

ORISE
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

January 13, 2006

Mr. John House
U.S. Nuclear Regulatory Commission
Region III
2443 Warrenville Road
Lisle, IL 60532-4351

SUBJECT: ANALYTICAL RESULTS FOR SECOND SET OF WATER SAMPLES NEAR THE BRAIDWOOD NUCLEAR GENERATING STATION IN BRAIDWOOD, ILLINOIS [INSPECTION REPORT 456/457/2005-010] (RFTA NO. 06-001)

Dear Mr. House:

The Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) received ten water samples on December 30, 2005 that were collected near the Braidwood Nuclear Generating Station in Braidwood, Illinois for rush processing. The samples were analyzed by gamma spectroscopy (GS) (Procedure CP1, Revision 15) and for tritium (H-3) by liquid scintillation analysis (Procedure AP2, Revision 15; Procedure CP4, Revision 3). The sample identifications and collection data are presented in Table 1. The GS results are presented in Table 2. The H-3 results are presented in Table 3.

ESSAP's Quality Control (QC) requirements were met for these analyses. The QC files are available for your review upon request.

If you have any questions, please call me at (865) 241-3242 or Wade Ivey at (865) 576-9184.

Sincerely,

Dale Condra

Dale Condra
Laboratory Manager
Environmental Survey and
Site Assessment Program

RDC:WPI:ar

Enclosure

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ORISE TABLE 1

**SAMPLE IDENTIFICATIONS
AND COLLECTION DATA
BRAIDWOOD NUCLEAR GENERATING STATION
BRAIDWOOD, ILLINOIS**

ESSAP Sample ID	NRC Region III Sample ID	Collection Date	Collection Time
1682W0060	NRC-60-R3	12/14/2005	na ^a
1682W0061	NRC-61-R3	12/13/2005	na
1682W0062	NRC-62-R3	12/14/2005	10:15 AM
1682W0063	NRC-63-R3	na	na
1682W0064	NRC-64-R3	na	na
1682W0065	NRC-65-R3	na	na
1682W0066	NRC-66-R3	na	na
1682W0067	NRC-67-R3	12/27/2005	4:15 PM
1682W0068	NRC-68-R3	12/8/2005	na
1682W0069	NRC-69-R3	12/8/2005	na

ORISE TABLE 2

**CONCENTRATIONS OF SELECTED
GAMMA EMITTING RADIONUCLIDES
IN WATER SAMPLES
BY GAMMA SPECTROSCOPY CP1, REVISION 15
BRAIDWOOD NUCLEAR GENERATING STATION
BRAIDWOOD, ILLINOIS**

ESSAP Sample ID	NRC Region III Sample ID	Radionuclide Concentrations ^a (pCi/L)			
		Co-58	Co-60	Cs-134	Cs-137
1682W0060	NRC-60-R3	1.2 ± 2.6 ^b	1.3 ± 2.4	1.1 ± 2.7	1.9 ± 2.3
1682W0061	NRC-61-R3	0.7 ± 3.3	2.7 ± 3.0	1.6 ± 3.3	2.1 ± 2.8
1682W0062	NRC-62-R3	0.3 ± 3.3	0.1 ± 3.1	0.8 ± 3.4	1.3 ± 3.0
1682W0063	NRC-63-R3	0.8 ± 3.1	3.5 ± 3.1	1.9 ± 2.9	1.3 ± 5.6
1682W0064	NRC-64-R3	-2.7 ± 3.8	2.5 ± 4.3	3.2 ± 3.7	1.9 ± 6.0
1682W0065	NRC-65-R3	0.2 ± 3.3	1.5 ± 3.6	1.0 ± 3.1	0.7 ± 2.9
1682W0066	NRC-66-R3	-0.5 ± 2.7	0.3 ± 2.5	2.7 ± 2.6	2.3 ± 2.3
1682W0067	NRC-67-R3	-1.7 ± 2.7	4.5 ± 3.4	0.9 ± 3.0	3.5 ± 6.0
1682W0068	NRC-68-R3	-4.5 ± 6.3	4.6 ± 5.4	9.3 ± 7.6	-0.2 ± 5.1
1682W0069	NRC-69-R3	-4.8 ± 6.4	-1.2 ± 5.7	0.1 ± 5.9	4.8 ± 2.5

^aThe range of MDCs for the selected radionuclides is 4.0 pCi/L to 10 pCi/L.

^bUncertainties represent the 95% confidence level, based on total propagated uncertainties.

ORISE TABLE 3

**CONCENTRATIONS OF TRITIUM
IN WATER SAMPLES
BY LIQUID SCINTILLATION ANALYSIS
AP2, REVISION 15; CP4, REVISION 3
BRAIDWOOD NUCLEAR GENERATING STATION
BRAIDWOOD, ILLINOIS**

ESSAP Sample ID	NRC Region III Sample ID	Tritium Concentrations, TPUs, and MDCs^a (pCi/L)
1682W0060	NRC-60-R3	910 ± 130 ^b (210)
1682W0061	NRC-61-R3	21,720 ± 350 (210)
1682W0062	NRC-62-R3	4,810 ± 170 (210)
1682W0063	NRC-63-R3	2,480 ± 150 (210)
1682W0064	NRC-64-R3	55,920 ± 690 (210)
1682W0065	NRC-65-R3	160,400 ± 1,700 (210)
1682W0066	NRC-66-R3	281,800 ± 2,900 (210)
1682W0067	NRC-67-R3	1,310 ± 140 (210)
1682W0068	NRC-68-R3	-30 ± 120 (210)
1682W0069	NRC-69-R3	1,360 ± 140 (210)

^aMDCs are in parenthesis.

^bUncertainties represent the 95% confidence level, based on total propagated uncertainties.