FINDING OF NO SIGNIFICANT IMPACT

SEWER SYSTEM UPGRADE PROJECT

IDAHO NATIONAL ENGINEERING LABORATORY, IDAHO

AGENCY: Department of Energy

ACTION: Finding of No Significant Impact

SUMMARY: The Department of Energy (DOE) has prepared an environmental assessment (EA), DOE/EA-0907, for a proposed Sewer System Upgrade Project at the Idaho National Engineering Laboratory (INEL) near Idaho Falls, Idaho. The proposed action would include activities conducted at the Central Facilities Area, Test Reactor Area, and the Containment Test Facility at the Test Area North at INEL. The proposed action would consist of replacing or remodeling the existing sewage treatment plants at the Central Facilities Area, Test Reactor Area, and Containment Test Facility. Also, a new sewage testing laboratory would be constructed at the Central Facilities Area. Finally, the proposed action would include replacing, repairing, and/or adding sewer lines in areas where needed.

The existing sewage treatment plants and portions of the collection systems at the Central Facilities Area, Containment Test Facility, and Test Reactor Area are at least 35 years old and are deteriorating. The equipment is outdated and inefficient and requires continual maintenance and repair. This proposed action would provide INEL with a reliable method for treating and disposing of sanitary sewage waste at the Central Facilities Area, Containment Test Facility, and Test Reactor Area that would reduce maintenance costs and be in compliance with the State of Idaho Waste Water Land Application Permit Regulations.

Based on the analyses in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969, 42 U.S.C. 4321, et seq. Therefore, the preparation of an

environmental impact statement (EIS) is not required, and the Department is issuing this Finding of No Significant Impact.

COPIES OF THE EA ARE AVAILABLE FROM:

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FOR FURTHER INFORMATION CONCERNING THE DOE NEPA PROCESS, CONTACT:

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PROPOSED ACTION: The DOE proposes to upgrade the existing sewer system at the INEL by: 1) replacing or remodeling the existing sewage treatment plants at the Central Facilities Area, Test Reactor Area, and Containment Test Facility at the Test Area North; 2) constructing a new sewage testing laboratory at the Central Facilities Area; and 3) replacing, repairing, and/or adding sewer lines in these areas as necessary.

The proposed sewage treatment plants would be designed to process only nonhazardous wastewater and would be located in the same general area as the existing plants to utilize the existing sewer lines and to minimize the length of new lines. The preferred alternative design involves construction of new raw sewage lift stations, force mains, gravel access roads, and lagoon systems at each location as necessary.

The proposed Sewage Treatment Plant for the Central Facilities Area would receive sanitary wastes from the existing sewer system. The Sewage Treatment Plant would require construction of a new lift station, a new force main, and a gravel access road. A partial-mix, aerated lagoon system consisting of an initial treatment pond, a facultative (natural process) lagoon, and a polishing pond would constitute a mid-treatment process for the Sewage

Treatment Plant at the Central Facilities Area. Each lagoon would have a modified soil liner to prevent release of untreated wastewater to the subsurface. The treatment process would include land application of lagoon effluent using low-pressure drip irrigation from a center pivot, covering up to 34 hectares (85 acres) of indigenous native vegetation.

The proposed Sewage Treatment Plant for the Test Reactor Area would receive sanitary wastes from the existing sewer system. The Sewage Treatment Plant design would consist of a new lift station, a new force main, a gravel access road, and two containment lagoons, each with a modified soil liner to prevent the release of untreated wastewater to the subsurface. The lagoons would cover up to 7 hectares (18 acres).

The proposed Sewage Treatment Plant for the Containment Test Facility would grind the effluent for initial treatment prior to pump transfer to a newly-constructed, lined lagoon covering approximately 2 hectares (5 acres). No other additional equipment or construction would be required.

All Sewage Treatment Plant systems would be designed to handle 2.5 times the average daily flow rate and accommodate peak flows that could occur in any 24-hour period.

The existing drainage systems at the Central Facilities Area, Test Reactor Area, and Test Area North have been sampled, monitored, and characterized to determine if there are sources of radioactive and/or hazardous contamination that have the potential to contaminate the new sewage treatment plants. Where contamination has been detected, those portions of the sewer system would be rerouted and/or reconstructed to avoid contaminating the new sewage treatment plants. Contaminated mains, equipment, and lagoons removed from service would be stabilized in place until additional characterization can be performed. Non-contaminated parts of the existing sewer system components scheduled for replacement would be removed and excessed or placed in a solid waste disposal site. DOE would conduct an appropriate, separate NEPA review before conducting any decontamination and decommissioning activities.

A new laboratory for testing and analyzing the sewage waste from the INEL Sewage Treatment Plants would be constructed within the area of the proposed Central Facilities Area Sewage Treatment Plant. The proposed facility would be a pre-engineered metal building, approximately 9.3 x 13.3 m (30.5 x 43.5 ft) in size. This facility would provide office and laboratory space for Sewage Treatment Plant personnel. Standard laboratory equipment would be installed.

ENVIRONMENTAL IMPACT: Construction of the proposed Sewage Treatment Plants for the Central Facilities Area, Test Reactor Area, and Containment Test Facility would disturb approximately 15.4 hectares (38.1 acres) at the INEL. An additional 34 hectares (85 acres) at the Central Facilities Area would be allocated for land application, and available as habitat for wildlife. The loss of habitat for the lagoons would be offset by the creation of habitat through the land application. This land would be available for other future uses if the land application is discontinued.

All proposed locations are near existing facilities and some of the locations were previously disturbed. The loss of habitat would be small when compared to the remaining undisturbed areas of the INEL and is not expected to have an effect on the viability of any critical habitat or any listed threatened or endangered species. Wildlife would likely be attracted, and native habitat would be promoted and enhanced by the land application of the treated wastewater. The Sewage Treatment Plants are not likely to be affected by flooding from the Big Lost River because the existing river channel and man-made diversions would provide adequate protection. No cultural resources would be adversely affected by this project.

Air Quality. Tritium is present in potable water pumped from the Snake River Plain Aquifer at the Central Facilities Area but not at the Test Reactor Area or Test Area North. Water pumped and tested monthly from the production wells at the Central Facilities Area was determined to contain an average concentration of about 16 picocurie per liter of tritiated water which is below the maximum contaminant levels for tritium in drinking water, as stated in the National Primary Drinking Water Regulations, 40 CFR 141.16. For this analysis, it is assumed that groundwater from the Central Facilities Area

production wells would cause atmospheric releases of tritiated water from the Central Facilities Area sewer system lagoons. The entire inventory of 10,000 Curies of tritiated water that remains in the aquifer is assumed to be released to the atmosphere instantaneously by pumping the aquifer at the Central Facilities Area. Dose estimates were calculated by using the Environmental Protection Agency Clean Air Act Assessment Package-1988 dose and risk assessment code.

The nearest offsite receptor (an individual living at an existing residence where the effects of atmospheric releases from the Central Facilities Area would have the greatest impact) was considered to be located approximately 14,100 m (8.76 mi) southeast of the Central Facilities Area. The total effective dose equivalent for this receptor would be 0.001 mrem during the year of assumed release. The effective dose equivalent for the individual receptor is a small fraction of the 0.1 mrem/yr level that, if exceeded, would require emission measurements at the point of release. See Title 40 CFR Part 61.93 (b)(4)(i) of Subpart H, "National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities." The estimated lifetime fatal cancer risk from this exposure would be 3×10^{-8} (3 in 100 million).

An effective dose equivalent was also calculated for workers and the collective population (offsite residential population). The maximum worker effective dose equivalent would be 35 mrem/yr, which can be compared to the 5,000-mrem/yr limit specified in DOE 5480.11, "Radiation Protection for Occupational Workers." The collective population effective dose equivalent would be 0.02 person-rem/year. This dose would be expected to pose a risk of fatal cancer of 6.6×10^{-6} (6.6 in 1 million) fatal cancers/year in the affected population. These are extremely conservative estimates because the hypothetical bounding release calculation assumes the exhaust of the entire tritiated water inventory at once, which is not possible. In fact, the risks associated with tritiated water releases would be substantially smaller.

There would be a temporary increase in fugitive dust and a minor increase in hydrocarbon emissions and noise from equipment at the proposed construction locations. Other air emissions from the Sewage Treatment Plants would include

methane, carbon dioxide, and trace amounts of hydrogen sulfide. Of these emissions, only hydrogen sulfide is regulated by the State of Idaho as a noncarcinogenic toxic air pollutant. The amount of hydrogen sulfide likely to be in the ponds was determined using numbers and percentages from anaerobic sludge digesters. The estimated maximum bounding emissions of hydrogen sulfide for the proposed Central Facilities Area ponds would be 0.0014 lb/hr and for the Test Reactor Area 0.0004 lb/hr. The State of Idaho toxic air pollutant limit is 0.993 lb/hr. The Idaho toxic air pollutant rate is one fifteenth of the Occupational Exposure Limit used by the Occupational Safety and Health Administration and the American Council of Governmental Industrial Hygienists. Emissions of hydrogen sulfide would not cause any health effects because the emission rate is far below the health-based regulatory standard. Emissions of other gases have been determined to be inconsequential.

Among the chemicals proposed for use at the Sewage Treatment Plant testing laboratory, only two on the Idaho toxic air pollutant list could produce emissions: sulfuric acid and sodium hydroxide. The estimated maximum potential emission rate from this amount of use would be 0.00043 lb/hr for sulfuric acid and 0.00035 lb/hr for sodium hydroxide, assuming 100% release. These emission rates are well below the State of Idaho regulatory limit of 0.0667 lb/hr for sulfuric acid and 0.133 lb/hr for sodium hydroxide. No health effects would be expected from the use of these two chemicals.

Biological Resources. As previously stated, activities associated with Sewage Treatment Plant construction would disturb approximately 15.4 hectares of vegetation. There is a potential for these construction activities (including both Sewage Treatment Plant and laboratory construction) to destroy some small burrowing and less mobile animals, and force larger animals and birds to relocate to adjacent areas where similar or more suitable habitat is abundant. It is not anticipated that construction activities would affect the viability of any plant species, local wildlife population, or any endangered species.

Groundwater. The effluent from the Sewage Treatment Plants would not increase contaminant concentrations in groundwater above the drinking water primary maximum contaminant levels and secondary contaminant levels based on the following considerations: 1) concentrations of contaminants in influent to the

Sewage Treatment Plants are low, 2) the Sewage Treatment Plants will decrease contaminant concentrations substantially and projected trace element nutrient loading rates would fall below state recommended levels, and 3) any interbeds present in the vadose zone may also provide treatment of infiltrate prior to reaching the aquifer.

Waste Generation. Sludge would be generated from the sewage treatment process that would require disposal in accordance with applicable State and Federal Regulations. The estimated annual generation would be of 19.1 m^3 (25 yd^3), 5.7 m^3 (7.5 yd^3), and 3.8 m^3 (5 yd^3) for the Sewage Treatment Plant facilities at the Central Facilities Area, Test Reactor Area, and Containment Test Facility, respectively. This sludge would contain approximately 93 to 97 percent water. The 3 to 7 percent consisting of solids would be 60 to 80 percent organic matter. It is projected that the sludge would be removed from the lagoons every 20 to 30 years. Based on the influent to the sewage treatment facilities, the sludge would contain only small quantities of contaminants such as metals that would not limit any management and disposal options, which include beneficial reuse, land disposal or incineration in accordance with 40 CFR parts 257 and 403.

ALTERNATIVES CONSIDERED: Alternative Sewage Treatment Plant designs were evaluated in addition to the no action alternative and the preferred alternative. The alternative selection factors included: 1) the amount of land that is available and where it is located; 2) proximity to drinking water wells; and 3) ease of permitting.

Alternative Sewage Treatment Plant designs were considered for the Central Facilities Area including: 1) the aforementioned partial-mix, aerated treatment system with a series of unlined, rapid infiltration lagoons for effluent disposal that would cover up to 16.2 hectares (40 acres); and 2) a combination of facultative lagoons that would cover an estimated 43 hectares (106 acres), each with soil liners to prevent leakage for the initial treatment process, plus land application as previously described for effluent disposal. These two alternatives were not selected due to the increased disturbed acreage.

Other reasonable alternative designs for the Test Reactor Area were not identified. Any other designs would contribute to potential contamination of drinking water wells located nearby. No other reasonable locations near the Test Reactor Area were available.

Alternative designs considered for the Containment Test Facility include: 1) construction of flow-through aerated lagoons and discharge of effluent to the ground through infiltration/percolation trenches; 2) using septic tanks to receive the effluent initially prior to pumping to a newly constructed containment lagoon system; and 3) construction of smaller facultative ponds with modified soil liners for initial treatment followed by a series of small infiltration ponds. The proposed Sewage Treatment Plant design was selected due to space limitations, treatment effectiveness, reduced maintenance, and the lack of need to increase treatment capacity at the Containment Test Facility. No other reasonable locations near the Containment Test Facility were available.

The no action alternative would potentially impact continuing operations and practices, and might delay new facilities and/or programs due to the limited capacity and efficiency of the existing sewage treatment plants.

DETERMINATION: The proposed action to upgrade the INEL sewer system does not constitute a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act. This finding is based on the analyses in the EA. Therefore, the preparation of an EIS is not required for this proposed action, and the Department of Energy is issuing this Finding of No Significant Impact.

Issued at Washington, D.C., this 1st day of April, 1994.

for Tara O'Toole, M.D., M.P.H.
Assistant Secretary
Environment, Safety and Health