

# ORISE

OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

June 23, 2006

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

**SUBJECT: ANALYTICAL RESULTS FOR TWENTY- FIVE WATER SAMPLES,  
BATCH TWO, FROM THE VICINITY OF THE QUAD CITIES  
STATION, CORDOVA, ILLINOIS [INSPECTION REPORT NO. 050-  
00254/2006-005]  
(RFTA NO. 06-001)**

Dear Mr. Snell:

The Oak Ridge Institute for Science and Education (ORISE) received 25 water samples, Batch two, on June 7, 2006 which were collected in the vicinity of the Quad Cities Station in Cordova, Illinois. The 25 water samples were analyzed for tritium using a liquid scintillation analyzer. The chain of custody identified three 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. The pertinent procedure references are provided in the specific tables.

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,

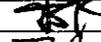


Dale Condra, Manager  
Laboratory

RDC:WPI:db

Enclosures

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**TABLE 1****SAMPLE IDENTIFICATIONS  
AND COLLECTION DATA  
QUAD CITIES STATION  
CORDOVA, ILLINOIS**

<b>ORISE Sample ID</b>	<b>NRC Region III Sample ID</b>	<b>Collection Time</b>	<b>Collection Date</b>
1703W0005	Q-06-02-01	5/31/2006	9:20 AM
1703W0006	Q-06-02-02	5/31/2006	2:50 PM
1703W0007	Q-06-02-03	5/31/2006	8:00 AM
1703W0008	Q-06-02-04	5/31/2006	8:20 AM
1703W0009	Q-06-02-05	5/31/2006	8:50 AM
1703W0010	Q-06-02-06	5/31/2006	9:10 AM
1703W0011	Q-06-02-07	5/31/2006	9:10 AM
1703W0012	Q-06-02-08	5/31/2006	9:40 AM
1703W0013	Q-06-02-09	5/31/2006	10:30 AM
1703W0014	Q-06-02-10	5/31/2006	2:37 PM
1703W0015	Q-06-02-11	5/31/2006	2:45 PM
1703W0016	Q-06-02-12	5/31/2006	4:00 PM
1703W0017	Q-06-02-13	5/31/2006	4:15 PM
1703W0018	Q-06-02-14	6/1/2006	7:48 AM
1703W0019	Q-06-02-15	6/1/2006	8:20 AM
1703W0020	Q-06-02-16	6/1/2006	8:50 AM
1703W0021	Q-06-02-17	6/1/2006	9:05 AM
1703W0022	Q-06-02-18	6/1/2006	9:15 AM
1703W0023	Q-06-02-19	6/1/2006	9:17 AM
1703W0024	Q-06-02-20	6/1/2006	9:30 AM
1703W0025	Q-06-02-21	6/1/2006	10:18 AM
1703W0026	Q-06-02-22	6/1/2006	11:18 AM
1703W0027	Q-06-02-23	6/1/2006	12:58 PM
1703W0028	Q-06-02-24	6/1/2006	2:10 PM
1703W0029	Q-06-02-25	6/1/2006	2:20 PM

**TABLE 2**

**CONCENTRATIONS OF SELECTED  
GAMMA EMITTING RADIONUCLIDES  
IN SELECTED WATER SAMPLES  
BY GAMMA SPECTROSCOPY CP1, REVISION 15  
QUAD CITIES STATION  
CORDOVA, ILLINOIS**

ORISE Sample ID	NRC Region III Sample ID	Radionuclide Concentrations <sup>a</sup> (pCi/L)			
		Co-58	Co-60	Cs-134	Cs-137
1703W0006	Q-06-02-02	-1.4 ± 2.2 <sup>b</sup>	-0.5 ± 2.3	-1.6 ± 2.7	-0.1 ± 2.1
1703W0016	Q-06-02-12	-1.4 ± 2.9	2.3 ± 2.9	2.1 ± 2.8	0.8 ± 6.2
1703W0026	Q-06-02-22	2.5 ± 3.1	0.7 ± 2.9	0.4 ± 3.2	0.5 ± 2.8

<sup>a</sup>The range of MDCs for the selected radionuclides is 3.6 pCi/L to 5.4 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  
QUAD CITIES STATION  
CORDOVA, ILLINOIS

ORISE Sample ID	NRC Region III Sample ID	Tritium Concentrations, TPUs, and MDCs <sup>a</sup> (pCi/L)			
1703W0005	Q-06-02-01	20	±	110 <sup>b</sup>	(180)
1703W0006	Q-06-02-02	0 <sup>c</sup>	±	110	(180)
1703W0007	Q-06-02-03	160	±	110	(180)
1703W0008	Q-06-02-04	520	±	120	(180)
1703W0009	Q-06-02-05	440	±	120	(180)
1703W0010	Q-06-02-06	10	±	110	(180)
1703W0011	Q-06-02-07	80	±	110	(180)
1703W0012	Q-06-02-08	400	±	120	(180)
1703W0013	Q-06-02-09	1,090	±	140	(180)
1703W0014	Q-06-02-10	230	±	120	(190)
1703W0015	Q-06-02-11	60	±	110	(190)
1703W0016	Q-06-02-12	32,780	±	620	(180)
1703W0017	Q-06-02-13	10,250	±	310	(190)
1703W0018	Q-06-02-14	100	±	110	(190)
1703W0019	Q-06-02-15	-10	±	110	(190)
1703W0020	Q-06-02-16	670	±	130	(190)
1703W0021	Q-06-02-17	-10	±	110	(190)
1703W0022	Q-06-02-18	150	±	110	(190)
1703W0023	Q-06-02-19	70	±	110	(190)
1703W0024	Q-06-02-20	30	±	110	(190)
1703W0025	Q-06-02-21	110	±	110	(190)
1703W0026	Q-06-02-22	-60	±	100	(180)
1703W0027	Q-06-02-23	100	±	110	(190)
1703W0028	Q-06-02-24	10	±	110	(190)
1703W0029	Q-06-02-25	60	±	110	(190)

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

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

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