DOE-ID NEPA CX DETERMINATION
Idaho National Laboratory

CX Posting No.: DOE-ID-INL-14-023

SECTION A. Project Title: Materials and Fuels Complex (MFC) Fire Water Replacement and Upgrades

SECTION B. Project Description:

The existing combined fire/potable water supply and distribution system at Materials and Fuels Complex (MFC), including the Transient Reactor Test Facility (TREAT), has been identified as being unreliable since a single fault can prevent the system from operating as required. Additionally, the fire water supply to TREAT has also been found inadequate based upon water flow testing. Replacement of portions of the existing fire water/potable water distribution system and installation of a new storage tank, pumps, and other components is needed to provide a reliable and adequate water supply and distribution system for fire suppression and a potable water distribution system for use at MFC and TREAT and for protection of personnel and equipment.

The project site includes the tank and pump house area located west of MFC-785 and the piping route between the MFC plant area and the TREAT plant area. See Figure 1 for the approximate area of construction.

Site demolition to the west of HFEF (MFC-785) would include removal of building MFC-755 and its associated foundation; two existing tanks, platforms, and walkways; and removal of the existing berm surrounding the tanks. The two tanks, building MFC-755, platforms, and the berm to be removed are shown in the photo 1.

Site demolition to the east of MFC-785 would include removal of the existing 200,000 gallon water tank. The 200,000 gallon tank forms a part of the north wall of MFC-754 so repairs to MFC-754 would also be required. The paint in the tanks must be sampled for polychlorinated biphenyls (PCBs) prior to demolition. Special requirements for demolition would apply if PCBs are present.

A new 1155 sf pump house would be designed and constructed and would be redundant to the current pump house. The facility would be of metal building construction with tapered structural frames and cold-formed wall girts and roof purlins. White standing-seam metal roofing would be installed to complete the “cool” roof system. This facility would not normally be occupied, so minimal controls would be provided for the heating and ventilation system. Unit heaters would be provided with individual thermostats and air flow would be provided through the building for cooling by a fan. Mechanical cooling would not be provided, and there would be no sanitary sewer or domestic waste water or potable water provided in the facility.

Figure 1. Construction area.

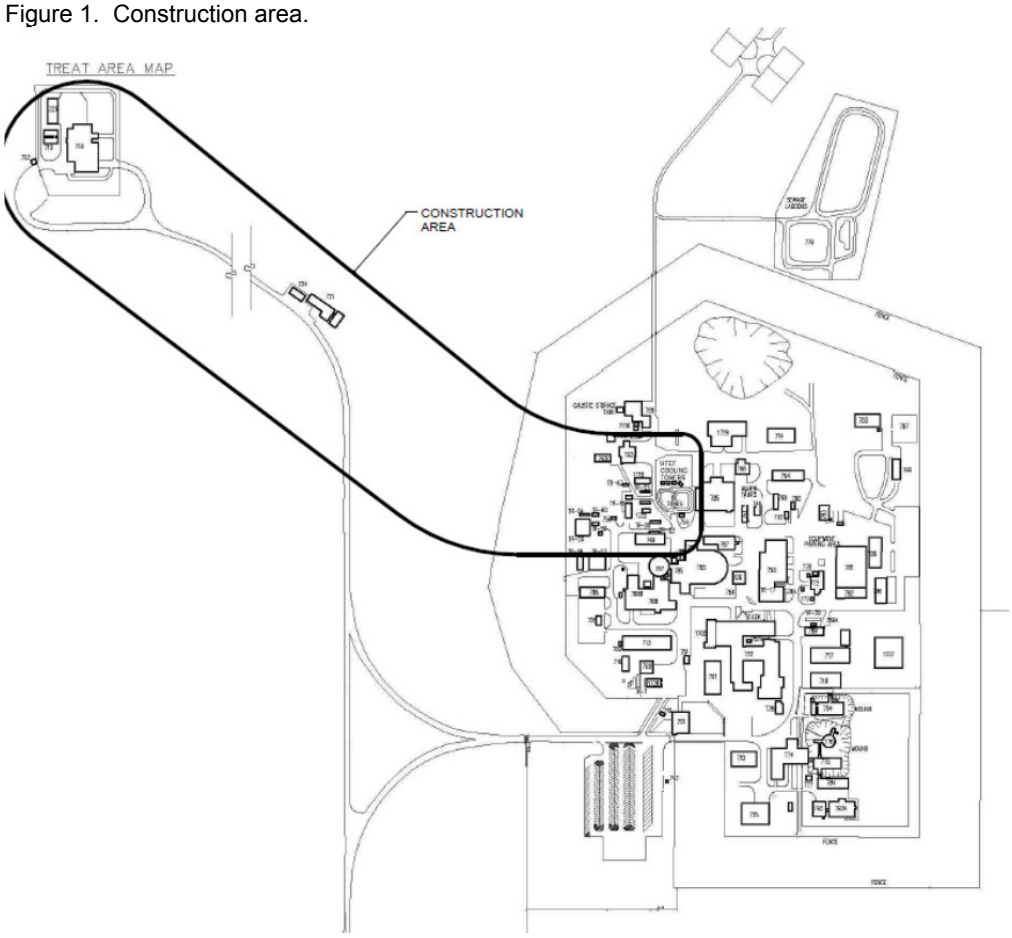


Photo 1. Existing site features.

A vertical pump system with integral variable frequency drive (VFD) motors, manifolds, isolation valves, check valves, and controller would be installed for the potable water pump station. The system would be a turnkey system single power source and would be factory tested prior to delivery. A diesel driven horizontal split case fire pump taking suction from an above ground welded steel suction tank would be installed in the pump house. State of Idaho-approved reduced pressure principle assembly would be installed for back flow prevention on the cooling water supply to the diesel engine. The fire water pumps would have independent start/stop controllers to automatically start the fire water pumps.

Automatic sprinkler protection would be provided throughout the facility. The design of the sprinkler systems would utilize standard, high-temperature heads based on a maximum of 120 ft^2 spacing or the Hazard Category 2 requirements of FM-3-26. A State of Idaho-approved double check backflow preventer would be installed on the automatic sprinkler riser.

The building electrical service would be at 480 V, three-phase to supply the majority of mechanical loads. Standby power and uninterruptible power would not be provided. This service would require the installation of a new electrical duct bank from the MFC-711 substation to the new facility.

Telephone and network services would be extended from the MFC dial room to the new pump house via single-mode fiber and telecommunications copper cable. The new 12-fiber and 6-pair copper cables would run between MFC-1728 to the new pump house.

Fire alarm and emergency notification information would be supplied to the new pump house via single-mode fiber optics. The fiber optics would run between MFC-1728, MFC-768, new pump house, and existing MFC-754 pump house.

A fire alarm/mass notification system would be provided. The fire alarm panel would be networked into the existing high-speed Notifier-net at MFC via single mode fiber optics by connecting into the loop between the new dial room, via the power plant, and Irradiated Materials Characterization Laboratory (IMCL). This would require the installation of new patch panels in the power plant, both pump houses, and IMCL.

A new programmable logic controller (PLC) would be installed in the new pump house and the existing PLC in the existing pump house (MFC-754) would be replaced with a similar PLC. These PLCs would communicate with each other via a fiber optic link and would control starting and stopping of the deep well pumps and overall control of potable water pumps. Each PLC would control the positioning of the deep well motor-operated control valves and starting and stopping of the deep well pumps to supply water to its respective fire water storage tank. The run time of the deep well pumps would be split approximately equally between the Deep Well 1 pump and Deep Well 2 pump. The PLCs would also control designating the lead and lag potable pump group, i.e., whether the pumps in MFC-754 or the pumps in the new pump house would be selected to run. The PLC in MFC-754 would also control the starting and stopping of the individual potable water pumps in MFC-754 in a manner similar to the current operating sequence.

The proposed action would also install a new 400,000 gallon painted, carbon steel welded tank, finished and insulated with a pre-fabricated insulated metal panel system. The foundation system for the tank would be similar to a ring foundation consisting of an 18-

inch x 3-ft deep stem wall supported by a 6-ft wide x 18-inch thick footing. Drain pipes would be installed around the perimeter. A prepared base of compacted leveling course gravel and compacted sand/lime mix would be installed under the tank bottom.

Controls for the operation of the tank fill would be arranged to hold approximately 350,000 gallons in reserve for fire protection, while allowing the tank to introduce freshwater from the deep wells frequently enough to provide heating for the tank. The storage tank, vents, material, ladders, and other accessories must comply with both National Fire Protection Association (NFPA) and Idaho Administrative Procedures Act (IDAPA) Drinking Water Standards as this is a combined system. The IDAPA requirements in turn apply the requirements of the American Water Works Association and National Sanitation foundation such as use of approved paint and piping.

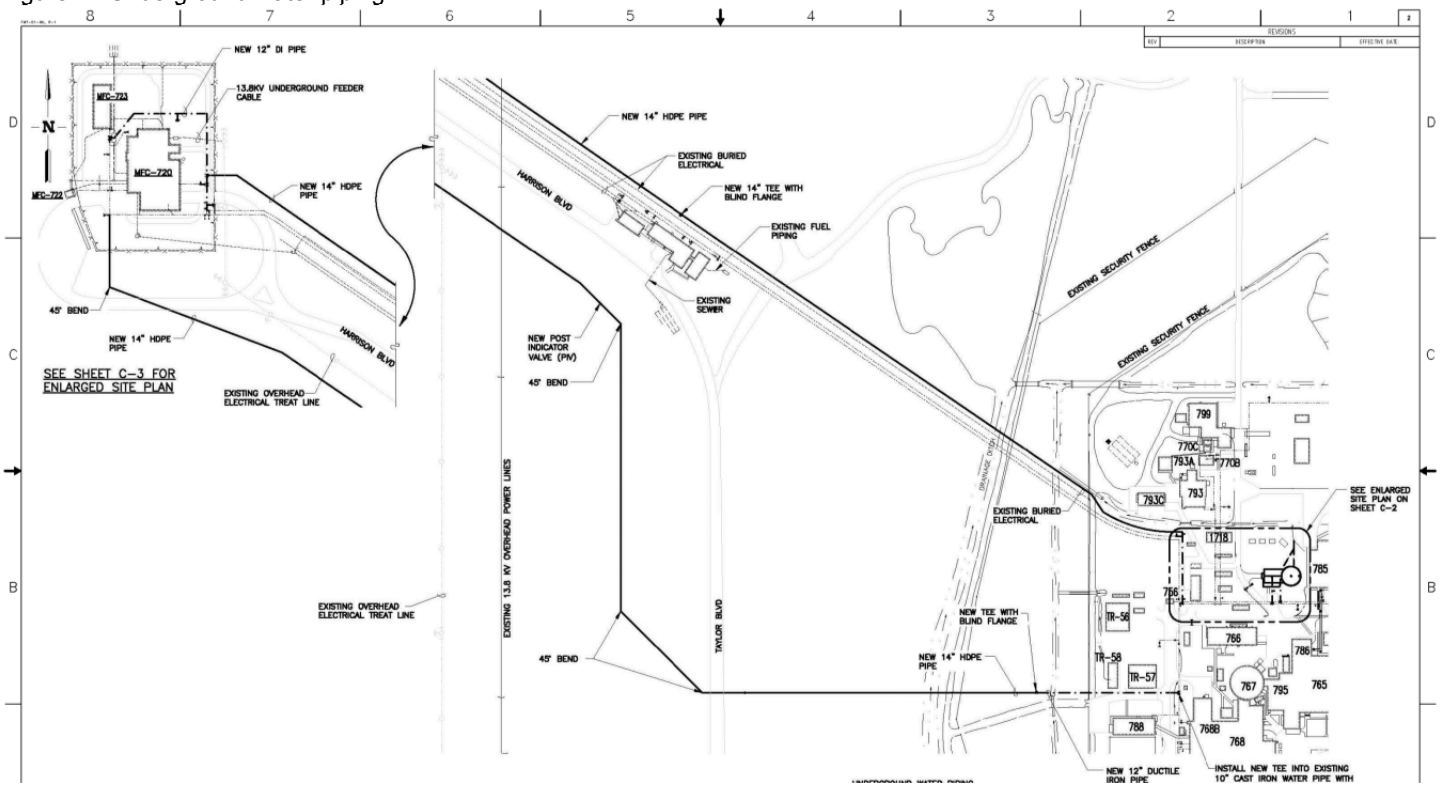
Connections would be made between the new pump house and existing supply and distribution lines. The new tank would be filled by the existing deep well supply pumps. Controls for filling the tank would be coordinated with the existing water tank to ensure the water in the tank is rotated frequently and would be adequate to function as the tank heat source.

In addition, new underground supply lines would be installed to provide a looped configuration to the TREAT facility (See Figure 2). The supply mains would be 14 inch high-density polyethylene (HDPE) pipe. Piping located inside the MFC area and the TREAT area that has a potential for future facility connections would be constructed using 12 inch cement lined ductile iron pipe. Existing 4-inch and 6-inch water supply lines to TREAT would be left in-place to supply the TREAT Control Facility. Portions of the existing 6-inch lines that supply the TREAT reactor building would be used to form the fire water loop around the TREAT reactor building.

The trench for the new piping within the MFC plant would be accomplished using both conventional open-trench methods and rock trenching. The trench from the 10 to 14-inch pipe transition to the TREAT facility would be accomplished using rock trenching. The piping would be placed on sand bedding and backfilled with pit run gravel. Where new piping is to be installed under existing asphalt pavement, backfill would include compacted pit run gravel and 8-inches of leveled course road base under 4-inches of asphalt.

The new tank and pump house foundation subbase would be excavated to a depth 3-ft below the bottom of foundation elevation and backfilled with compacted pit run gravel. Site drainage would be routed to the existing storm water drainage system through a new 12-inch culvert. The north side of the site would be sloped to drain to the existing storm water drainage ditch located to the north.

Figure 2. Underground water piping.



The fire/potable water system would be considered a Public Water, Non-Transient/Non-Community system and would disinfect, store, and pump fire and potable water from two existing wells to the existing MFC underground piping system. Water softening would be done at the point of use as required. Water softener regeneration water would be routed to the existing storm water system. New fire hydrants, sectional valves, and tees would be installed in the HDPE piping.

SECTION C. Environmental Aspects or Potential Sources of Impact:

Air Emissions: Project activities have the potential to generate fugitive dust. Reasonable precautions (water, dust suppressant chemicals, etc.) would be taken by the subcontractor to prevent dust from becoming airborne during construction. If control methods are needed, the method used must be documented in daily logbooks for compliance with the Idaho National Laboratory (INL) Tier I Air Permit.

There is a possibility for disturbance of asbestos containing building materials. All asbestos work must be conducted by properly trained personnel using appropriate abatement methods. If the scope of work specified in the work package identifies an amount of regulated asbestos-containing material (RACM) to be removed that equals or exceeds the threshold quantity (260 linear feet on pipes / 160 square feet on other facility components / 35 cubic feet on facility components where the length or area could not be measured previously) specified in 40 Code of Federal Regulation (CFR) 61.145, contact the Asbestos Coordinator and provide the necessary information for completion of a 10-Day Demolition or Renovation Notification. Ten-day notifications are required for all demolitions, even if asbestos is absent. Examples of asbestos containing materials that may remain may include floor tiles, mastics, insulation within fire doors, roofing materials, and piping gaskets. Project personnel will properly manage RACM in compliance with the asbestos National Emission Standard for Hazardous Air Pollutant (NESHAP) regulations during removal, transport, and disposal. Instructions provided in Laboratory-Wide Procedure (LWP)-8000 Section 4.3 will be implemented where applicable.

An APAD would be developed for operation of the diesel engines on the fire water pumps.

Discharging to Surface-, Storm-, or Ground Water: There is a shallow injection well associated with MFC-755. If decommissioning of the well is required, contact Mike Lewis (526-0623). An "Authorization to Decommission a Well" form would need to be submitted to the Idaho Department of Water Resources (IDWR). Once approved, the shallow injection well must be decommissioned in accordance with the requirements in the approved form and any other requirements identified by IDWR. Within 30 days of decommissioning, a completed "Notice of Completion of Decommission for an Injection Well" form must be submitted to the IDWR. Copies of approvals from the State of Idaho for well abandonment and well abandonment records must be maintained and must also be provided to the Hydrogeologic Data Repository as required by LWP-8000.

Water softener discharge would be routed to the industrial waste system.

Disturbing Cultural or Biological Resources: The project includes the demolition of a facility (MFC-755) constructed during the INL's Historic Period of Significance (1942-1970). As a utility, this facility is exempt from cultural resource review ("INL Cultural Resource Management Plan" Table 1, Property Type 6 [DOE/ID-10997 rev. 5]).

It is unlikely that excavation activities within fenced facility boundaries would disturb cultural or biological resources. However, discovery of bones or other cultural artifacts during excavation requires an immediate cessation of work and a review by the Battelle Energy Allicance, LLC (BEA) Cultural Resources personnel.

Cultural resource surveys would be required for all areas outside the MFC and TREAT perimeter fences. Project activities would be organized to avoid impacts to any culturally sensitive materials identified during these surveys. Brenda Pace (526-0916) of the INL Cultural Resource Management Office would be contacted to arrange for a cultural resource review.

There is also the potential for some impact to wildlife and habitat during the course of the proposed action. Contact Jackie Hafla (525-9358) at Gonzales-Stoller Surveillance to arrange for biological resource surveys (including nesting bird surveys), at least two weeks in advance, or to respond to any questions or concerns with biological resources.

Generating and Managing Waste: Construction activities may result in the generation of industrial waste. The project may generate hazardous or mixed waste, including components and materials that contain lead, cadmium, and mercury, such as fusible links (sprinkler heads), lead packing on piping, mercury switches, and fluorescent lamps. Based on historical operations, there is the potential to generate both waste streams. A hazardous waste determination would be performed for all waste streams to develop the appropriate management practices and identify disposal paths. Waste streams would be evaluated to determine if any of these materials can be recycled or reused and would be evaluated to implement actions for minimizing waste entering the landfill. Waste Generator Services (WGS) would characterize all solid wastes. If hazardous or mixed waste is generated, it would be segregated, packaged, and stored in a temporary waste management area or a permitted area until it is transported to an off-site permitted disposal facility. The proposed action would generate industrial waste in the form of concrete and structural steel, with additional waste coming from corrugated metal siding, wood framing, gypsum board, and scrap metal. The industrial waste stream would be evaluated for recycling/diversion opportunities and materials not recycled or diverted would be disposed of at the INL Landfill Complex. Asbestos containing material consisting of both friable and non-friable asbestos-containing materials may be generated and would be disposed of at the INL Landfill Complex (asbestos portion).

Because of the age of the buildings, PCBs may be present in painted surfaces and possibly other materials such as wiring, electrical cable insulation, components, light ballasts, contaminated fixtures, and hydraulic and dielectric fluids. PCBs may also be present in waste residues within tanks, pumps, piping, floor trenches, sumps, and other components. Any materials that contain PCBs may also be present above the threshold limit of 50 ppm and would be managed in compliance with 40 CFR 761 Subpart D. Project personnel

would notify Environmental Support & Service personnel of PCBs found during deactivation, decontamination, and decommissioning (DD&D) activities.

Releasing Contaminants: Portions of the facility equipment and components may contain asbestos-containing material, both friable and non-friable. Examples of the materials may include floor tiles, mastics, insulation within fire doors, roofing materials, and piping gaskets.

The project could disturb soil in former Comprehensive Environmental Response and Liabilities Act (CERCLA) sites during excavation for the fire water lines to the TREAT reactor facility. Two of the three sites (Industrial Waste Ditches and Main Cooling Tower Blowdown Ditch) have been determined to require no further action. The other site, the Interceptor Canal, is undergoing natural radioactive decay. Prior to field activities associated with disturbing the soil in the Interceptor Canal, Industrial Waste Ditches, and Main Cooling Tower Blowdown Ditch, a "Notice to Disturb" would be generated.

Using, Reusing, and Conserving Natural Resources: Scrap material, such as wood and metal, shall be recycled to the extent practical. All applicable waste will be diverted from disposal in the landfill when possible. Project personnel will use every opportunity to recycle, reuse, and recover materials and divert waste from the landfill when possible. The project will 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, or are non-toxic or less-toxic alternatives. New equipment will meet either the Energy Star or Significant New Alternatives Policy (SNAP) requirements as appropriate (see http://www.sftool.gov/GreenProcurement/ProductCategory/14).

Executive Orders 13514 and 13423 require all Federal agencies to comply with the Guiding Principles for New Construction and Major Renovation. The proposed new facility does not meet the minimum size requirement (5,000 gross square feet) to invoke the Guiding Principles, nor does it meet the minimum dollar value required to invoke Leadership in Energy and Environmental Design (LEED) Gold certification requirements. However, the Guiding Principles would be followed if cost effective. Examples include use of integrated design principles, use of low-emitting materials and recycled materials during construction, environmental tobacco smoke control, cool roof design, and indoor air quality during construction principles.

SECTION D. Determine the Recommended Level of Environmental Review (or Documentation) and Reference(s): Identify the applicable categorical exclusion from 10 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 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 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 B2.5, "Facility safety and environmental improvements."

Justification: Project activities in this EC are consistent with 10 CFR 1021 Appendix B to Subpart D, Categorical Exclusion B2.5. "Safety and environmental improvements of a facility (including, but not limited to, replacement and upgrade of facility components) that do not result in a significant change in the expected useful life, design capacity, or function of the facility and during which operations may be suspended and then resumed. Improvements include, but are not limited to, replacement/upgrade of control valves, in-core monitoring devices, facility air filtration systems, or substation transformers or capacitors; addition of structural bracing to meet earthquake standards and/or sustain high wind loading; and replacement of aboveground and belowground tanks and related piping,provided that there is no evidence of leakage, based on testing in accordance with applicable requirements (such as 40 CFR part 265 “Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities” and 40 CFR part 280 “Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks”). These actions do not include rebuilding or modifying substantial portions of a facility (such as replacing a reactor vessel).

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: 7/29/2014