

**ORISE**  
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

May 9, 2006

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

**SUBJECT: ANALYTICAL RESULTS FOR FOUR WATER SAMPLES, BATCH FIVE, FROM THE VICINITY OF THE BRAIDWOOD GENERATING STATION, BRAIDWOOD, ILLINOIS [INSPECTION REPORT NO. 050-00456/2006-003] (RFTA NO. 06-001)**

Dear Mr. Snell:

The Oak Ridge Institute for Science and Education (ORISE) received four water samples, Batch Five, on April 26, 2006 that were collected in the vicinity of the Braidwood Generating Station in Braidwood, Illinois. The four 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 one water sample 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

Enclosure

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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 Time</b>	<b>Collection Date</b>
1691W0124	BD-06-5-01	04/13/2006	10:50 AM
1691W0125	BD-06-5-02	04/18/2006	8:35 AM
1691W0126	BD-06-5-03	04/20/2006	9:25 AM
1691W0127	BD-06-5-04	03/29/2006	3:50 PM

**TABLE 2**

**CONCENTRATIONS OF SELECTED  
GAMMA EMITTING RADIONUCLIDES  
IN A SELECTED WATER SAMPLE  
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
1691W0127	BD-06-5-04	7.7 ± 6.4 <sup>b</sup>	-10 ± 10	0.1 ± 5.5	12 ± 12

<sup>a</sup>The range of MDCs for the selected radionuclides is 8 pCi/L. to 10 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**

<b>ORISE Sample ID</b>	<b>NRC Region III Sample ID</b>	<b>Tritium Concentrations, TPUs, and MDCs<sup>a</sup> (pCi/L)</b>			
1691W0124	BD-06-5-01	-50	±	110 <sup>b</sup>	(190)
1691W0125	BD-06-5-02	0 <sup>c</sup>	±	110	(190)
1691W0126	BD-06-5-03	-10	±	110	(190)
1691W0127	BD-06-5-04	160	±	120	(190)

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

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

<sup>c</sup>Zero values are due to rounding.