ORISE
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

February 16, 2005

Mr. John Hickman
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U.S. Nuclear Regulatory Commission
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SUBJECT: CONFIRMATORY SURVEY RESULTS FOR CLASS 3 OPEN LAND AREAS OUTSIDE THE RCA, YANKEE NUCLEAR POWER STATION, ROWE, MASSACHUSETTS [DOCKET NO. 50-29; RFTA NO. 04-007]

Dear Mr. Hickman:

The Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) performed confirmatory survey activities of some of the Class 3 Open Land Areas at the Yankee Nuclear Power Station (YNPS) Plant in Rowe, Massachusetts on November 17, 2004. These survey activities were requested by the licensee and approved by the NRC site representative while ESSAP was on site performing other activities. A formal confirmatory survey plan was not provided to the NRC for these confirmatory activities; instead, a plan used previously at the Connecticut Yankee site was used as the basis for the Open Land Areas Outside the RCA (OOL) survey activities at Yankee Rowe. The survey activities included gamma surface scans and soil sampling. Enclosed are the results documenting those survey activities.

If you have any questions or comments, please direct them to me at (865) 576-0065 or Timothy J. Vitkus at (865) 576-5073.

Sincerely,

Wade C. Adams
Health Physicist/Project Leader
Environmental Survey and
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WCA:klp

Enclosures

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File/1621

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CONFIRMATORY SURVEY RESULTS FOR CLASS 3 OPEN LAND AREAS YANKEE NUCLEAR POWER STATION ROWE, MASSACHUSETTS

INTRODUCTION

The U.S. Nuclear Regulatory Commission's (NRC) Headquarters and Region I Offices requested that the Oak Ridge Institute for Science and Education's (ORISE) Environmental and Survey Site Assessment Program (ESSAP) perform confirmatory surveys of the Class 3 surface soil survey units (SU) in the Open Land Areas Outside the RCA (OOL) of the Yankee Nuclear Power Station (YNPS) in Rowe, Massachusetts (Figure 1). Class 3 SUs included OOL-05, OOL-08, and OOL-15. Background surface soil samples were collected from the on-site Reference Area. SU OOL-05 is located along the west boundary of the Restricted Area; SU OOL-08 stretches from the western portion of the site, along the fence perimeter towards the south, and then east of the site; SU OOL-15 is north of the site; and the Reference Area is located towards the east. The confirmatory surveys of these SUs were performed on November 17, 2004.

PROCEDURES

A formal site-specific survey plan was not prepared for these survey activities. While on site performing other confirmatory activities, the licensee requested that ESSAP perform confirmatory surveys of the available Class 3 SUs. After receiving approval from the NRC site representative, ESSAP agreed to this request. The confirmatory surveys were performed in accordance with a survey plan that had been submitted to and approved by the NRC for the Open Land Areas at the Connecticut Yankee site in Haddam Neck, Connecticut (ORISE 2003), and the ORISE/ESSAP Survey Procedures and Quality Assurance Manuals (ORISE 2004a and b). Applicable procedures were documented in the site log book.

Gamma surface scans were performed over five percent of accessible portions of the survey units using NaI scintillation detectors coupled to ratemeters with audible indicators—some areas were inaccessible due to standing water or access restricted due to safety concerns. Five surface soil samples (0-15 cm) were collected from SU OOL-05 (Figure 2), five surface soil samples were collected from SU OOL-08 (Figure 3), four surface soil samples were collected from SU OOL-15 (Figure 4), and three surface soil samples were collected from the Reference Area (Figure 5).

SAMPLE ANALYSIS AND DATA INTERPRETATION

Samples and data were returned to ESSAP's laboratory in Oak Ridge, TN for analysis and interpretation. Soil samples were analyzed by gamma spectroscopy for the primary gamma emitting radionuclide of concern Cs-137—the data were also reviewed for other fission and activation products, e.g. Co-60. Sample analyses were performed in accordance with the ESSAP Laboratory Procedures Manual (ORISE 2004c). Radionuclide concentrations were reported in picocuries per gram (pCi/g).

FINDINGS AND RESULTS

Gamma surface scans identified several locations of elevated direct gamma radiation within the SUs, but the elevated readings were determined to be due to natural granite formations. Concentrations of radionuclides in soil samples collected from these SUs are provided in Table 1. Background concentrations of Co-60 and Cs-137 from the Reference Area ranged from -0.01 to 0.02 pCi/g and 0.28 to 1.69 pCi/g, respectively. Concentrations of Co-60 ranged from -0.02 to 0.02 pCi/g in SU OOL-05, from -0.01 to 0.01 pCi/g in SU OOL-08, and from -0.02 to 0.00 pCi/g in SU OOL-15. Concentrations of Cs-137 ranged from -0.01 to 0.74 pCi/g in SU OOL-05, from 0.08 to 1.71 pCi/g in SU OOL-08, and from 0.03 to 0.33 pCi/g in SU OOL-15. A review of other gamma-emitting radionuclide concentrations did not note any significant findings. These results were not compared to site-specific guidelines since the license termination plan (LTP) for the Yankee Rowe site has not been finalized by the licensee and/or approved by the NRC.

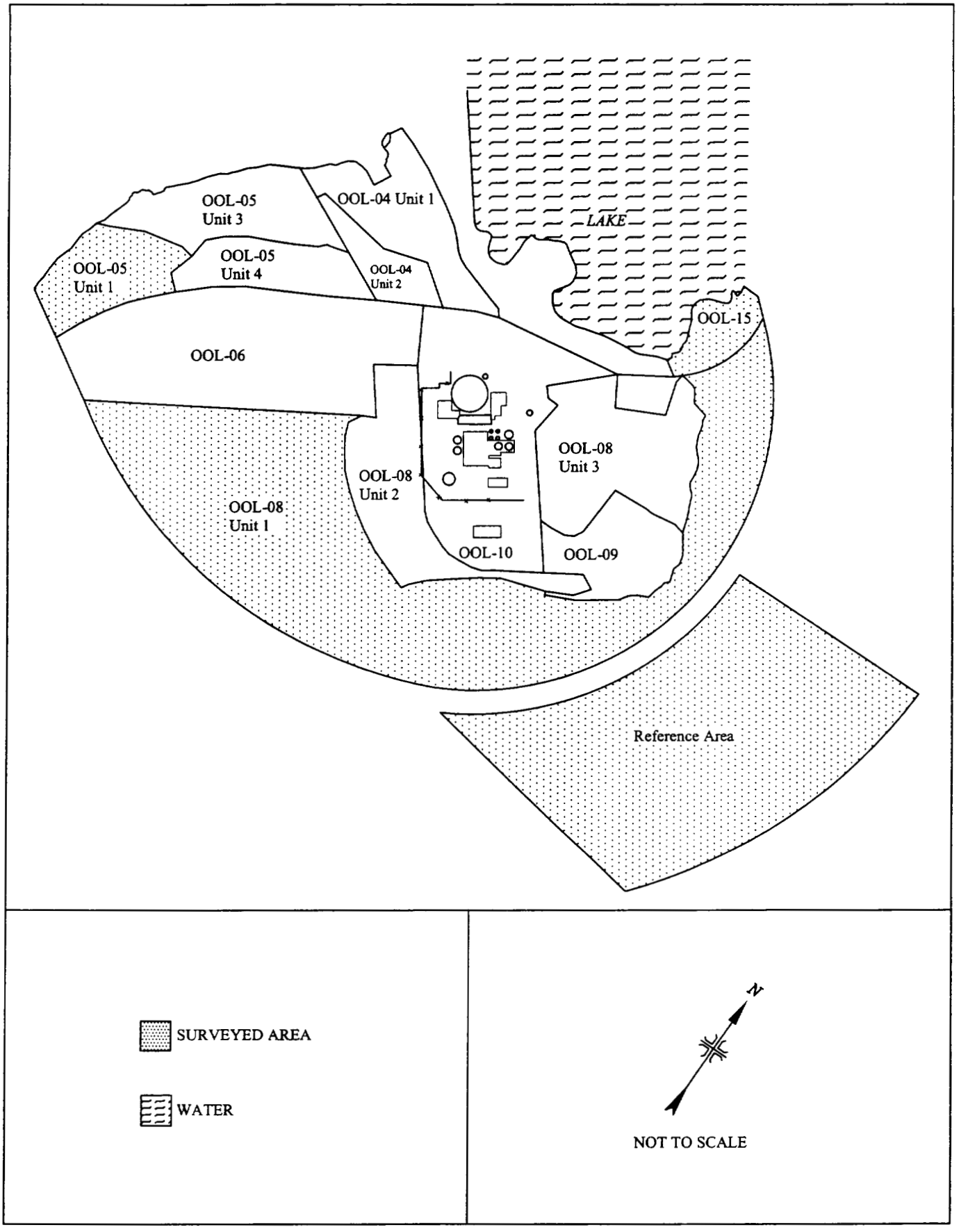

FIGURE 1: Plot Plan of Open Land Area at Yankee Atomic Power Company - Rowe, Massachusetts

FIGURE 2: Survey Unit OOL-05 Unit 1 - Soil Sampling Locations

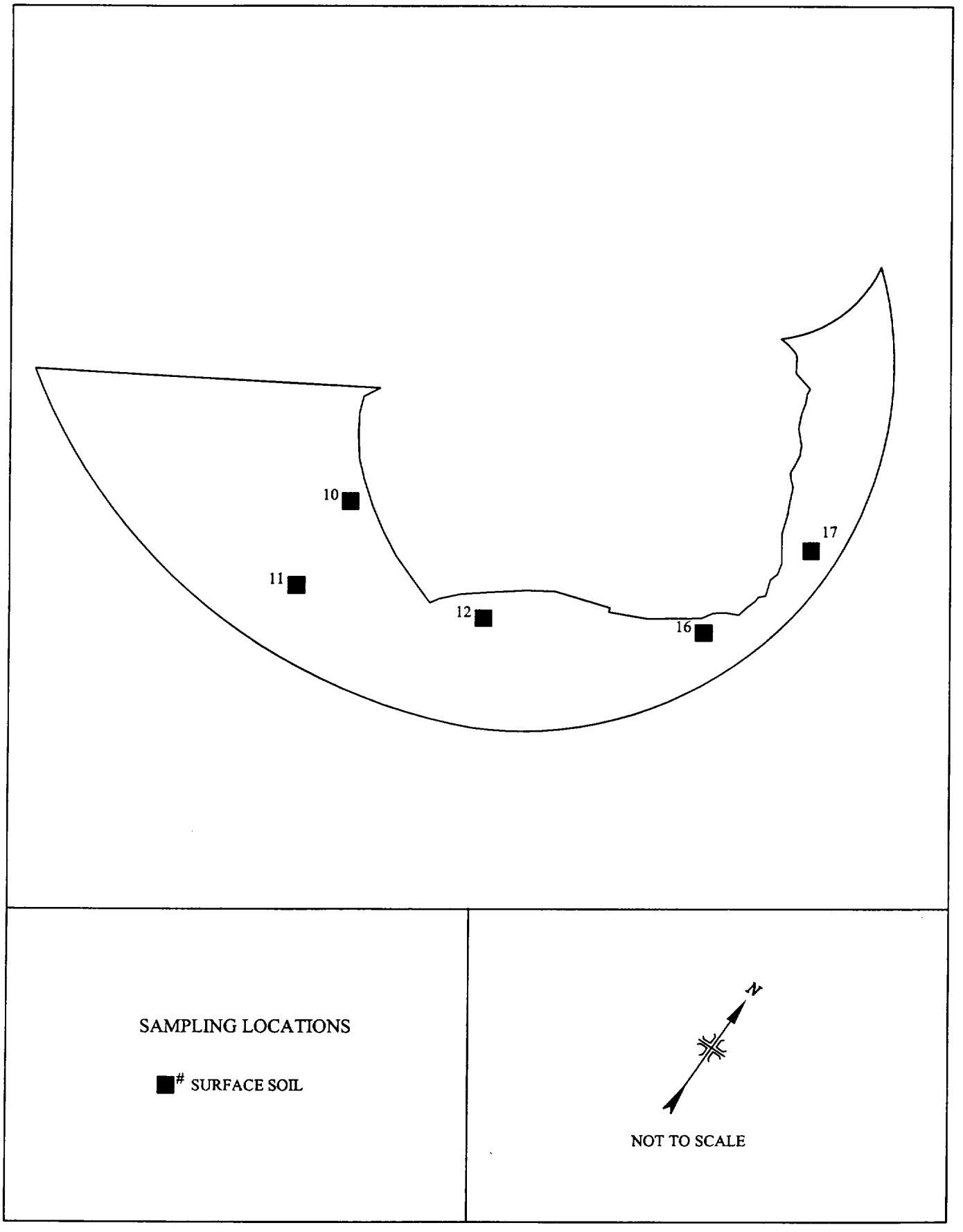

FIGURE 3: Survey Unit OOL-08 Unit 1 - Soil Sampling Locations

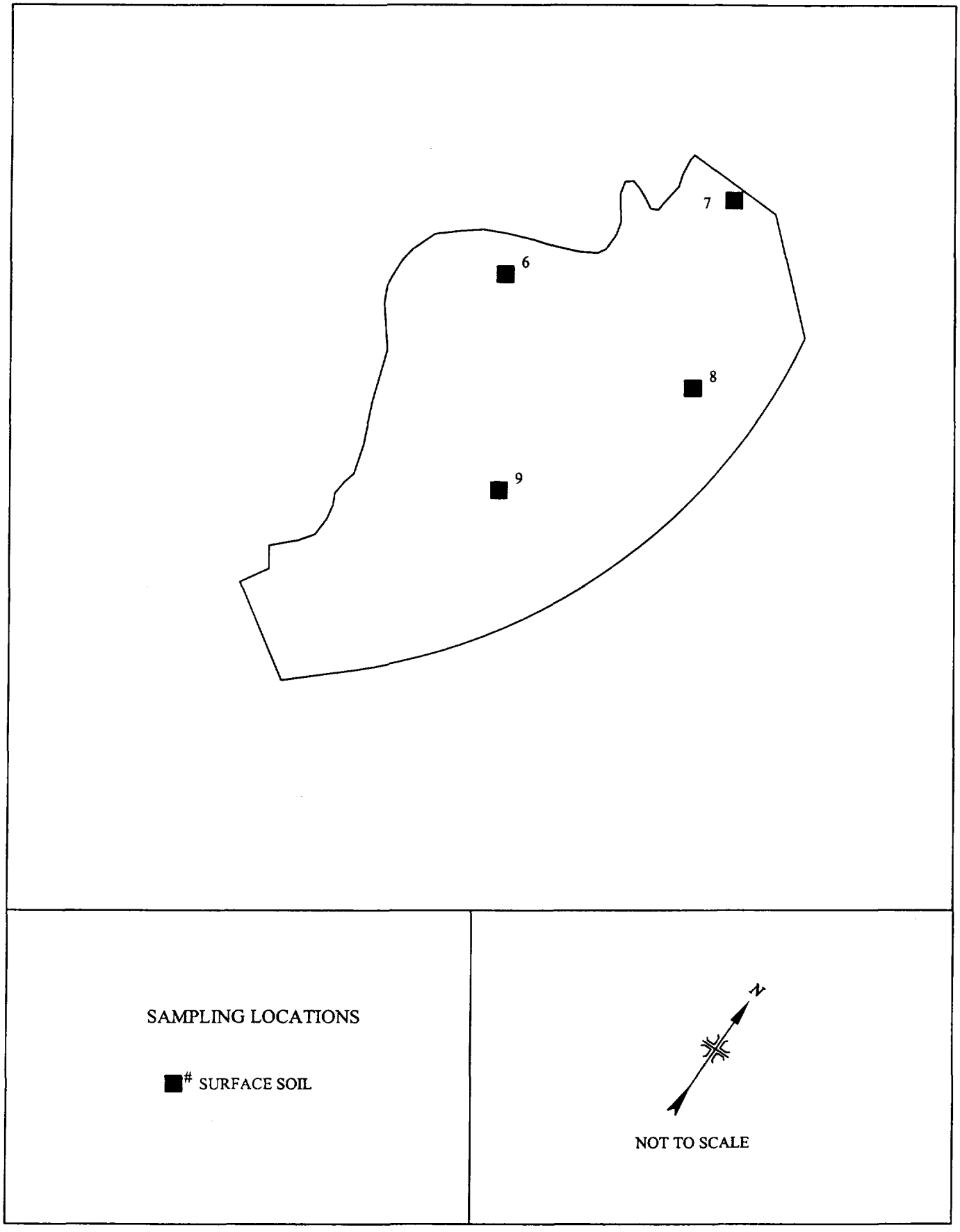

FIGURE 4: Survey Unit OOL-15 - Soil Sampling Locations

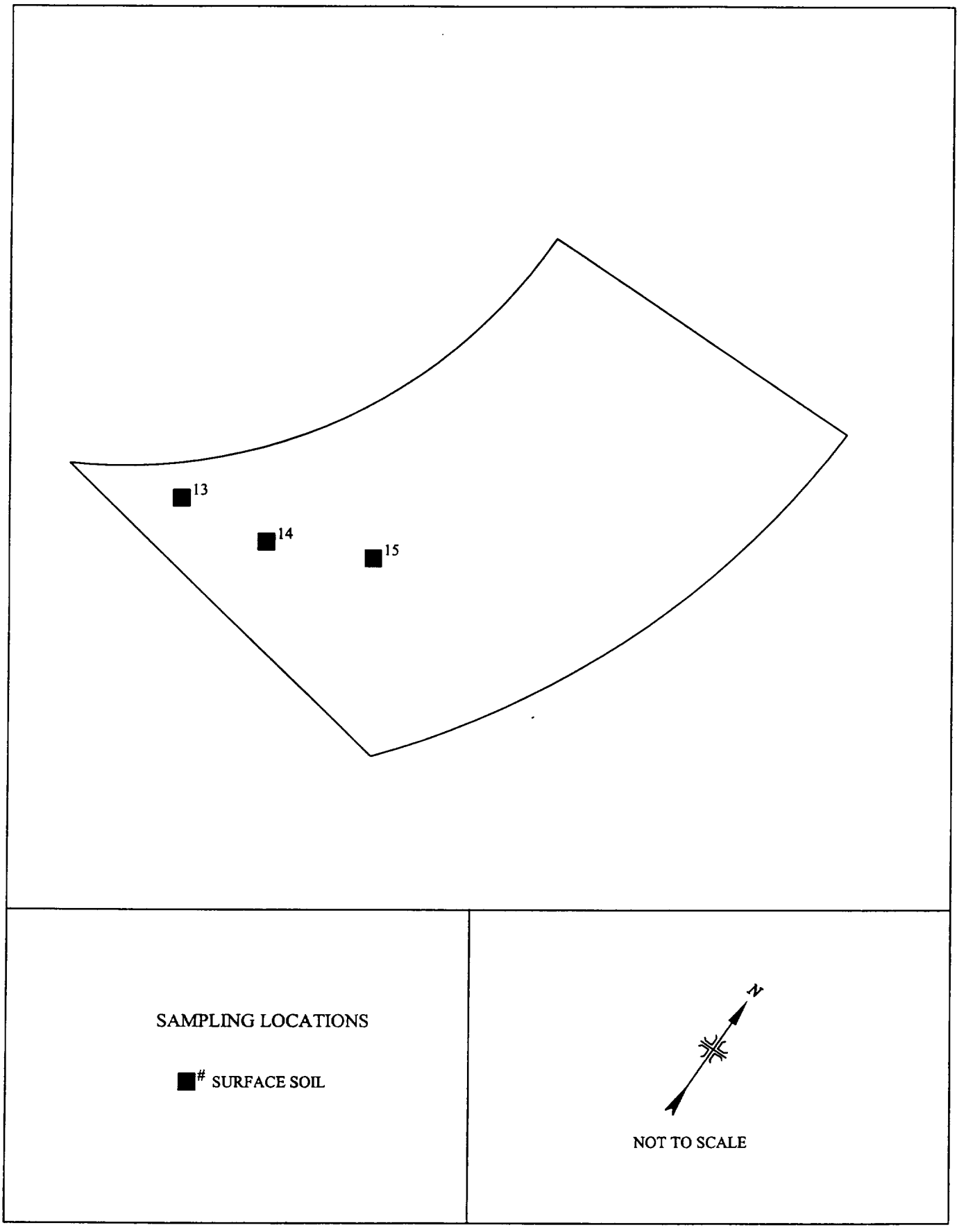

FIGURE 5: Background Reference Area - Soil Sampling Locations

TABLE 1

Co-60 AND Cs-137 CONCENTRATIONS IN SURFACE SOIL DETERMINED BY GAMMA SPECTROSCOPY SURVEY UNITS OOL-05, 08, 15 AND REFERENCE AREA YANKEE NUCLEAR POWER STATION ROWE, MASSACHUSETTS

Sample Location[a]	Radionuclide Concentration (pCi/g)	
	Co-60	Cs-137
Survey Unit OOL-05		
1	-0.02 ± 0.03[b]	0.68 ± 0.08
2	0.01 ± 0.03	0.74 ± 0.07
3	0.02 ± 0.03	0.17 ± 0.03
4	0.01 ± 0.02	0.06 ± 0.03
5	0.02 ± 0.03	-0.01 ± 0.02
Survey Unit OOL-08		
10	-0.01 ± 0.03	0.94 ± 0.09
11	0.00[c] ± 0.03	0.08 ± 0.03
12	-0.01 ± 0.03	0.77 ± 0.07
16	0.01 ± 0.03	1.71 ± 0.12
17	-0.01 ± 0.04	0.45 ± 0.06
Survey Unit OOL-15		
6	-0.01 ± 0.03	0.33 ± 0.04
7	0.00 ± 0.02	0.03 ± 0.02
8	-0.02 ± 0.03	0.08 ± 0.03
9	0.00 ± 0.02	0.06 ± 0.02
Reference Area		
13	0.02 ± 0.04	0.62 ± 0.08
14	-0.01 ± 0.03	1.69 ± 0.12
15	-0.01 ± 0.04	0.28 ± 0.04

[a]Refer to Figures 2 through 5.
[b]Uncertainties represent the 95% confidence level based on total propagated uncertainties.
[c]Zero values due to rounding.

REFERENCES

Oak Ridge Institute for Science and Education (ORISE). Proposed Confirmatory Survey Plan for the Open Land Area Survey Units, Connecticut Yankee Decommissioning Project, Haddam, Connecticut (Docket No. 50-0213; RFTA No. 03-008). Oak Ridge, TN; September 22, 2003.

Oak Ridge Institute for Science and Education. Survey Procedures Manual for the Environmental Survey and Site Assessment Program. Oak Ridge, TN; September 2, 2004a.

Oak Ridge Institute for Science and Education. Quality Assurance Manual for the Environmental Survey and Site Assessment Program. Oak Ridge, TN; August 31, 2004b.

Oak Ridge Institute for Science and Education. Laboratory Procedures Manual for the Environmental Survey and Site Assessment Program. Oak Ridge, TN; August 31, 2004c.