S. Department of Energy- Idaho Operations Office
National Environmental Policy Act
Categorical Exclusion Determination**

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 dispositioned at off-site locations will be managed in accordance with BEA Waste Management Program requirements and in compliance with requirements applicable at 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.

Determination

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); (5) involve 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, such as those listed in paragraph B(5) of 10 CFR Part 1021, Appendix B. The proposal has not been segmented to meet the definition of a categorical exclusion. Segmentation can occur when a proposal is broken down into small parts in order to avoid the appearance of significance of the total action. However, segmentation does not include proposals that are developed and potentially implemented over multiple phases where each phase results in a decision whether to proceed to the subsequent phase. There is no extraordinary circumstance related to the proposal that is likely to cause a reasonably foreseeable significant adverse effect or for which DOE does not know the environmental effect. Extraordinary circumstances are unique situations presented by specific proposals, including, but not limited to, scientific controversy about the environmental effects of the proposal; uncertain effects or effects involving unique or unknown risks; and unresolved conflicts concerning alternative uses of available resources.

References: B3.6 "Small-scale research and development, laboratory operations, and pilot projects", B3.15 "Small-scale indoor research and development projects using nanoscale materials"

Justification: For the DOE regulations regarding the application of categorical exclusions, including the full text of each categorical exclusion, see 10 CFR 1021.102 and Appendix B to 10 CFR Part 1021. Implementing guidance for categorical exclusions can be found in DOE's National Environmental Policy Act Implementing Procedures (June 30, 2025): (See full text in regulations and implementing procedures).

The proposal must fit within the classes of actions listed in Appendix B to 10 CFR Part 1021 and must satisfy the conditions that are integral elements of the classes of actions therein.

There are no extraordinary circumstances related to the proposal that may affect the significance of the environmental effects of the proposal. DOE or an applicant may modify the proposal to avoid reasonably foreseeable adverse significant effects such that the categorical exclusion would apply.

The proposal has not been segmented to meet the definition of a categorical exclusion.

**U.S. Department of Energy- Idaho Operations Office
National Environmental Policy Act
Categorical Exclusion Determination**

B3.6 Small-scale research and development, laboratory operations, and pilot projects. 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 this category 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.

B3.15 Small-scale indoor research and development projects using nanoscale materials. Siting, construction, modification, operation, and decommissioning of facilities for indoor small-scale research and development projects and small-scale pilot projects using nanoscale materials in accordance with applicable requirements (such as engineering, worker safety, procedural, and administrative regulations) necessary to ensure the containment of any hazardous materials. Construction and modification activities would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible).

Approved by Robert Herzog, DOE-ID NEPA Compliance Officer on: 1/15/2026