

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

INSPECTION REPORT

Inspection No. 040-02253/99-02  
Docket No. 040-02253  
License No. SUB-238  
Licensee: U.S. Army Research Laboratory  
Address: Attn: AMRSL-CS-IS-SH  
2800 Powder Mill Road  
Adelphia, MD 20783  
Locations Inspected: Formerly Used Defense Site Parcel  
Arsenal Street, Watertown, Massachusetts  
Inspection Dates: July 14, 1999  
Date Followup  
Information Received: September 9, 1999 and September 30, 1999

Inspector:

Marie Miller  
Marie Miller  
Senior Health Physicist

10-4-99  
date

Approved By:

Ronald R. Bellamy  
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Decommissioning and Laboratory Branch  
Division of Nuclear Materials Safety

Oct 7, 1999  
date

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## EXECUTIVE SUMMARY

Formerly Used Defense Site (FUDS) Parcel, Watertown, MA  
NRC Inspection Report No. 040-02253/99-02

Routine inspection at the Formerly Used Defense Site (FUDS) parcel (the FUDS parcel) at Arsenal Street, Watertown, Massachusetts. The U.S. Army Corps of Engineers, New England District (USACE) provides project manager and health and safety support for the US Army Research Laboratory at this FUDS parcel. The inspection consisted of a confirmatory survey of portions of the sewer system associated with the former Watertown Arsenal, Building 41 (currently, the site of a parking lot for a shopping mall) and background sewer locations. The inspection was conducted under the supervision of NRC Region I by the Environmental Survey and Site Assessment Program of the Oak Ridge Institute for Science and Education (ORISE). Additional support was received from the Watertown Department of Public Works by providing access and a clear understanding of the current sewer network. All sampling was conducted in accordance with the Site Safety and Health Plan and Sampling and Analysis Plan for Sanitary Manholes at the Former Watertown Arsenal, Watertown, MA, which were developed by the USACE.

The survey determined that uranium concentrations, exposure rate measurements and total alpha and beta removable contamination measurements met the NRC Site Decommissioning Management Plan (SDMP) Action Plan release criteria. Results were consistent with background concentrations of uranium found in the environment. However, two localized areas within one manhole indicated direct surface contamination activity in excess of the maximum guideline for depleted uranium, while three other locations were in excess of the average guideline for depleted uranium.

As discussed during the inspection, based on the slightly elevated direct contamination results, completion of a dose assessment with conservative, yet plausible scenarios is required. The dose assessments should demonstrate that any potential doses from future uses are consistent with the current NRC dose-based release criterion.

## REPORT DETAILS

### **I. Organization and Scope of the Program**

#### a. Inspection Scope (87104)

Review the project organization and responsibilities for the conduct of radiological surveys to be conducted under potentially hazardous conditions, including confined space entries.

#### b. Observations and Findings

Under an arrangement with the U.S. Army Research Laboratory (the licensee) the FUDS parcel is managed by the U.S. Army Corps of Engineers, New England District (USACE). USACE has project management and coordination responsibilities for sampling activities, health and safety and radiation protection at the FUDS parcel. To support the NRC confirmatory sampling inspection, which involved potential exposure to hazardous or toxic conditions resulting from sanitary sewers and confined spaces, the USACE developed a "Site Safety and Health Plan for the Former Watertown Arsenal (FUDS)", dated July 13, 1999. All persons participating in the sampling received a copy of this plan, and received a hazard analysis briefing. Based on the conditions of the sewers, confined space entries were not required to obtain sediments or to take measurements.

USACE was also assisted by their contractors in arranging for support from the Watertown Public Works Department and access to the property from the FUDS parcel land owners or their agents.

#### c. Conclusions

The project coordination demonstrated good preparations for onsite sampling, implementation of health and safety plans, and coordination with offsite representatives, including the Commonwealth and local government..

### **II. Radiation Surveys**

#### a. Inspection Scope (87104, Appendix A)

Conduct a confirmatory sampling inspection in accordance with NRC sampling plan that was provided to the licensee by letter dated May 25, 1999. This survey plan was designed to confirm the adequacy of the licensee's risk assessment of a possible drain line from former Army Arsenal Building 41. Review adequacy of licensee split sampling and measurements taken in accordance with the USACE "Sampling and Analysis Plan for Sanitary Manholes at the Former Watertown Arsenal", dated July 9, 1999.



b. Observations and Findings

Access to all planned locations was available. However, based on a review of a current "Sewerage Map of Watertown", provided by Watertown Public Works, sampling locations were modified to address the flow from manhole 9 (closest to the former Arsenal Building 41) to two potentially-affected downstream locations. These locations were manhole 106, across from Greenough Blvd., and a sewer connection that extended to the entrance of the parking garage before crossing Greenough Blvd. Attachment 1 to this report provides the ORISE radiological evaluation report, dated August 31, 1999, which was received September 9, 1999.

There was sediment in two of the five manholes, and not sufficient sediment to split samples with USACE and the Commonwealth of Massachusetts. Gamma spectrometry analysis results showed background uranium concentrations. Alpha spectrometry was not performed, because the results were not distinguishable from environmental levels of uranium. Direct exposure rate measurements were taken by ORISE, the USACE and by the Commonwealth. These readings were consistent with background. Direct and removable contamination measurements were taken by ORISE.

Direct measurements were performed at 15 locations within the five manholes with surface activity levels ranging from -1,700 to 18,000 disintegrations per minute per one hundred square centimeters( dpm/100 cm<sup>2</sup>). Two direct readings from manhole 9 were in excess of the maximum guideline for depleted uranium (15,000 dpm/100 cm<sup>2</sup>).

c. Conclusions

Based on the slightly elevated direct contamination results, completion of a dose assessment with conservative, yet plausible scenarios is required. The dose assessments should demonstrate that any potential doses from future uses are consistent with the current NRC dose-based release criterion.

### III. Exit Meeting

The inspector met with the U. S. Army Corps of Engineers and their representatives identified in Section IV of this report and presented a summary of the inspection findings on July 14, 1999. On September 30, 1999, USACE provided a current copy of their distribution list for receipt of documents related to the FUDS parcel.

#### IV. PARTIAL LIST OF PERSONS CONTACTED

##### Licensee Representatives and Contractors

Dennis Waskiewicz, Project Manager, US Army Corps of Engineers, New England  
\*Shelia Harvey, Industrial Hygienist, US Army Corps of Engineers, New England  
Beth Shields, EM, US Army Corps of Engineers, New England  
\*Hans Honeriah, Health Physicist, US Army Corps of Engineers, Baltimore  
\*Steve Masciulli, Certified Health Physicist, Caberra Associates (Contractor to Corps)  
\*Sarah Mangini, Project Scientist, Harding Lawson Associates (Contractor to Corps)

##### Commonwealth and Local Representatives

\*Thomas O'Connell, Supervisor, Laboratory, Massachusetts Department of Health,  
Radiation Control Program  
Albe Simenas, Environmental Engineer, Massachusetts Department of  
Environmental Protection  
Steve Haggergy, Watertown Public Works  
Peter Anactasi, Watertown Public Works

\* Denotes attendance at exit meeting on July 14, 1999.