DOE-ID NEPA CX DETERMINATION
Idaho National Laboratory

CX Posting No.: DOE-ID-INL-19-006

SECTION A. Project Title: Advanced Retrieval and Disposition Techniques for RH MLLW

SECTION B. Project Description and Purpose:

The Radioactive Scrap and Waste Facility (RSWF) at the Materials and Fuels Complex (MFC) provides interim storage for spent nuclear fuel (SNF), remote-handled mixed low-level waste (RHMLLW), and other radioactive wastes. The RSWF stores materials in gravel-filled 16" diameter by 12' 4" long by ¼" thick carbon steel pipes (e.g. liners) that are welded shut with a shield plug or plate. The 16" liners are over packed into 24" diameter by 13' 8" long carbon steel pipes with cathodic protection. The RSWF stores one-hundred and twenty-one (121) 24" over-packed large liners needing dispositioned.

The current disposition process involves coring around the 24" large liner, extracting then packaging the liner for transport from RSWF to the Idaho Nuclear Technology and Engineering Center (INTEC) Fluorinel Process Dissolution hot cell facility where it is processed for treatment and final disposition. The process is labor intensive, slow, and expensive. Therefore, Idaho National Laboratory (INL) needs an improved retrieval process and alternate treatment and disposal method.

The purpose of the proposed action is to design, test, and implement a more efficient retrieval system capable of remotely completing the following tasks:

- Removing the 16" liner from the 24" liner
- Removing the gravel from the 16" liner
- Attaching or fabricating a new 16" liner lid
- Reducing the size of the 16" liner
- Retrieving the size-reduced 16" liner for packaging and transportation.

To meet the purpose and need, the proposed action designs and implements a prototype demonstration of a semi-remote, mobile retrieval system for retrieval and size reduction of 16-inch liners containing paint cans. The project designs a Remote Retrieval System (RRS) to remove a 16-inch liner from the over-packed 24-inch liner underground, and reduce the liner size for transportation off-Site for treatment of sodium metal and other waste. The process removes the lid, lifts the 16-inch liner part way out of the over-packed 24-inch liner, clamps it in place, vents and purges the 16-inch liner, and removes the lid. After lid removal, a vacuum system removes most gravel from the 16-inch liner and reduces the size of the 16-inch liner to just above the inner paint can. The system then welds a new lid on the 16-inch liner, places the 16-inch liner in a bag, and transfers it to a rack for loading into a transport container for shipment off-Site. INL anticipates completing 2 demonstrations in the next two years.

In the future, INL anticipates performing these tasks more remotely for larger scale projects. Following the demonstration phase of the proposed action, INL anticipates processing about 121 liners.

RRS operations also perform the following activities:

- Preparing the site
- Purging the 24-inch liner
- Opening the 24-inch liner to access to 16-inch liner
- Testing integrity and lifting 16-inch liner
- Purging 16-inch liner
- Reducing size of 16-inch liner
- Closing and sealing 16-inch liner
- Packaging 16-inch liner for transportation.

The following subsystems are also needed:

- Remote Tool Frame (RTF)
- Overhead hoist and rigging
- Secondary containment tent with HEPA filtered ventilation
- Vacuum skid with HEPA filtration for removing gravel from 16" liner
- Control Station
- Hydraulic Power Unit.

The RTF includes a liner clamp, hole punch tool, pipe cutting tool, debris collection tray, expansion plug installation tool, and a mounting frame. Overhead Hoist and Rigging uses an electric hoist and custom lift tools when necessary. A two room Secondary Containment Tent contains the RTF and connects to the Ventilation Skid for radionuclide particulate abatement. The Vacuum Skid with HEPA Filtration has a vacuum pump, suction wand, and collection drums for removal of gravel and other debris. The Control Station houses the operator, who actuates and controls the RTF tools. The Hydraulic Power Unit, if needed, supports RTF tools.

A mobile crane supports the overhead hoist and lifts liners when necessary.

The prototype demonstration performs the tasks listed below:

- Place secondary containment tent over the selected liner
- Place the RTF and gravel collection intercept and waste drum(s) in the tent processing room

- Suspend the overhead hoist and rigging equipment over the selected liner and lower through an access hole on top of the tent
- Locate support equipment, (e.g., control station, hydraulic power unit, ventilation system, and vacuum skid) outside the tent.

The proposed action transports the size-reduced liner to Perma-Fix Northwest in Richland, Washington for processing in the GeoMelt Richland system. After processing, the waste will be dispositioned at the Nevada National Security Site (NNSS). The environmental impacts of transferring low level waste to the Nevada National Security Site were analyzed in the 1996 Nevada Test Site EIS (DOE/EIS-0243) and supplemental analysis (SA) (DOE/EIS-0243-SA-01) and DOE's Waste Management Programmatic EIS (DOE/EIS-200). The fourth ROD (65 FR 10061, February 25, 2000) for DOE's Waste Management Programmatic EIS established the Nevada National Security Site as one of two regional low level waste (LLW) and mixed low level waste (MLLW) disposal sites. The SA considers additional waste streams, beyond those considered in the 1996 NTS EIS, that may be generated at or sent to the NNSS for management.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

The proposed action opens the 16 inch liners in a secondary containment tent, and a ventilation skid with HEPA filtration (pre-filter followed by HEPA cartridge) connects to the secondary containment tent for radionuclide particulate abatement.

Project activities have the potential to generate fugitive dust and emissions from operating equipment.

Generating and Managing Waste

Project activities have the potential to generate radioactive waste from vacuum system contents, liner parts, and personnel protective equipment. The project anticipates processing about 121 liners and generating about 0.3 m^3 of LLW per year.

Industrial (non-hazardous, non-radioactive) waste includes typical maintenance wastes such as boxes, wood, wiring, paper, insulation, and some metals. The proposed action requires evaluating potential waste materials for waste minimization prior to generation and evaluating industrial waste for recycling opportunities prior to disposal at the INL Landfill Complex.

Project personnel must work with Waste Generator Services (WGS) to properly package and transport regulated, hazardous, or radioactive material or waste according to laboratory procedures.

Releasing Contaminants

All chemicals and associated Safety Data Sheets (SDS's) must be submitted in the vendor data system for approval. The Chemical Coordinator would track these chemicals in the INL Comply Plus Chemical Management System. Chemical use has a potential for small air emissions and spills. In the event of a spill, notify facility PEL. If the PEL cannot be contacted, report the release to the Spill Notification Team (208-241-6400). Clean up the spill and turn over spill cleanup materials to WGS.

Using, Reusing, and Conserving Natural Resources

All material will be reused and/or recycled where economically practicable. All applicable waste would be diverted from disposal in the landfill when possible. Project personnel would use every opportunity to recycle, reuse, and recover materials and divert waste from the landfill when possible. The project would practice sustainable acquisition, as appropriate and practicable, by procuring construction materials that are energy efficient, water efficient, are bio-based in content, environmentally preferable, non-ozone depleting, have recycled content, and are non-toxic or less-toxic alternatives.

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.

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: 10 CFR 1021, Appendix B to Subpart D, item B6.1 "Cleanup actions"

Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada (DOE/EIS-0243) and supplemental analysis (SA) (DOE/EIS-0243-SA-01).

Justification: Project activities in this Environmental Checklist (EC) are consistent with 10 CFR 1021, Appendix B to Subpart D, Categorical Exclusion B6.1, "Small-scale, short-term cleanup actions, under RCRA, Atomic Energy Act, or other authorities, less than approximately 10 million dollars in cost (in 2011 dollars), to reduce risk to human health or the environment from the release or threat of release of a hazardous substance other than high-level radioactive waste and spent nuclear fuel, including treatment (such as incineration, encapsulation, physical or chemical separation, and compaction), recovery, storage, or disposal of wastes at existing facilities currently handling the type of waste involved in the action. These actions include, but are not limited to:

a) Excavation or consolidation of contaminated soils or materials from drainage channels, retention basins, ponds, and spill areas that are not receiving contaminated surface water or wastewater, if surface water or groundwater would not collect and if such actions would reduce the spread of, or direct contact with, the contamination;
b) Removal of bulk containers (such as drums and barrels) that contain or may contain hazardous substances, pollutants, contaminants, CERCLA-excluded petroleum or natural gas products, or hazardous wastes (designated in 40 CFR part 261 or applicable state requirements), if such actions would reduce the likelihood of spillage, leakage, fire, explosion, or exposure to humans, animals, or the food chain;
c) Removal of an underground storage tank including its associated piping and underlying containment systems in accordance with applicable requirements (such as RCRA, subtitle I; 40 CFR part 265, subpart J; and 40 CFR part 280, subparts F and G) if such action would reduce the likelihood of spillage, leakage, or the spread of, or direct contact with, contamination;
d) Repair or replacement of leaking containers;
e) Capping or other containment of contaminated soils or sludges if the capping or containment would not unduly limit future groundwater remediation and if needed to reduce migration of hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products into soil, groundwater, surface water, or air;
f) Drainage or closing of man-made surface impoundments if needed to maintain the integrity of the structures;
g) Confinement or perimeter protection using dikes, trenches, ditches, or diversions, or installing underground barriers, if needed to reduce the spread of, or direct contact with, the contamination;
h) Stabilization, but not expansion, of berms, dikes, impoundments, or caps if needed to maintain integrity of the structures;
i) Drainage controls (such as run-off or run-on diversion) if needed to reduce offsite migration of hazardous substances, pollutants, contaminants, or CERCLA excluded petroleum or natural gas products or to prevent precipitation or run-off from other sources from entering the release area from other areas;
j) Segregation of wastes that may react with one another or form a mixture that could result in adverse environmental impacts;
k) Use of chemicals and other materials to neutralize the pH of wastes;
l) Use of chemicals and other materials to retard the spread of the release or to mitigate its effects if the use of such chemicals would reduce the spread of, or direct contact with, the contamination;
m) Installation and operation of gas ventilation systems in soil to remove methane or petroleum vapors without any toxic or radioactive co-contaminants if appropriate filtration or gas treatment is in place;
n) Installation of fences, warning signs, or other security or site control precautions if humans or animals have access to the release; and
o) Provision of an alternative water supply that would not create new water sources if necessary immediately to reduce exposure to contaminated household or industrial use water and continuing until such time as local authorities can satisfy the need for a permanent remedy."

The environmental impacts of transferring low level waste to the Nevada National Security Site were analyzed in the 1996 Nevada Test Site EIS (DOE/EIS-0243) and supplemental analysis (SA) (DOE/EIS-0243-SA-01) and DOE's Waste Management Programmatic EIS (DOE/EIS-200). The fourth ROD (65 FR 10061, February 25, 2000) for DOE's Waste Management Programmatic EIS established the Nevada National Security Site as one of two regional low level waste (LLW) and mixed low level waste (MLLW) disposal sites. The SA considers additional waste streams, beyond those considered in the 1996 NTS EIS, that may be generated at or sent to the NNSS for management.

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

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on: 2/06/2019