ORISE
OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

January 10, 2005

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Mr. Rick Munoz
U.S. Nuclear Regulatory Commission
Region IV: DNMS: NMLB
Suite 400
611 Ryan Plaza Drive
Arlington, TX 76011

**SUBJECT: ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED NOVEMBER 30, 2004 AND DECEMBER 15, 2004 FROM KAISER ALUMINUM, TULSA, OKLAHOMA (INSPECTION REPORT #040-02377/2004-03) [RFTA NO. 05-001]**

Dear Mr. Munoz:

The Environmental Survey and Site Assessment Program (ESSAP) of the Oak Ridge Institute for Science and Education (ORISE) received two soil samples on December 1, 2004 that were collected November 30, 2004. An additional four soil samples were received on December 20, 2004 that were collected December 15, 2004. The samples were analyzed for the uranium and the thorium series by gamma spectroscopy (GS) (Procedure CP1, Revision 14). After reviewing the preliminary GS data, you indicated in an e-mail on December 29, 2004 that alpha isotopic analysis was not required. The GS data are presented in Table 1.

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

Please contact me at (865) 241-3242 or Wade Ivey at (865) 576-9184 with any questions or comments.

Sincerely,

Dale Condra

Dale Condra
Laboratory Manager
Environmental Survey and
Site Assessment Program

RDC/WPI:ar

Enclosure

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| Distribution approval and concurrence: | Initials | Date |
|---|---|---|
| Technical Management Team Member | TQV | 1/10/2005 |
| Quality Manager | QTP | 1/10/2005 |

## ORISE TABLE 1

## CONCENTRATIONS OF SELECTED GAMMA EMITTING RADIONUCLIDES IN SOIL SAMPLES BY GAMMA SPECTROSCOPY CP1, REVISION 14 KAISER ALUMINUM TULSA, OKLAHOMA

| ESSAP Sample ID | NRC Region IV Sample ID | Radionuclide Concentrations (pCi/g dry weight)[a] | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | U-238 by Th-234 | U-235 | Total U[b] | Th-230 | Th-228 by Pb-212 | Th-232 by Ac-228 | Total Th[c] |
| 1645S0001 | NRC 04-03-01 | 1.53 ± 0.63[d] | 0.16 ± 0.16 | 3.22 ± 0.91 | 6.2 ± 6.4 | 2.51 ± 0.19 | 2.53 ± 0.30 | 5.04 ± 0.36 |
| 1645S0002 | NRC 04-03-02 | 0.85 ± 0.51 | 0.03 ± 0.08 | 1.73 ± 0.73 | 4.1 ± 4.1 | 1.64 ± 0.12 | 1.71 ± 0.20 | 3.35 ± 0.23 |
| 1645S0003 | NRC 04-03-03 | 0.65 ± 0.62 | -0.01 ± 0.12 | 1.29 ± 0.88 | 9.5 ± 6.6 | 2.44 ± 0.18 | 2.67 ± 0.30 | 5.11 ± 0.35 |
| 1645S0004 | NRC 04-03-04 | 0.65 ± 0.47 | 0.08 ± 0.10 | 1.38 ± 0.67 | 2.8 ± 4.0 | 1.36 ± 0.10 | 1.49 ± 0.19 | 2.85 ± 0.21 |
| 1645S0005 | NRC 04-03-05 | 1.63 ± 0.82 | 0.16 ± 0.19 | 3.4 ± 1.2 | 11.9 ± 6.6 | 2.99 ± 0.22 | 3.10 ± 0.34 | 6.09 ± 0.40 |
| 1645S0006 | NRC 04-03-06 | 0.98 ± 0.45 | -0.02 ± 0.08 | 1.94 ± 0.64 | -2.0 ± 3.2 | 1.15 ± 0.09 | 1.24 ± 0.17 | 2.39 ± 0.19 |

[a]The average MDCs for these radionuclides range from 0.04 pCi/g for Th-228 by Pb-212 to 6.2 pCi/g for Th-230.

[b]Total uranium is calculated using (2·U-238) + U-235.

[c]Total thorium is the sum of Th-228 and Th-232.

[d]Uncertainties represent the 95% confidence level, based on total propagated uncertainties.