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April 16, 1991

Mr. Tony Huffert
NMSS, Division of Low Level Waste Management
and Decommissioning
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: ADDITIONAL ANALYSES - CUSHING SAMPLES

Dear Mr. Huffert:

Enclosed are the results of alpha spectrometry analyses, on selected Cushing Site soil samples, collected by ORAU during the November 1990 visit and obtained from Kerr-McGee for confirmatory analyses. These results indicate the absence of plutonium; they also demonstrate that the general site contaminants are uranium, slightly enriched in U-235, and thorium. There was however, one sample (KiMG 90N, OE) which contained depleted uranium. Although the total uranium and total thorium values determined by alpha spectrometry are in general agreement with the gamma analyses results, submitted earlier, it should be kept in mind that these samples were not completely homogenized before either of the analyses and therefore, differences are to be expected.

If I can be of further assistance, please contact me at (615) 576-3305 or FTS 626-3305.

Sincerely,

James D. Berger, Director
Environmental Survey and
Site Assessment Program

JDB:jls

Enclosure

cc: W. Fisher, NRC/Region IV
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Site File: #155

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RADIONUCLIDE CONCENTRATIONS IN SOIL SAMPLES
FROM CUSHING SITE
CUSHING, OKLAHOMA

SAMPLE ID	RADIONUCLIDE CONCENTRATION (pCi/g)									
	Pu-238	Pu-239/240	U-234	U-235	U-238	Th-228	Th-230	Th-232		
Trash Dump (ORAU)	0.01 ± 0.02 ^a	0.02 ± 0.02	---	---	---	---	---	---	---	---
Trash Dump (ORAU)	0.00 ± 0.01	0.01 ± 0.02	---	---	---	---	---	---	---	---
W. Bank Skull Creek (ORAU)	0.01 ± 0.04	0.01 ± 0.02	---	---	---	---	---	---	---	---
N. Bank Skull Creek (ORAU)	0.01 ± 0.02	0.01 ± 0.02	---	---	---	---	---	---	---	---
KMG DP-1	0.04 ± 0.04	0.02 ± 0.03	15.8 ± 0.5	0.9 ± 0.1	3.4 ± 0.2	18.6 ± 0.8	3.9 ± 0.4	18.5 ± 0.8		
KMG DP-2	0.01 ± 0.05	0.01 ± 0.03	23.9 ± 0.9	1.4 ± 0.3	5.4 ± 0.4	9.7 ± 0.5	2.1 ± 0.3	9.6 ± 0.5		
KMG 4S, 10E (2')	0.01 ± 0.04	0.01 ± 0.04	1.9 ± 0.3	0.1 ± 0.1	1.2 ± 0.2	37.4 ± 0.9	4.6 ± 0.3	37.0 ± 0.9		
KMG 4S, 10E (3')	0.03 ± 0.07	0.02 ± 0.06	2.4 ± 0.3	0.1 ± 0.1	1.2 ± 0.2	50.0 ± 1.0	6.4 ± 0.4	51.1 ± 1.0		
KMG 2N, 23E (1')	0.01 ± 0.04	0.01 ± 0.03	2.3 ± 0.3	0.2 ± 0.1	1.2 ± 0.2	4.7 ± 0.8	1.9 ± 0.4	6.4 ± 0.5		
KMG 40N, 20E (6")	0.01 ± 0.03	0.01 ± 0.04	2.9 ± 0.5	0.5 ± 0.3	2.1 ± 0.4	1.3 ± 0.3	0.2 ± 0.3	1.4 ± 0.3		
KMG 40N, 25E (6")	0.01 ± 0.06	0.01 ± 0.04	17.0 ± 0.8	1.1 ± 0.2	3.1 ± 0.3	4.6 ± 0.8	1.0 ± 0.4	7.0 ± 0.5		
KMG 40N, 25E (1')	0.01 ± 0.05	0.01 ± 0.02	5.5 ± 0.4	0.2 ± 0.1	1.5 ± 0.2	8.3 ± 0.7	0.7 ± 0.3	4.7 ± 0.4		
KMG 40N, 25E (4')	0.02 ± 0.04	0.01 ± 0.05	1.1 ± 0.4	0.0 ± 0.1	1.1 ± 0.3	2.2 ± 0.5	1.1 ± 0.3	1.0 ± 0.2		
KMG 50N, 10E (6")	0.01 ± 0.04	0.01 ± 0.04	13.8 ± 1.1	1.9 ± 0.7	5.7 ± 0.7	10.2 ± 0.9	2.1 ± 0.4	12.6 ± 0.7		
KMG 90N, 0E (6")	0.01 ± 0.04	0.02 ± 0.04	12.1 ± 0.8	1.1 ± 0.4	43.5 ± 1.7	2.5 ± 0.4	1.0 ± 0.2	1.6 ± 0.2		

^aUncertainties are at the 95% confidence level, based only on sample counting statistics.

^bDash indicates analysis not performed.