

POLICY ISSUE
(Negative Consent)

August 11, 2000

SECY-00-0173

FOR: The Commissioners

FROM: William D. Travers /RA/
Executive Director for Operations

SUBJECT: REMOVAL OF THE WATERTOWN MALL AREA FROM THE SITE
DECOMMISSIONING MANAGEMENT PLAN

PURPOSE:

To inform the Commission that the staff plans to remove the Watertown Mall Area site, in Watertown, Massachusetts, from the Site Decommissioning Management Plan (SDMP).

BACKGROUND:

In SECY-90-121, the original SDMP, the staff identified approximately 50 sites that warranted additional oversight by the U.S. Nuclear Regulatory Commission (NRC), to ensure the timely and safe remediation of residual radioactive material in excess of NRC's criteria for release and license termination. One of these sites was the Watertown Arsenal/Mall Area site, in Watertown, Massachusetts.

The site is located approximately 11 kilometers (7 miles) west of Boston, Massachusetts, along the north branch of the Charles River. In July 1997, the western portion of the site, the U.S. Army Research Laboratory (ARL), was removed from the SDMP, having met the criteria for release for unrestricted use. The Watertown Mall Area remained under SUB-238 license, the source material license for the site, and on the SDMP.

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The Manhattan Engineering District Project, and later the U.S. Army, conducted operations involving natural and depleted uranium from approximately 1946 through 1967 in the eastern portion of the former Watertown Arsenal. This portion of the site is referred to as the Watertown Mall Area. The Watertown Mall Area was transferred to the U.S. General Services Administration (GSA) and subsequently sold to the Watertown Redevelopment Authority (WRA) in 1968. The site history and radiological survey history are summarized in Attachment 1. Three facilities on the Watertown Mall Area -- Buildings 34, 41, and 421, were used for activities involving natural and depleted uranium. Buildings 34 and 41 were sold in a contaminated state. In 1969, surveys and remediation actions were conducted at the site by an Atomic Energy Commission (AEC)-licensed contractor. The final survey concluded that Buildings 34 and 41 met the AEC criteria for unrestricted use. Building 421 was presumed to be free from contamination, based on characterization surveys conducted by the Army at the time the site was transferred to the WRA. However, surveys of these three buildings conducted by Argonne National Laboratory (ANL), in the early 1980s, identified small spots of contamination on the concrete pads remaining from former Buildings 34 and 421 and a few soil and sediment samples that were in excess of natural background levels for uranium. In addition, a radiation exposure reading in a drain line associated with Building 41 was in excess of the SDMP Action Plan criteria (57 Federal Register 13389).

In 1990, the Watertown Mall Area was added to the SDMP, and later added to SUB-238, the license for the ARL site, because records available to the Army and NRC did not clearly demonstrate that necessary decontamination had occurred before the property was released for unrestricted use. In October 1993, the Army submitted the "Former Watertown Arsenal Preliminary Assessment (PA)," which included recommendations for resolving issues associated with the radiological status of the site. These recommendations included evaluating the potential doses from the residual radioactive material on the former building pads and in the drain/sewer lines. In a letter dated January 31, 1994, NRC stated that the recommendations of the PA were acceptable. Several additional surveys were conducted in the 1990s to address areas that required further characterization, including an assessment of the small spots of contaminated concrete and elevated soil/sediment concentrations that were identified in the ANL surveys.

At the time the ARL portion of the Watertown Arsenal was removed from the SDMP in 1997, the licensee had completed a majority of the radiological assessments for the Watertown Mall Area, indicating that it could be released for unrestricted use. These assessments concluded that residual radioactive material in soil and on the former building pads did not pose a significant risk to the public. However, there was the possibility that residual radioactive material in excess of the SDMP criteria was present in buried drain/sewer lines on the site, which had not yet been evaluated. In 1998, a Risk Evaluation for the Watertown Mall Area, developed by the Army to comply with the Commonwealth of Massachusetts Department of Environmental Protection (MADEP) requirements, also included an assessment of the risk from residual radiological material in the buried drain/sewer lines. This assessment concluded that, under current and future site conditions, no significant human health nor ecological risks would be expected from the residual radioactive material.

In a letter dated July 10, 2000, ARL requested removal of the Watertown Mall Area from the SDMP and provided a dose assessment for the radioactive material in the buried sewer line that had residual radioactive material in excess of the SDMP Action Plan criteria for fixed contamination. The ARL also provided a demonstration that these doses were as low as

reasonably achievable (ALARA).

DISCUSSION:

The ARL and the U.S. Army Corps of Engineers, New England District Office (hereafter, the Corps), completed an extensive historical record review, including an archival record search and interviews with former employees, current property owners, community members, and State and Federal regulators. The staff reviewed these documents as well as surveys and assessments from 1992 through 1999.

In a letter dated May 25, 1999, the NRC staff concluded that the drain/sewer line sediment sample results, which were reported as less than the SDMP Action Plan criteria, were inconclusive, because of the high uncertainty reported for a few of the measurements, and data were not available for the location nearest to the potential source of contamination from the former Building 41 drain/sewer line. NRC also stated that a dose assessment would be required to justify leaving the buried sewer pipe in place. NRC provided "Preliminary Guidelines for Evaluating Dose Assessments in Support of Decommissioning," to ensure that the licensee's dose assessment would be developed in accordance with NRC staff guidance. To confirm the licensee's assessment, NRC developed a survey plan to collect sediment samples and make radiological measurements to determine if the facility could be released for unrestricted use.

On July 19, 1999, under the supervision of NRC Region I staff, the Oak Ridge Institute for Science and Education sampled portions of the sewer system associated with Building 41 and background sewer locations. The survey determined that uranium concentrations, exposure rate measurements, and total alpha and beta removable contamination met the NRC SDMP Action Plan criteria. Results were consistent with uranium concentrations found in the environment. However, two localized areas within one manhole indicated direct surface activity in excess of the maximum guideline for depleted uranium. As documented in an NRC Inspection Report dated October 4, 1999, a dose assessment was required to demonstrate that potential doses from future uses would be consistent with NRC's dose-based release criterion. An inspector from the Commonwealth of Massachusetts Department of Public Health (MADPH), Radiation Protection Program observed and participated in the inspection. A representative from the MADEP also observed portions of the inspection.

The requested dose evaluation and an ALARA demonstration were submitted to the NRC in July 2000. In developing this dose evaluation, the licensee assumed that the sewer line was excavated, ground up, and uniformly spread over an area of approximately 2,400 square meters. The licensee then used a residential family farm scenario, with a site-specific source term and the DandD Screen model (using the code's default parameters). Based on this evaluation, a maximum dose of approximately 0.084 milliSieverts per year [0.084 mSv/y] (8.4 millirem per year (8.4 mrem/y)) could be received by the average member of the critical group 4 years after the site is released. The residential family farm scenario is considered highly unlikely given the site's location in a metropolitan area of a major city, the existence of the Mall, associated buildings, and parking areas, and the classification of the local groundwater as a non-potential source of drinking water. An external dose estimate for a utility worker based on current radiological conditions was also developed. The dose to the utility worker is estimated to be 10 microSieverts (0.001 mrem) for a 2-minute pipe inspection. This dose scenario is also considered unlikely because the buried drain lines are no longer being

used.

Based on the staff's review of the radiological surveys provided by the licensee and NRC confirmatory surveys, NRC staff has concluded that residual radioactive material levels at the majority of the site are at, or near, background levels and therefore, satisfy the SDMP Action Plan criteria. In addition, NRC staff reviewed the assumptions and default parameters, and through independent dose calculations confirmed that potential doses from residual radioactive material in the sewer line are well below the NRC dose-based release criterion of 0.25 mSv/y (25 mrem/y) as stipulated in 10 CFR 20.1402. The staff also estimated the potential doses to the public from the residual radioactive material on the Building 421 concrete pad and determined that they would be less than 0.01mSv/y (1 mrem/y). Further, the average soil and sediment sample results for residual radioactive material for the site were consistent with background levels, except for a few slightly elevated uranium and radium results. Therefore, staff is satisfied that the dose from residual radioactive material for the entire site is expected to be less than 0.25 mSv/yr (25 mrem/yr).

The licensee also submitted a limited ALARA analysis, evaluating the costs to excavate the buried pipe and associated debris, and concluded that leaving the pipe in place was ALARA. The NRC staff independently evaluated the potential doses to the public from residual radioactive material in the buried pipe and determined that the doses are ALARA.

Based on the staff's review of the radiological surveys, risk assessments, the dose assessment for leaving the buried drain lines from the former Building 41 in place, and the independent dose assessment of the contaminated spots on the Building 421 concrete pad, the staff has concluded that the Watertown Mall Area is acceptable for unrestricted release and should be removed from the SDMP. The licensee has not requested license termination and release of the site at this time. However, ARL, GSA, and the Corps are evaluating whether to request an amendment to SUB-238 to add another SDMP site, the GSA property, a 5-hectare (12-acre) site also in Watertown, rather than terminate the license with the removal of the Watertown Mall from the SDMP. The GSA property is currently not licensed by NRC, and the radiological assessment and remediation of the GSA property is managed by the Corps, under the Formerly Utilized Defense Sites program. The GSA property had been part of the Watertown Arsenal/Mall before 1968. Placing the GSA property under a license would improve the decommissioning process for the GSA property by requiring schedule constraints in accordance with NRC's Decommissioning Timeliness Rule. Based on discussions with the licensee, staff expects to resolve the status of the site license by the end of the calendar year.

If the Commission does not object to the removal of the Watertown Mall Area from the SDMP, the attached letter (Attachment 2) will be sent to the licensee. Consistent with prior staff practice, prior to removing the site from the SDMP and transmitting the letter to the licensee, NRC RI will send letters to the Environmental Protection Agency (EPA) and the State regulatory agencies to inform them of the Commission's position on the proposed action. A Federal Register notice (Attachment 3) will announce the staff's action to remove the Watertown Mall from the SDMP list. When the licensee submits a request to amend its license to remove the Watertown Mall Area from the license, a Federal Register notice will be prepared providing an opportunity for a hearing.

NRC staff has coordinated this action with the MADEP, to which EPA, Region I deferred responsibility under the Massachusetts Contingency Plan program for remediation of hazardous material at Federal facilities. NRC staff has also coordinated the action with the MADPH. Both

agencies were informed of NRC inspections and meetings throughout the project. At a meeting in May 2000 with ARL, GSA, and the Corps, which included MADEP and MADPH, NRC staff discussed removing the Watertown Mall area site from the NRC SDMP list. In addition, NRC RI staff contacted EPA Region I, MADEP and MADPH cognizant representatives directly and discussed the basis for the staff's recommendation to remove the site from the SDMP without a request for license termination. The representatives from each agency stated that they were in agreement with the proposed action. The Corps also agreed to announce this proposed action during the next Watertown Restoration Advisory Board meeting. Finally, this paper has been coordinated with the NRC's Office of State and Tribal Programs.

COORDINATION:

This paper has been coordinated with the Office of the General Counsel, which has no legal objections.

RECOMMENDATION:

Staff requests action within 10 days. Action will not be taken until the SRM is received. We consider this action to be within the delegated authority of the EDO.

William D. Travers
Executive Director
for Operations

Attachments:

1. Site History and Site Radiological History
2. Draft Letter to Licensee
3. Draft Federal Register Notice

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PKG: ML003736375

SECY: ML003736341

Att1: ML003736357

Att2: ML003736365

Att3: ML003736372

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