

May 1, 2006

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

**SUBJECT: ANALYTICAL RESULTS FOR SIX WATER SAMPLES, BATCH ONE,  
FROM THE VICINITY OF THE ZION STATION, ZION, ILLINOIS  
[INSPECTION REPORT NO. 05000295/2006-001] (RFTA NO. 06-001)**

Dear Mr. Snell:

The Oak Ridge Institute for Science and Education (ORISE) received six water samples, Batch One, on April 26, 2006 which were collected in the vicinity of the Zion Station in Zion, Illinois. The six water samples were analyzed for tritium using a liquid scintillation analyzer. The chain of custody identified one water sample to be analyzed by gamma spectroscopy. 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:ar

Enclosure

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**TABLE 1**

**SAMPLE IDENTIFICATIONS  
AND COLLECTION DATA  
ZION GENERATING STATION  
ZION, ILLINOIS**

<b>ORISE Sample ID</b>	<b>NRC Region III Sample ID</b>	<b>Collection Time</b>	<b>Collection Date</b>
1701W0001	Z-06-1-01	04/19/2006	9:45 AM
1701W0002	Z-06-1-02	04/19/2006	9:35 AM
1701W0003	Z-06-1-03	04/19/2006	10:15 AM
1701W0004	Z-06-1-04	04/19/2006	10:45 AM
1701W0005	Z-06-1-05	04/19/2006	11:20 AM
1701W0006	Z-06-1-06	04/19/2006	11:55 AM

**TABLE 2**

**CONCENTRATIONS OF SELECTED  
GAMMA EMITTING RADIONUCLIDES  
IN A SELECTED WATER SAMPLE  
BY GAMMA SPECTROSCOPY CP1, REVISION 15  
ZION GENERATING STATION  
ZION, ILLINOIS**

ORISE Sample ID	NRC Region III Sample ID	Radionuclide Concentrations <sup>a</sup> (pCi/L)			
		Co-58	Co-60	Cs-134	Cs-137
1701W0005	Z-06-1-05	-5.0 ± 5.3 <sup>b</sup>	10.8 ± 5.5	-1.1 ± 6.1	-0.1 ± 5.1

<sup>a</sup>The range of MDCs for the selected radionuclides is 8.4 pCi/L to 11 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  
ZION GENERATING STATION  
ZION, 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>
1701W0001	Z-06-1-01	0 <sup>b</sup> ± 110 <sup>c</sup> (190)
1701W0002	Z-06-1-02	20 ± 110 (190)
1701W0003	Z-06-1-03	30 ± 110 (190)
1701W0004	Z-06-1-04	10 ± 110 (190)
1701W0005	Z-06-1-05	50 ± 110 (190)
1701W0006	Z-06-1-06	0 ± 110 (190)

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

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

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