

June 2, 2006

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

**SUBJECT: ANALYTICAL RESULTS FOR THIRTEEN WATER SAMPLES, BATCH SIX, FROM THE VICINITY OF THE BRAIDWOOD GENERATING STATION, BRAIDWOOD, ILLINOIS**  
**[INSPECTION REPORT NO. 050-456/2006-003] (RFTA NO. 06-001)**

Dear Mr. Snell:

The Oak Ridge Institute for Science and Education (ORISE) received 13 water samples, Batch Six, on May 23, 2006 that were collected in the vicinity of the Braidwood Generating Station in Braidwood, Illinois. The 13 water samples were analyzed for tritium to a minimum detectable concentration of 190 pCi/L using a liquid scintillation analyzer. The chain-of-custody identified two water samples to be analyzed by gamma spectroscopy (GS). The sample identifications and collection data are presented in Table 1. The GS data are presented in Table 2. The tritium data are presented in Table 3.

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

My contact information is listed below. You may also contact Wade Ivey at 865.576.9184 with any questions or comments.

Sincerely,



Dale Condra, Manager  
Laboratory

RDC:WPI:ar

Enclosures

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**TABLE 1**

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

<b>ORISE Sample ID</b>	<b>NRC Region III Sample ID</b>	<b>Collection Date</b>	<b>Collection Time</b>
1691W0128	BD-06-6-01	5/10/2006	9:25 AM
1691W0129	BD-06-6-02	5/10/2006	1:45 PM
1691W0130	BD-06-6-03	5/11/2006	10:05 AM
1691W0131	BD-06-6-04	5/11/2006	3:00 PM
1691W0132	BD-06-6-05	5/15/2006	10:00 AM
1691W0133	BD-06-6-06	4/5/2006	NDP <sup>a</sup>
1691W0134	BD-06-6-07	4/13/2006	NDP
1691W0135	BD-06-6-08	4/18/2006	NDP
1691W0136	BD-06-6-09	5/5/2006	NDP
1691W0137	BD-06-6-10	5/13/2006	NDP
1691W0138	BD-06-6-11	5/16/2006	NDP
1691W0139	BD-06-6-12	5/19/2006	NDP
1691W0140	BD-06-6-13	5/19/2006	NDP

<sup>a</sup>No data provided.

**TABLE 2**

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

ORISE Sample ID	NRC Region III Sample ID	Radionuclide Concentrations <sup>a</sup> (pCi/L)			
		Co-58	Co-60	Cs-134	Cs-137
1691W0132	BD-06-6-05	-4.0 ± 4.1 <sup>b</sup>	3.8 ± 4.4	0.9 ± 4.5	-5.2 ± 6.2
1691W0137	BD-06-6-10	-0.4 ± 2.9	-0.5 ± 3.0	1.1 ± 3.2	1.5 ± 2.8

<sup>a</sup>The range of MDCs for the selected radionuclides is 4.9 pCi/L to 8.1 pCi/L..

<sup>b</sup>Uncertainties represent the 95% confidence level, based on total propagated uncertainties.

**TABLE 3**

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

ORISE Sample ID	NRC Region III Sample ID	Tritium Concentrations, TPUs, and MDCs <sup>a</sup> (pCi/L)			
1691W0128	BD-06-6-01	-30	±	110 <sup>b</sup>	(190)
1691W0129	BD-06-6-02	-30	±	110	(190)
1691W0130	BD-06-6-03	430	±	120	(190)
1691W0131	BD-06-6-04	90	±	110	(190)
1691W0132	BD-06-6-05	50	±	110	(190)
1691W0133	BD-06-6-06	-20	±	110	(190)
1691W0134	BD-06-6-07	-50	±	110	(190)
1691W0135	BD-06-6-08	-30	±	110	(190)
1691W0136	BD-06-6-09	60	±	110	(190)
1691W0137	BD-06-6-10	-50	±	110	(190)
1691W0138	BD-06-6-11	-60	±	110	(190)
1691W0139	BD-06-6-12	-30	±	110	(190)
1691W0140	BD-06-6-13	90	±	110	(190)

<sup>a</sup>MDCs are in parentheses.

<sup>b</sup>Uncertainties represent the 95% confidence level, based on total propagated uncertainties.