

RAS 14517

Army Barta Exh. # 2-C

[Originally Attached As EXHIBIT MLB #4 to Witness
Barta's pre-filed testimony]

U.S. NUCLEAR REGULATORY COMMISSION

In the Matter of US ARMY (JEFFERSON PROVING GROUND)

Docket No. 40-8838-MLA Official Exhibit No. ARMY EXH. #2-C

OFFERED by: Applicant/Licensee Intervenor _____
NRC Staff Other _____

IDENTIFIED on _____ Witness/Panel _____

Action Taken: ADMITTED REJECTED WITHDRAWN

Reporter/Clerk _____

**SEG (Scientific Ecology Group). 1995. JPG Depleted
Uranium Impact Area, Scoping Survey Report.
Volumes 1-3. March., Florida.**

DOCKETED
USNRC

October 25, 2007 (2:00pm)

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

Docket No. 40-8838-ML

TEMPLATE = SEG-028

SEG-02

Jefferson Proving Ground Depleted Uranium Impact Area

NRC License No. SUB-1435

Scoping Survey Report **Volume 1, Survey Report**

**March 1995
Revision 0**



SCIENTIFIC ECOLOGY GROUP, INC.

Radiological Engineering & Decommissioning Services

SCOPING SURVEY PROGRAM

Soil Samples

The soil sampling program performed during the scoping survey was intended to mirror the baseline environmental survey performed in 1983. The SEG survey was unbiased, and based on a 150 meter grid system. All sample locations were pre-determined by the JPG Radiation Safety Officer. Locations and sample numbers are shown in Figure 3-2.

The central axis of the grid was a north-south line along the 500 Center line of fire. Samples 1 through 18, 41 and 42 were collected from south to north along this line. Samples 19 through 25 were collected along a line parallel to, and 300 meters east of the firing line. Samples 26 through 32 were collected along a line parallel to, and 300 meters west of the firing line. Samples 33 through 36, and 37 through 40, were collected along lines 600 meters east and west respectively of the firing line. Samples 43, 44, 47 and 48 were collected at the NE, SE, SW and NW corners of the impact area respectively. Sample 45 was collected approximately 100 meters north of C road on the K5 firing line. Samples 53 and 54 were collected at and 300 meters south of C road respectively, on the J firing line. Samples 55, 56, and 57 were collected within six feet of monitoring wells 9, 10 and 11 respectively.

Samples were collected by clearing away grass and undergrowth when necessary. A small hand trowel was used to gather a representative surface soil sample to a depth of approximately 1/2 an inch. The sample was placed in a ziplock bag, given a location number and taken to the SEG project office. Approximately 50 g of soil were transferred from the bags and placed into plastic sample containers. The containers were numbered and sealed. Chain-of-custody and radioactive material paperwork was completed, and the samples were shipped to the off-site lab for uranium isotopic analysis.

As is apparent in Figure 3-2, the samples are not numbered consecutively. The numbering sequence used during the initial part of scoping survey corresponds with the sequence used during the baseline environmental survey.

Vegetation Samples

Six samples of leaf litter were collected and four samples of lichen were cut from the DU Impact Area. The locations of these are shown in Figure 3-3. Approximately 200 g fresh weight of vegetation was obtained and placed into ziplock bags. Samples were given a unique identifier, chain-of-custody and radioactive material shipping paperwork completed, and the samples shipped to the off-site lab for uranium isotopic analysis.

SCOPING SURVEY PROGRAM

Additional Environmental Sampling

Included in the enlargement of the impact area and firing line surveys was a requirement to collect additional environmental samples. Sample locations were pre-determined by JPG Environmental staff. The samples consisted of 10 soil, 10 vegetation, 5 surface waste and 5 vegetation collected along J, 500 Center and K5 lines of fire and north of E Road. Sample locations are shown in Figure 3-5.

All samples were collected similarly to previous samples, and stakes placed at each sample location. Samples were given unique identifiers, chain of custody and radioactive material shipping paperwork completed, and the samples shipped to the off-site lab for uranium isotopic analysis.

Evaluation of Sample Results

All samples were analyzed by alpha spectroscopy for U-234, U-235 and U-238. Labs used for sample analysis, Quanterra, Inc., of Richland, WA, and Lockheed Analytical, of Las Vegas, NV, were accredited by the American Association for Laboratory Accreditation. Sample results were reviewed, tabulated and are presented in Sections 4.4 to 4.6 of this report.

SURVEY RESULTS

**Table 4-4
Sediment Sample Results**

SAMPLE NUMBER	U-234 (pCi/g)	U-235 (pCi/g)	U-238 (pCi/g)	U-238/U-234	TOTAL URANIUM (pCi/g)
M-1	0.721	< 0.0534	0.596	0.827	1.317 ± 0.431
M-2	0.772	< 0.0707	0.830	1.08	1.602 ± 0.516
M-3	0.719	< 0.0514	0.674	0.937	1.393 ± 0.476
M-4	0.421	< 0.0450	0.460	1.09	0.881 ± 0.317
M-5	0.611	0.0445	1.05	1.72	1.7055 ± 0.472
M-6	0.833	< 0.0436	0.686	0.824	1.519 ± 0.451
M-7	0.929	< 0.0452	1.01	1.09	1.939 ± 0.553
M-8	0.424	< 0.0564	0.843	1.99	1.267 ± 0.432

**Table 4-5
Vegetation Sample Results**

SAMPLE NUMBER	U-234 (pCi/g)	U-235 (pCi/g)	U-238 (pCi/g)	U-238/U-234	TOTAL URANIUM (pCi/g)
W-N	< 0.00813	< 0.00669	0.0123		0.0123 ± 0.0179
W-MID	0.0260	< 0.00647	0.0251	0.9653	0.0511 ± 0.0265
W-S	0.0237	< 0.00327	< 0.00486		0.0237 ± 0.0198
E-N	0.0114	< 0.00552	0.0105	0.9210	0.0219 ± 0.01568
E-MID	0.00825	< 0.00605	0.0087	1.055	0.017 ± 0.01357
E-S	0.00899	< 0.00832	0.0168	1.869	0.0258 ± 0.01789
L1	0.121	0.00681	0.164	1.36	0.2918 ± 0.0834
L2	0.114	0.0101	0.261	2.29	0.3851 ± 0.1127
L3	0.0628	< 0.00539	0.164	2.61	0.2322 ± 0.0678
L4	0.126	< 0.00781	0.198	1.57	0.3294 ± 0.093

SURVEY RESULTS

Table 4-6
Additional Environmental Sample Results

Sample Type	Sample Number	U-234 (pCi/g)	U-235 (pCi/g)	U-238 (pCi/g)	U-238/U-234	Total Uranium (pCi/g)
Soil	SA-01	0.85	0.132	0.89	1.05	1.872 ± 0.515
Soil	SA-02	0.74	0.059	0.84	1.1	1.639 ± 0.375
Soil	SA-03	0.63	<0.039	0.79	1.3	1.42 ± 0.354
Soil	SA-04	0.79	0.062	0.91	1.2	1.762 ± 0.385
Soil	SA-05	0.81	0.084	0.88	1.1	1.774 ± 0.382
Soil	SA-06	0.78	0.086	0.65	0.83	1.516 ± 0.388
Soil	SA-07	0.86	0.071	0.84	0.97	1.771 ± 0.424
Soil	SA-08	0.68	<0.034	0.79	1.2	1.47 ± 0.334
Soil	SA-09	0.69	0.063	0.64	0.93	1.393 ± 0.358
Soil	SA-10	1.04	0.172	1.13	1.09	2.342 ± 0.539
Sediment	MA-01	1.00	0.111	0.92	0.92	2.031 ± 0.421
Sediment	MA-02	0.79	0.155	0.61	0.77	1.555 ± 0.393
Sediment	MA-03	1.55	0.131	1.40	0.903	3.081 ± 0.514
Sediment	MA-04	0.51	0.078	0.274	0.54	0.862 ± 0.290
Sediment	MA-05	0.301	<0.037	0.117	0.389	0.418 ± 0.200
Vegetation	VA-01	0.227	<0.034	0.172	0.758	0.399 ± 0.120
Vegetation	VA-02	0.29	0.081	0.219	0.76	0.590 ± 0.264
Vegetation	VA-03	0.149	0.053	0.053	0.356	0.255 ± 0.167
Vegetation	VA-04	0.165	0.036	0.288	1.75	0.489 ± 0.196
Vegetation	VA-05	0.239	<0.041	0.174	0.728	0.413 ± 0.203
Vegetation	VA-06	0.132	<0.031	0.049	0.371	0.181 ± 0.142
Vegetation	VA-07	0.058	<0.030	<0.040		0.058 ± 0.110
Vegetation	VA-08	0.36	<0.034	0.288	0.80	0.648 ± 0.241
Vegetation	VA-09	0.292	0.069	0.142	0.486	0.503 ± 0.219
Vegetation	VA-10	0.103	0.033	0.046	0.447	0.182 ± 0.140
Sample Type	Sample Number	U-234 (pCi/l)	U-235 (pCi/l)	U-238 (pCi/l)	U-238/U-234	Total Uranium (pCi/l)
Surface Water	SWA-01	0.55	0.14	0.19	0.35	0.88 ± 0.55
Surface Water	SWA-02	0.51	0.13	<0.12		0.64 ± 0.51
Surface Water	SWA-03	0.23	<0.099	0.12	0.52	0.35 ± 0.343
Surface Water	SWA-04	0.32	<0.11	<0.12		0.32 ± 0.43
Surface Water	SWA-05	0.21	<0.12	<0.13		0.21 ± 0.40