DEPARTMENT OF ENERGY

Office of Secretary

National Environmental Policy Act
Record of Decision for Remedial Actions
at the Niagara Falls Storage Site, Lewiston, NY

AGENCY: Department of Energy

SUMMARY: Pursuant to the Council on Environmental Quality Regulations (40 CFR Part 1505) implementing the procedural provisions of the National Environmental Policy Act (NEPA) and the Department of Energy's (DOE) guidelines for compliance with NEPA (45 FR 20694, March 28, 1980), the Office of Assistant Secretary for Nuclear Energy of DOE is issuing a Record of Decision for remedial actions at the Niagara Falls Storage Site (NFSS), described in the "Final Environmental Impact Statement, Long-Term Management of the Existing Radioactive Wastes and Residues at the Niagara Falls Storage Site," (DOE/EIS-0109F).

DECISION: For the radioactive wastes at the NFSS, the DOE has selected long-term in place management consistent with the guidance provided in the Environmental Protection Agency (EPA) regulation for uranium mill tailings (40 CFR 192). For the radioactive residues at the NFSS, it is the DOE intent to provide for long-term in place management consistent with future applicable EPA guidance. If future analyses show that in place management cannot meet EPA guidance, long-term in place management of the residues would need to be replaced by another option which meets EPA guidance and is environmentally acceptable. Further NEPA review is anticipated subsequent to additional design of the long-term in place management project for the radioactive residues.

Background

The Niagara Falls Storage Site (NFSS) is located in the Town of Lewiston, Niagara County, New York, about 19 miles north of Buffalo. The current site is part of a former Manhattan Engineer District (MED) site, which in turn was part of the former Lake Ontario Ordnance Works. Beginning in 1944, the MED used the site for storage of radioactive residues that resulted from the processing of uranium ores during development of the atomic bomb. Additional residues were brought to the site for several years after World War II. The contaminated materials at the site consist of 15,000 cubic yards of "residues" from the processing of uranium ores (total radium-226 inventory of 871 curies) and 240,000 cubic yards of "wastes," mostly very slightly contaminated soils (total radium-226 inventory of 7.8 curies).

The Department initiated interim remedial actions in 1982 to consolidate and safely store all radioactive materials on the site and on adjacent properties. When interim remedial actions are completed in the fall of 1986, all the radioactive residues and wastes will be consolidated within the interim waste containment area in the southwest corner of the site. The residues are located within a reinforced concrete structure within the interim facility. The interim facility, with a service life of 25-50

years, will safely contain the radioactive wastes and residues until the long-term management alternative is implemented. The interim facility cap is designed to retard radon emissions and minimize water infiltration into and consequent leaching of radioactive contaminants from the wastes and residues. The clay dike and below-grade clay cutoff wall surrounding the wastes are designed to minimize lateral migration of contaminants. The cutoff wall is keyed into a natural layer of low permeability clay. The interim facility is described in detail in "Design Report for the Interim Waste Containment Facility at the Niagara Falls Storage Site," DOE/OR/20722-21, May 1986.

Both a performance monitoring system and environmental monitoring system will go into effect when the interim facility is completed. The objective of the performance monitoring system will be early detection of trends that could indicate weaknesses developing in the containment structure so that corrective actions could be taken. This system is described in detail in "Report on the Performance Monitoring System for the Interim Waste Containment at the Niagara Falls Storage Site," DOE/OR/20722-71, May 1986. The environmental monitoring system will include sampling and analyses of ground and surface water, sediments and air. Proposed monitoring locations and planned sampling frequencies and parameters to be measured are detailed in "Environmental Monitoring Plan for the Niagara Falls Storage Site and the Interim Waste Containment Facility," DOE/OR/20722-86, April 1986.

Project Description

The purpose of the project is to provide for in place long-term management of the radioactive wastes and residues at NFSS. To do this, a long-term multilayered engineered cap will be constructed over the interim waste containment area. The long-term cap will be designed to minimize infiltration over a long period of time and to impede inadvertent intrusion into the residues and wastes. The design of the long-term cap will result in enlargement of the interim waste containment area and will necessitate relocation of the central drainage ditch. The long-term waste containment area will be 302 meters long, 137 meters wide and 8.9 meters high, with a side slope of 1 vertical to 5 horizontal. The DOE intends to manage only NFSS material at the site. The DOE will retain ownership and control of the waste containment area, plus a small buffer zone and service area. Thus, approximately 150 acres of the 190-acre site will be released for other uses.

Design options for the containment cell and for the waste form of the residues will be selected after consultation with EPA. Such options could include but are not limited to physical or chemical modification of the residues and the addition of a concrete top to the concrete structure that holds the residues. Selection from these and other options will be made after full consideration of any future EPA standards (such as 40 CFR 193) and/or guidance that could be applicable to the residues.

Description of Alternatives

The following alternatives were considered in detail by DOE in reaching its decision for long-term management of the residues and wastes at the Niagara Falls Storage Site (NFSS).

1. No Action

   This alternative consists of performing no additional remedial actions and continuing to store the radioactive residues and waste as they will be at the end of interim remedial actions in the fall of 1986. This alternative does not meet the passive design requirements of 40 CFR 192.

2. Decontamination of the NFSS, transport, and long-term management of the radioactive wastes and residues at the DOE site in Hanford, Washington

   Both the residues and the wastes will be excavated from the containment area at NFSS and transported on trucks to a waste-management site on the DOE Hanford Reservation near Richland, Washington. The residues will be packaged in large metal boxes and transported either on flatbed trailers or in shielded vans. The wastes are classified as nonradioactive under current transportation regulations and will be shipped in large dump trucks. About 16,000 truckloads will be needed to transport all 250,000 yd^3 of wastes and residues. Major interstate highway systems will be followed through 11 States, over a distance of approximately 2500 miles. Following transport of all wastes and residues to the Hanford site, the excavated areas will be filled and regraded, and NFSS will be released for other use.

   At Hanford, the contaminated materials will be buried in trenches in a manner similar to current practices for other types of solid radioactive wastes on the Hanford Reservation. Burial of the NFSS wastes and residues will require approximately 42 trenches. The waste management site at Hanford will cover about 140 acres, including 95 acres in the actual waste containment area.

3. Decontamination of the NFSS, transport, and long-term management of the radioactive wastes and residues at a DOE site in Oak Ridge, Tennessee

   The NFSS wastes and residues will be excavated and transported by truck to the Pine Ridge Knolls site on the DOE Oak Ridge Reservation near Oak Ridge, Tennessee. Approximately 16,000 truckloads will be transported over major interstate highway systems, crossing five States, and covering approximately 750 miles. Following transport of all wastes and residues to the Oak Ridge site, excavated areas at NFSS will be filled and regraded and NFSS will be released for other use.

   The wastes and residues will be stabilized in several mounds on top of the knolls at the Pine Ridge Knolls site. The mounds will be covered with a long-term cap similar to that described for NFSS. A total of 60 acres will be needed at the Oak Ridge site, including 29 acres for the actual waste containment area. A major technical uncertainty in implementing this alternative is whether or not there will be enough space on top of the knolls.

4. Removal, transport, and long-term management of the radioactive residues at Hanford, Washington, and long-term management of the radioactive wastes at NFSS

The residues will be excavated, packaged, and transported to Hanford in 1600 truck trips. The packages will be buried in 10 trenches. About 53 acres, including 23 acres for the actual waste containment area, will be required at Hanford.

The wastes will remain at NFSS and will be covered with a long-term cap.

5. Removal, transport, and long-term management of the radioactive residues at Hanford, Washington, and removal and ocean disposal of the radioactive wastes

The residues will be removed, packaged, and transported to Hanford as described in alternative 4 above. All remaining wastes will be excavated, transported in bulk in dump trucks to a dock in the New York/New Jersey harbor area, loaded onto barges, and transported to the 106-mile Ocean Waste Disposal Site (Site 106) for disposal.

Following excavation and removal of all wastes and residues from NFSS, the excavated areas will be filled and graded and the site will be released for other use. A potential institutional obstacle to implementation of this alternative is the need to obtain an ocean dumping permit from the U.S. EPA and the uncertainty as to how the wastes will be classified for ocean disposal purposes.

6. Removal, transport, and long-term management of the radioactive residues at Oak Ridge, Tennessee, and long-term management of the radioactive wastes at NFSS

The residues will be shipped to Oak Ridge, Tennessee, stabilized in one or two large mounds on the knolls at the Pine Ridge Knolls site, and covered with a long-term cap. About 33 acres of land will be needed, including 6.7 acres for the actual waste containment area. The procedures for managing the remaining contaminated wastes at NFSS will be identical to those described for alternative 4 above.

7. Removal, transport, and long-term management of the radioactive residues at Oak Ridge, Tennessee, and removal and ocean disposal of the radioactive waste

The residues will be removed, packaged, and transported to Oak Ridge, Tennessee, stabilized in one or two large mounds on the knolls at the Pine Ridge Knolls site, and covered with a long-term cap. About 33 acres of land will be needed, including 6.7 acres for the actual waste containment area. The radioactive wastes will be excavated, transported in bulk in dump trucks to a dock in the New York/New Jersey area, loaded onto barges, and transported to the 106-mile Ocean Waste Disposal Site for disposal. Following excavation and removal of all wastes and residues from NFSS, the excavated areas will be filled and graded and the site will be released for other uses. A potential institutional obstacle to implementation of this alternative is the

need to obtain an ocean dumping permit from the U.S. EPA and the uncertainty as to how the wastes will be classified for ocean disposal purposes.

Basis for Decision

Consistent with the waste management guidance in DOE Order 5820.2, DOE is using the EPA standard 40 CFR 192 as guidance for long-term management of the radioactive wastes at the NFSS on land. These wastes are contaminated with naturally occurring radionuclides, and we conclude that the EPA standard developed for disposal of uranium mill tailings on land, 40 CFR 192 is the relevant standard. For the radioactive residues, there is no applicable EPA standard. Compliance with future applicable requirements is uncertain until those requirements are known and compared with the in place management design.

Long-term management in place has less environmental impacts for the action alternatives for (1) transportation and occupational injuries and deaths, and (2) additional imputed radiological health effects during the action period to the general public and workers. For the long term, several of the alternatives, including in place management at NFSS, have less projected health effects than the other alternatives. Considering the action period and long term in toto, in place management at NFSS is the environmentally perferable alternative. Further, in place long-term management at NFSS is shown in the EIS to be far less costly than the other alternatives.

Considerations in the Implementation of the Decision

The DOE is cognizant of potential environmental and health impacts which could result in implementing the decision. These impacts will be minimized or avoided through strict compliance with applicable Federal, State, and local regulations.

Near the time of implementation of the decision, DOE will evaluate design options for long-term in-place management of the wastes and residues. DOE will consult with EPA on the selection of the specific on-site containment option and provide EPA with assurance that the selected option will meet applicable standards and/or guidance and will be environmentally acceptable. Detailed engineering plans and environmental health and safety operations plans, as well as long-term maintenance and monitoring plans, will be developed consistent with the selected option. The appropriate NEPA review will be conducted. The existing maintenance and environmental monitoring programs will be modified as necessary, to reflect the monitoring experience gained during the interim waste containment period and to reflect any additional monitoring necessitated by disturbance of the residues.

Subject to the requirements of the selected option, the following are representative measures which will be employed to avoid or minimize impacts during the remedial action:

- Mitigation of contaminate exposure and release through air and land pathways - The release of contaminated particulates will reduced by dampening contaminated material with water and/or dust suppressants, by stopping contaminated material-handling operations during adverse weather conditions, and by using equipment designed and/or selected to minimize particulate releases.

  The inadvertent off-site transportation of radioactively contaminated material will be controlled by the use of decontamination facilities (e.g., truck wash stations) to clean trucks and other vehicles before leaving the site. Human exposure to residual radioactive material will be reduced by restricting access, and by providing the monitoring and protective equipment and training programs necessary for use by the remedial action workers. Radon, in and around the site, will be monitored as part of the process to minimize exposure.

- Mitigation of contaminate release through water pathways - To prevent possible off-site migration of contaminated water during excavation and handling of the contaminated material, protective dikes isolating the disturbed material from surface-water systems will be installed. The construction of collecting and settling basins will permit the collection and treatment of waste-water resulting from washing vehicles and equipment. All effluent water will be monitored and treated to meet water-quality release criteria before being discharged. Sediment from sedimentation basins will be stabilized and disposed of in the Waste Containment Cell.

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This long-term management project at the NFSS is expected to be implemented in the next 5 to 10 years based on the availability of funds and other priorities within the Surplus Facilities Management Program. In the meantime, the interim waste containment facility to be completed in the fall of 1986 will contain the radioactive material and protect the public health and safety.

A. David Rossin
Assistant Secretary
for Nuclear Energy