

October 6, 2006

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

**SUBJECT: INTERIM LETTER REPORT FOR ANALYTICAL RESULTS FOR EIGHT  
WATER SAMPLES FROM BATTELLE, WEST JEFFERSON, OHIO  
[TAC NO. W90175] (RFTA NO. 06-001)**

Dear Mr. McCann:

The Oak Ridge Institute for Science and Education (ORISE) received eight water samples on August 24, 2006 from Battelle in West Jefferson, Ohio. The samples were analyzed for gamma spectroscopy, gross alpha, gross beta, and for total radiostrontium. The analytical request for plutonium and uranium is being delayed until the U.S. Nuclear Regulatory Commission gives the approval to resume analytical work on water samples that may have plutonium present as a contaminant. The sample identifications are presented in Table 1. The data for gamma spectroscopy, gross alpha and gross beta, and total radiostrontium are presented in Tables 2-4, respectively. The pertinent procedure references are in the data 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

Enclosures

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TABLE 1

SAMPLE IDENTIFICATIONS  
AND COLLECTION DATA  
BATTELLE  
WEST JEFFERSON, OHIO

ORISE Sample ID	NRC Region III Sample ID	Collection Date	Collection Time
1717W0001	Well 3-805	8/22/2006	16:20
1717W0002	Well 4-805	8/21/2006	11:50
1717W0003	Well 2-855	8/21/2006	14:45
1717W0004	Well 3-855	8/22/2006	11:25
1717W0005	Well 4-855	8/21/2006	13:40
1717W0006	Well 2-885	8/22/2006	12:45
1717W0007	Well 4-885	8/22/2006	9:30
1717W0008	Well 2-805	8/21/2006	16:50

TABLE 2  
 CONCENTRATIONS OF SELECTED  
 GAMMA EMITTING RADIONUCLIDES  
 IN WATER SAMPLES  
 BY GAMMA SPECTROSCOPY CP1, REVISION 15  
 BATTELLE  
 WEST JEFFERSON, OHIO

ORISE Sample ID	NRC Region III Sample ID	Radionuclide Concentrations (pCi/L)				
		Co-60 <sup>a</sup>	Cs-137 <sup>a</sup>	Eu-152 <sup>a</sup>	Eu-154 <sup>b</sup>	Am-241 <sup>a</sup>
1717W0001	Well 3-805	3.0 ± 2.6 <sup>c</sup>	6.4 ± 3.3	-3.9 ± 5.3	4.6 ± 9.4	0.2 ± 3.1
1717W0002	Well 4-805	1.6 ± 2.2	0.0 <sup>d</sup> ± 2.1	0.3 ± 4.9	-6.1 ± 9.8	2.8 ± 3.2
1717W0003	Well 2-855	-0.8 ± 1.7	0.7 ± 1.6	-2.6 ± 4.1	-0.9 ± 7.2	0.6 ± 2.3
1717W0004	Well 3-855	2.4 ± 2.4	1.7 ± 2.1	0.0 ± 5.9	-4 ± 11	2.8 ± 3.2
1717W0005	Well 4-855	1.3 ± 2.1	0.4 ± 4.2	3.8 ± 5.5	-8.4 ± 9.3	0.0 ± 3.0
1717W0006	Well 2-885	2.9 ± 2.2	0.6 ± 2.1	1.3 ± 4.9	-6.6 ± 9.6	1.7 ± 3.2
1717W0007	Well 4-885	1.3 ± 1.8	-0.9 ± 1.6	0.1 ± 4.2	-6.0 ± 7.4	3.1 ± 2.4
1717W0008	Well 2-805	1.0 ± 2.3	1.8 ± 2.2	3.4 ± 5.4	-5 ± 12	-2.5 ± 2.5

<sup>a</sup>The range of MDCs for these radionuclides is 2.7 pCi/L to 9.0 pCi/L.

<sup>b</sup>The average of MDC for Eu-154 was 15 pCi/L.

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

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

**TABLE 3**

**CONCENTRATIONS OF  
ALPHA AND BETA EMITTING RADIONUCLIDES  
IN WATER SAMPLES  
BY LOW BACKGROUND ALPHA AND BETA COUNTING  
AP1, REVISION 14; CP3, REVISION 2  
BATTELLE  
WEST JEFFERSON, OHIO**

ORISE Sample ID	NRC Region III Sample ID	Radionuclide Concentrations <sup>a</sup> (pCi/L)	
		Gross Alpha	Gross Beta
1717W0001	Well 3-805	1.5 ± 2.7 <sup>b</sup> (4.9)	3.1 ± 2.4 (4.0)
1717W0002	Well 4-805	0.5 ± 1.9 (3.7)	3.7 ± 1.9 (3.0)
1717W0003	Well 2-855	2.8 ± 4.3 (7.6)	5.9 ± 3.8 (6.0)
1717W0004	Well 3-855	8.4 ± 3.1 (3.3)	7.9 ± 2.2 (3.0)
1717W0005	Well 4-855	2.0 ± 2.2 (3.6)	5.3 ± 2.0 (3.0)
1717W0006	Well 2-885	13.7 ± 6.8 (8.5)	18.5 ± 5.5 (7.5)
1717W0007	Well 4-885	18 ± 18 (30) <sup>c</sup>	376 ± 55 (30) <sup>d</sup>
1717W0008	Well 2-805	3.4 ± 2.7 (4.2)	7.6 ± 2.4 (3.4)

<sup>a</sup>The MDCs for each radionuclide are in parentheses.

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

<sup>c</sup>The requested alpha MDC not met due to the small volume of sample that could be used for this analysis.

<sup>d</sup>The requested beta MDC not met due to the small volume of sample that could be used for this analysis.



TABLE 4  
 CONCENTRATIONS OF TOTAL RADIOSTRONTIUM  
 IN WATER SAMPLES  
 BY LOW BACKGROUND BETA COUNTING  
 AP4, REVISION 13; CP3, REVISION 2  
 BATTELLE  
 WEST JEFFERSON, OHIO

ORISE Sample ID	NRC Region III Sample ID	Radionuclide Concentrations, TPUs, and MDCs <sup>a</sup> (pCi/L)
1717W0001	Well 3-805	-0.6 ± 1.5 <sup>b</sup> (2.7)
1717W0002	Well 4-805	-0.7 ± 2.0 (3.6)
1717W0003	Well 2-855	0.4 ± 1.9 (3.3)
1717W0004	Well 3-855	-0.3 ± 2.1 (3.7)
1717W0005	Well 4-855	-0.3 ± 1.5 (2.7)
1717W0006	Well 2-885	-1.1 ± 1.5 (2.8)
1717W0007	Well 4-885	-0.9 ± 1.5 (2.8)
1717W0008	Well 2-805	-0.6 ± 1.5 (2.7)

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

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