

June 29, 2006

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

SUBJECT: ANALYTICAL RESULTS FOR TWENTY-TWO WATER SAMPLES, BATCH SEVEN, FROM THE VICINITY OF THE BRAIDWOOD NUCLEAR 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 Batch Seven, consisting of 22 water samples on June 16, 2006. These samples were collected in the vicinity of the Braidwood Nuclear Generating Station in Braidwood, Illinois. The 22 water samples were analyzed for tritium to an average minimum detectable concentration of 190 pCi/L using a liquid scintillation analyzer. The chain-of-custody identified four 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**

| ORISE Sample ID | NRC Region III Sample ID | Collection Date | Collection Time |
|----------------------------|-------------------------------------|------------------------|----------------------------|
| 1691W0141 | BD-06-7-01 | 06/14/06 | NDP ^a |
| 1691W0142 | BD-06-7-02 | 06/11/06 | NDP |
| 1691W0143 | BD-06-7-03 | 04/11/06 | NDP |
| 1691W0144 | BD-06-7-04 | 04/27/06 | NDP |
| 1691W0145 | BD-06-7-05 | 05/01/06 | NDP |
| 1691W0146 | BD-06-7-06 | 06/15/06 | NDP |
| 1691W0147 | BD-06-7-07 | 06/15/06 | 1300 |
| 1691W0148 | BD-06-7-08 | 04/25/06 | NDP |
| 1691W0149 | BD-06-7-09 | 04/07/06 | NDP |
| 1691W0150 | BD-06-7-10 | 04/27/06 | NDP |
| 1691W0151 | BD-06-7-11 | 04/11/06 | NDP |
| 1691W0152 | BD-06-7-12 | 06/08/06 | NDP |
| 1691W0153 | BD-06-7-13 | 06/08/06 | NDP |
| 1691W0154 | BD-06-7-14 | 05/01/06 | NDP |
| 1691W0155 | BD-06-7-15 | 04/11/06 | NDP |
| 1691W0156 | BD-06-7-16 | 06/08/06 | NDP |
| 1691W0157 | BD-06-7-17 | 04/27/06 | NDP |
| 1691W0158 | BD-06-7-18 | 04/12/06 | NDP |
| 1691W0159 | BD-06-7-19 | 05/01/06 | NDP |
| 1691W0160 | BD-06-7-20 | 05/01/06 | NDP |
| 1691W0161 | BD-06-7-21 | 06/08/06 | NDP |
| 1691W0162 | BD-06-7-22 | 06/08/06 | NDP |

^aNo 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 ^a (pCi/L) | | | |
|--------------------|-----------------------------|--|-----------|------------|------------|
| | | Co-58 | Co-60 | Cs-134 | Cs-137 |
| 1691W0145 | BD-06-7-05 | 0.3 ± 3.9 ^b | 4.3 ± 4.4 | -1.3 ± 2.9 | -3.6 ± 4.8 |
| 1691W0150 | BD-06-7-10 | 1.1 ± 4.7 | 2.4 ± 4.2 | 0.5 ± 3.0 | -3.6 ± 3.4 |
| 1691W0155 | BD-06-7-15 | 3.9 ± 4.5 | 0.9 ± 2.3 | 2.5 ± 2.7 | 0.3 ± 2.1 |
| 1691W0160 | BD-06-7-20 | -1.5 ± 5.2 | 5.7 ± 3.1 | 0.4 ± 3.7 | -1.0 ± 3.0 |

^aThe range of MDCs for the selected radionuclides is 3.7 pCi/L to 8.0 pCi/L.

^bUncertainties 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^a (pCi/L) | | | |
|----------------------------|-------------------------------------|---|---|------------------|-------|
| 1691W0141 | BD-06-7-01 | 2,560 | ± | 180 ^b | (180) |
| 1691W0142 | BD-06-7-02 | -40 | ± | 110 | (180) |
| 1691W0143 | BD-06-7-03 | 330 | ± | 120 | (180) |
| 1691W0144 | BD-06-7-04 | -50 | ± | 110 | (180) |
| 1691W0145 | BD-06-7-05 | -80 | ± | 110 | (190) |
| 1691W0146 | BD-06-7-06 | 2,560 | ± | 180 | (180) |
| 1691W0147 | BD-06-7-07 | 2,680 | ± | 180 | (180) |
| 1691W0148 | BD-06-7-08 | -30 | ± | 110 | (180) |
| 1691W0149 | BD-06-7-09 | 30 | ± | 110 | (180) |
| 1691W0150 | BD-06-7-10 | -20 | ± | 110 | (190) |
| 1691W0151 | BD-06-7-11 | 30 | ± | 110 | (180) |
| 1691W0152 | BD-06-7-12 | 30 | ± | 110 | (180) |
| 1691W0153 | BD-06-7-13 | -20 | ± | 110 | (180) |
| 1691W0154 | BD-06-7-14 | 90 | ± | 110 | (180) |
| 1691W0155 | BD-06-7-15 | 40 | ± | 110 | (190) |
| 1691W0156 | BD-06-7-16 | -20 | ± | 110 | (180) |
| 1691W0157 | BD-06-7-17 | 0 ^c | ± | 110 | (190) |
| 1691W0158 | BD-06-7-18 | 30 | ± | 110 | (190) |
| 1691W0159 | BD-06-7-19 | 20 | ± | 110 | (190) |
| 1691W0160 | BD-06-7-20 | -10 | ± | 110 | (190) |
| 1691W0161 | BD-06-7-21 | -50 | ± | 110 | (190) |
| 1691W0162 | BD-06-7-22 | 20 | ± | 110 | (190) |

^aMDCs are in parentheses.

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

^cZero values are due to rounding.