

DOE-ID NEPA CX DETERMINATION

Idaho National Laboratory

SECTION A. Project Title: Repair of Analytical Laboratory Liquid Waste System

SECTION B. Project Description and Purpose:

The radiological liquid waste system for the Materials and Fuels Complex (MFC) Analytical Laboratory (MFC-752), located in the A-Wing waste tank sub-basement, is used to collect rinsates and general aqueous waste from various chemical sinks in the laboratory. Wastewater is typically strongly acidic. The liquid waste contains both chemical and radiological low-level materials. Based on existing processes, virtually all waste solutions generated are acidic in nature. The primary acid waste is nitric acid (HNO₃), which has historically been approximately 95% of the total acid waste generated. The majority of the remaining 5% of the acid waste inventory is hydrochloric acid (HCL). Three other acids are occasionally used; hydrobromic acid (HBr), sulfuric acid (H₂SO₄), and hydrofluoric acid (HF). Samples which contain HF are complexed with aluminum nitrate at a 3:1 ratio prior to introduction into the waste system to protect the glass lining of the tanks.

The system has developed small leaks, and evaluation of the leaks indicates the materials used to construct the piping system are not compatible with some chemical constituents in the liquid waste. The affected piping, including recirculation, transfer, sampling station, tank covers (if required), and vent systems, need to be replaced with a system compatible with the liquid wastes generated by the analytical laboratory.

The recirculation system recirculates the wastewater in the tanks to support sampling and neutralization. It also connects to the discharge system and provides motive force for discharge of neutralized wastewater to the Radioactive Liquid Waste Treatment Facility (MFC-798). The proposed action would replace the following components of the recirculation system:

- 4-inch pump suction header, including all valves and components
- Pumps, including all suction and discharge piping transitions, fittings and valves connecting to the 3-inch discharge header piping
- 3-inch discharge header piping, including all valves and fittings
- Transfer piping and poly bottle sample station piping to the first isolation valves from the discharge header
- 4-inch tank inlet/overflow piping between the 3-inch discharge header and tanks including all valves and fittings up to boundary valves.

In addition, the chemical and corrosion environment for the recirculation system would be based on the reagents and characteristics of the expected waste water.

The tank vent piping located in the tank room not exposed to flowing waste solution would be designed based upon vapor exposure anticipated to be released from wastes. Vapor concentrations would be based on a stagnant air environment. There is no design air flow volume through the tank head spaces, although in practice there would be some airflow due to in-leakage from the sink drain system.

Piping connections at the top of tanks are made in blind covers on the three pipe flanges. These covers are austenitic stainless steel, either type 304L (most likely) or type 316. If these materials are determined to be unacceptable for service, or if modifications are required to accommodate redesigned piping connections, replacement covers would provide connections for all services presently accommodated, which include the following:

- recirculation system return
- water addition system
- chemical addition funnel
- venting (provided in separate cover plate).

An initial estimate of \$500K has been established for this work, and project duration is anticipated to be 1-5 years depending on funding and priority.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions

Use of standard laboratory chemicals is not expected to increase emissions. The proposed action is not considered a new source or modification.

Disturbing Cultural or Biological Resources

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MFC-752 is eligible for nomination to the National Register of Historic Places and is considered a Category 3 historic property. Removal and/or changes of original features may adversely impact this historic property.

Generating and Managing Waste

There is a potential for project activities to generate hazardous/mixed corrosive liquid waste. Project personnel will work with Waste Generator Services (WGS) to properly package and transport waste according to laboratory procedures.

Releasing Contaminants

Any chemicals would be entered in the vendor data system for approval. The Chemical Coordinator would track these chemicals in the Idaho National Laboratory Comply Plus Chemical Management System.

Using, Reusing, and Conserving Natural Resources

All materials would be reused and/or recycled where economically practicable. All applicable waste would be diverted from disposal in the landfill where conditions allow.

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, B6.3 "Improvements to environmental control systems."

Justification: Project activities are consistent with 10 CFR 1021, Appendix B, B6.3 "Improvements to environmental monitoring and control systems of an existing building or structure (such as changes to scrubbers in air quality control systems or ion-exchange devices and other filtration processes in water treatment systems), provided that during subsequent operations (1) Any substance collected by environmental control systems would be recycled, released, or disposed of within existing permitted facilities and (2) there are applicable statutory or regulatory requirements or permit conditions for disposal, release, or recycling of any hazardous substances or CERCLA-excluded petroleum or natural gas products that are collected or released in increased quantity or that were previously collected or released."

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

Approved by Jack Depperschmidt, DOE-ID NEPA Compliance Officer on: 5/2/2016