

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

November 29, 2004

Mr. Peter Lee  
U.S. Nuclear Regulatory Commission  
Region III  
801 Warrenville Road  
Lisle, IL 60532-4351

**SUBJECT: ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED NOVEMBER 3, 2004 FROM THE MICHIGAN DEPARTMENT OF NATURAL RESOURCES, BAY COUNTY MICHIGAN [INSPECTION REPORT 040-09015/004-001](RFTA NO. 05-001)**

Dear Mr. Lee:

The Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) received six soil samples on November 9, 2004 that were collected at the Michigan Department of Natural Resources in Bay County, Michigan. A gamma scan was performed on the six soil samples using gamma spectroscopy (GS) (Procedure CP1, Revision 14) to determine the aliquot size needed for the isotopic thorium analysis. The thorium analysis was performed using alpha spectroscopy (AS) (Procedure AP11, Revision 2 and Procedure CP2, Revision 12). The isotopic thorium data are reported in Table 1.

ESSAP's Quality Control (QC) requirements were met for these analyses. The QC files are available for your review upon request.

If you have any questions, please call me at (865) 241-3242 or Wade Ivey at (865) 576-9184.

Sincerely,



Dale Condra  
Laboratory Manager  
Environmental Survey and  
Site Assessment Program

RDC:WPI:ar

Enclosures

cc: T. McLaughlin, NRC/NMSS/TWFN 7F27                      E. Abelquist, ORISE/ESSAP  
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File 1638

Distribution approval and concurrence:	Initials	Date
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ORISE TABLE 1

CONCENTRATIONS OF THORIUM  
ALPHA EMITTING RADIONUCLIDES  
IN SOIL SAMPLES  
BY ALPHA SPECTROSCOPY AP11, REVISION 2 AND  
ALPHA SPECTROSCOPY CP2, REVISION 12  
MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
BAY COUNTY, MICHIGAN

ESSAP Sample ID	NRC Region III Sample ID	Radionuclide Concentrations <sup>a</sup> (pCi/g)			
		Th-228	Th-230	Th-232	Total Th <sup>b</sup>
1638S0001	SS-01A-002	0.50 ± 0.07 <sup>c</sup>	0.71 ± 0.09	0.57 ± 0.08	1.07 ± 0.11
1638S0002	SS-01A-003	0.32 ± 0.06	0.49 ± 0.07	0.42 ± 0.07	0.74 ± 0.09
1638S0003	SS-01A-004	0.37 ± 0.06	0.45 ± 0.07	0.34 ± 0.06	0.71 ± 0.08
1638S0004	SS-01A-005	0.40 ± 0.06	0.61 ± 0.08	0.38 ± 0.06	0.78 ± 0.08
1638S0005	SS-01A-006	0.43 ± 0.07	0.62 ± 0.08	0.47 ± 0.07	0.90 ± 0.10
1638S0006	SS-01A-007	0.65 ± 0.09	0.64 ± 0.09	0.58 ± 0.08	1.23 ± 0.12

<sup>a</sup>The average MDC by alpha spectroscopy for Th isotopes is 0.08 pCi/g.

<sup>b</sup>Total thorium is the sum of Th-228 and Th-232.

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