

Hematite Decommissioning Project	Procedure: HDP-PR-FSS-701, Final Status Survey Plan Development		
		Revision: 10	Appendix P-4, Page 1 of 1

APPENDIX P-4

FSS SAMPLE & MEASUREMENT LOCATIONS & COORDINATES

Survey Area:	LSA 08	Description:	Plant Soils SEA Open Land Area
Survey Unit:	15	Description:	Central Open Land Area
Survey Type:	FSS	Classification:	Class 2

Measurement or Sample ID	Surface or CSM	Type	Start Elevation*	End Elevation*	Northing** (Y Axis)	Easting** (X Axis)	Remarks / Notes
L08-15-01-P-S-S-00	Uniform	S	434.86	434.4	864565.0	827061.5	Surface 6-inch grab
L08-15-02-P-R-S-00	Uniform	S	434.37	429.9	864565.0	827061.5	Root 4.4-ft composite
L08-15-04-P-S-S-00	Uniform	S	434.62	434.1	864518.7	827034.8	Surface 6-inch grab
L08-15-05-P-R-S-00	Uniform	S	434.13	429.7	864518.7	827034.8	Root 4.4-ft composite
L08-15-07-P-S-S-00	Uniform	S	434.92	434.4	864518.7	827088.3	Surface 6-inch grab
L08-15-08-P-R-S-00	Uniform	S	434.43	430.0	864518.7	827088.3	Root 4.4-ft composite
L08-15-10-P-S-S-00	Uniform	S	434.07	433.6	864472.5	827008.0	Surface 6-inch grab
L08-15-11-P-R-S-00	Uniform	S	433.58	429.2	864472.5	827008.0	Root 4.4-ft composite
L08-15-13-P-S-S-00	Uniform	S	434.45	434.0	864472.5	827061.5	Surface 6-inch grab
L08-15-14-P-R-S-00	Uniform	S	434.0	429.5	864472.5	827061.5	Root 4.4-ft composite
L08-15-16-P-S-S-00	Uniform	S	434.0	433.6	864426.2	827034.8	Surface 6-inch grab
L08-15-17-P-R-S-00	Uniform	S	433.6	429.1	864426.2	827034.8	Root 4.4-ft composite
L08-15-19-P-S-S-00	Uniform	S	434.7	434.2	864426.2	827088.3	Surface 6-inch grab
L08-15-20-P-R-S-00	Uniform	S	434.2	429.8	864426.2	827088.3	Root 4.4-ft composite
L08-15-22-P-S-S-00	Uniform	S	434.1	433.6	864380.0	827061.5	Surface 6-inch grab
L08-15-23-P-R-S-00	Uniform	S	433.6	429.2	864380.0	827061.5	Root 4.4-ft composite
L08-15-11-P-R-Q-00	Uniform	Q	433.6	429.2	864472.5	827008.0	Root 4.4-ft composite
L08-15-20-P-R-Q-00	Uniform	Q	434.2	429.8	864426.2	827088.3	Root 4.4-ft composite
L08-15-25-P-S-B-00	Uniform	B	433.5	433.0	864343.5	827108.2	Biased 6-inch grab

Green shaded samples are the samples at each sample location, for use in WRS test.

*Elevations are in feet above mean sea level.
 ** Missouri - East State Plane Coordinates [North American Datum (NAD) 1983]
 Surface: Floor = F; Wall = W; Ceiling = C; Roof = R
 CSM: Three-Layer (Surface-Root-Excavation) or Uniform DCGLs used
 Type: Systematic = S, Biased = B; QC =Q; Investigation = I

HDP-PR-FSS-721 Final Status Survey Data Evaluation
 Steps 8.3 Preliminary Data Review and 8.4 Calculation of the Sum-of-Fractions (SOF)

Evaluate Final Status Survey Data: LSA-08-15

Sample ID	Sample Depth (ft)	Type (S=Stemmatic, B=Blank, C=C)	TestAmerica Analytical Results Step 8.3.2																								Sample ID	Sample Depth (ft)	Type (S=Stemmatic, B=Blank, C=C)	Enrichment (%)	SOF (Step 8.4.3)	Root Stratum SOF Verification (Where available based on only Step 8.4.4.1)	In Sample In the Root Stratum	In DOC? Template SOF C/F	root count	excavation count	surface count	MIC of Root Count												
			Ra-226						Tc-99						Th-232						Inferred U-234																		U-235						U-238					
			Result	Uncertainty	MDC	Qualifier	Net Result*	Corrected Result	Result	Uncertainty	MDC	Qualifier	Net Result*	Corrected Result	Result	Uncertainty	MDC	Qualifier	Net Result*	Corrected Result	Result	Uncertainty	MDC	Qualifier	Net Result*	Corrected Result													Result	Uncertainty	MDC	Qualifier	Net Result*	Corrected Result	Result	Uncertainty	MDC	Qualifier	Net Result*	Corrected Result
L08-15-01-P-S-S-00	0.00	S	0.868	0.134	0.063	N/A	-0.202	0.000	1.970	1.970	0.193	0.242	N/A	0.904	0.142	0.102	N/A	0.096	0.000	1.940	NA	NA	NA	0.103	0.188	0.343	U	1.020	0.287	0.708	N/A	L08-15-01-P-S-S-00	0.00	S	1.6	0.10	SURFACE	good				0.14								
L08-15-02-P-R-S-00	0.50	S	0.989	0.161	0.086	N/A	-0.081	0.000	0.479	0.479	0.058	0.231	N/A	1.120	0.232	0.125	N/A	0.120	0.120	0.698	NA	NA	NA	0.143	0.212	0.659	U	0.698	0.277	1.530	U	L08-15-02-P-R-S-00	0.50	S	0.7	0.08	ROOT	good	1			0.14								
L08-15-04-P-S-S-00	0.00	S	0.809	0.127	0.063	N/A	-0.251	0.000	0.114	0.114	0.059	0.237	U	0.743	0.127	0.091	N/A	-0.257	0.000	1.078	NA	NA	NA	0.057	0.153	0.310	U	0.582	0.252	0.677	U	L08-15-04-P-S-S-00	0.00	S	1.6	0.31	SURFACE	good				0.13								
L08-15-05-P-R-S-00	0.50	S	0.883	0.131	0.062	N/A	-0.187	0.000	0.059	0.059	0.076	0.246	U	0.935	0.143	0.092	N/A	-0.065	0.000	4.532	NA	NA	NA	0.250	0.158	0.205	N/A	1.050	0.304	0.783	N/A	L08-15-05-P-R-S-00	0.50	S	3.8	0.04	ROOT	good	1			0.12								
L08-15-07-P-S-S-00	0.00	S	0.742	0.135	0.077	N/A	-0.328	0.000	0.490	0.490	0.172	0.222	N/A	0.905	0.185	0.107	N/A	-0.065	0.000	2.231	NA	NA	NA	0.122	0.240	0.489	U	0.714	0.299	0.793	U	L08-15-07-P-S-S-00	0.00	S	2.6	0.04	SURFACE	good				0.16								
L08-15-08-P-R-S-00	0.50	S	0.898	0.153	0.074	N/A	-0.172	0.000	0.684	0.684	0.069	0.232	N/A	1.080	0.198	0.179	N/A	0.080	0.080	2.493	NA	NA	NA	0.133	0.247	0.620	U	1.230	0.573	0.853	N/A	L08-15-08-P-R-S-00	0.50	S	1.7	0.86	ROOT	good	1			0.21								
L08-15-10-P-S-S-00	0.00	S	0.883	0.131	0.060	N/A	-0.187	0.000	1.200	1.200	0.192	0.249	N/A	0.855	0.137	0.064	N/A	-0.145	0.000	3.205	NA	NA	NA	0.175	0.095	0.154	N/A	1.080	0.468	0.706	N/A	L08-15-10-P-S-S-00	0.00	S	2.5	0.07	SURFACE	good				0.09								
L08-15-11-P-R-S-00	0.50	S	1.040	0.159	0.077	N/A	-0.030	0.000	0.921	0.921	0.195	0.248	N/A	1.020	0.175	0.145	N/A	0.020	0.020	2.574	NA	NA	NA	0.140	0.213	0.411	U	0.951	0.326	0.867	N/A	L08-15-11-P-R-S-00	0.50	S	2.3	0.07	ROOT	good	1			0.17								
L08-15-13-P-S-S-00	0.00	S	0.797	0.122	0.070	N/A	-0.393	0.000	0.624	0.624	0.132	0.240	N/A	0.923	0.136	0.096	N/A	-0.077	0.000	3.480	NA	NA	NA	0.190	0.106	0.156	N/A	1.170	0.486	0.732	N/A	L08-15-13-P-S-S-00	0.00	S	2.5	0.05	SURFACE	good				0.12								
L08-15-14-P-R-S-00	0.50	S	1.250	0.197	0.090	N/A	0.180	0.180	0.124	0.124	0.083	0.234	U	1.210	0.207	0.143	N/A	0.210	0.210	2.250	NA	NA	NA	0.120	0.303	0.679	U	1.140	0.384	1.010	N/A	L08-15-14-P-R-S-00	0.50	S	1.7	0.23	ROOT	good	1			0.21								
L08-15-16-P-S-S-00	0.00	S	1.050	0.155	0.075	N/A	-0.020	0.000	0.529	0.529	0.068	0.230	N/A	0.861	0.138	0.088	N/A	-0.139	0.000	4.233	NA	NA	NA	0.233	0.119	0.163	N/A	1.130	0.319	0.808	N/A	L08-15-16-P-S-S-00	0.00	S	3.2	0.05	SURFACE	good				0.11								
L08-15-17-P-R-S-00	0.50	S	1.080	0.155	0.067	N/A	0.010	0.010	0.059	0.059	0.047	0.260	U	0.999	0.169	0.091	N/A	-0.001	0.000	1.004	NA	NA	NA	0.056	0.134	0.461	U	0.874	0.304	0.761	N/A	L08-15-17-P-R-S-00	0.50	S	1.0	0.02	ROOT	good	1			0.14								
L08-15-19-P-S-S-00	0.00	S	1.000	0.156	0.072	N/A	-0.070	0.000	0.178	0.178	0.169	0.251	U	0.911	0.154	0.100	N/A	-0.089	0.000	4.018	NA	NA	NA	0.219	0.122	0.186	N/A	1.400	0.534	0.783	N/A	L08-15-19-P-S-S-00	0.00	S	2.4	0.04	SURFACE	good				0.12								
L08-15-20-P-R-S-00	0.50	S	1.110	0.158	0.068	N/A	0.040	0.040	5.110	5.110	0.741	0.245	N/A	1.060	0.167	0.137	N/A	0.060	0.060	7.712	NA	NA	NA	0.426	0.189	0.251	N/A	1.510	0.365	0.872	N/A	L08-15-20-P-R-S-00	0.50	S	4.3	0.31	ROOT	good	1			0.15								
L08-15-22-P-S-S-00	0.00	S	0.774	0.110	0.039	N/A	-0.298	0.000	1.090	1.090	0.191	0.228	N/A	0.882	0.124	0.059	N/A	0.318	0.000	0.953	NA	NA	NA	0.048	0.103	0.292	U	0.750	0.244	0.536	N/A	L08-15-22-P-S-S-00	0.00	S	1.0	0.05	SURFACE	good				0.10								
L08-15-23-P-R-S-00	0.50	S	1.050	0.161	0.077	N/A	-0.020	0.000	1.720	1.720	0.282	0.243	N/A	1.080	0.169	0.119	N/A	0.080	0.080	1.501	NA	NA	NA	0.076	0.196	0.398	U	1.260	0.533	0.794	N/A	L08-15-23-P-R-S-00	0.50	S	1.0	0.13	ROOT	good	1			0.16								
L08-15-11-P-R-Q-00	0.50	Q	0.870	0.150	0.083	N/A	-0.200	0.000	1.080	1.080	0.198	0.224	N/A	1.010	0.186	0.172	N/A	0.010	0.010	3.156	NA	NA	NA	0.172	0.154	0.222	U	1.090	0.344	0.824	N/A	L08-15-11-P-R-Q-00	0.50	Q	2.4	0.07	good					0.17								
L08-15-20-P-R-Q-00	0.50	Q	1.140	0.180	0.086	N/A	0.070	0.070	5.420	5.420	0.820	0.240	N/A	1.030	0.200	0.134	N/A	0.030	0.030	5.394	NA	NA	NA	0.295	0.161	0.220	N/A	1.220	0.667	0.985	N/A	L08-15-20-P-R-Q-00	0.50	Q	2.6	0.43	good					0.14								
L08-15-25-P-S-B-00	0.00	B	0.401	0.063	0.027	N/A	-0.669	0.000	0.420	0.420	0.088	0.186	N/A	0.274	0.068	0.043	N/A	-0.726	0.000	4.585	NA	NA	NA	0.253	0.096	0.096	N/A	0.734	0.290	0.425	N/A	L08-15-25-P-S-B-00	0.00	B	5.1	0.05	good					0.08								
Systematic Minimum			0.000						0.058						0.000						0.698						0.582						Z: 3																	
Systematic Maximum			0.160						5.110						0.210						7.712						0.426						1510																	
Systematic Mean			0.614						0.959						0.036						2.750						0.128						1.035																	
Systematic Median			0.000						0.577						0.000						2.371						0.128						1.065																	
Systematic Standard Deviation			0.045						1.245						0.061						1.781						0.161						0.281																	
Step 8.3.3																																																		
Step 8.4.2			With ingrowth, use Ra226 bkg = 1.07						Th232 bkg = 1.0																																									
NOTES:																																																		
Gross results in units of pCi/g.																																																		
* Background with ingrowth (1.07 pCi/g) subtracted from gross result.																																																		
** Background (1.0 pCi/g) subtracted from gross result.																																																		
U Qualifier: Result is less than the sample detection limit.																																																		
All uncertainty values are reported at the 2-sigma confidence level.																																																		
Ave Conc. Ra-226, SS			0.000						1.970						0.000						1.940						0.103						1.020																	
Ave Conc. Tc-99, SS			0.000						0.114						0.000						1.078						0.057						0.582																	
Ave Conc. Th-232, SS			0.000						0.490						0.000						2.231						0.122						0.714																	
Ave Conc. U-234, SS			0.000						1.200						3.205						0.175						1.080																							
Ave Conc. U-235, SS			0.000						0.624						3.480						0.190						1.170																							
Ave Conc. U-238, SS			0.000						0.529						4.233						0.233						1.130																							
Ave Conc. Ra-226, RS			0.000						0.774						0.000						2.642						0.143						0.981																	
Ave Conc. Tc-99, RS			0.000						0.479						0.120						0.698						-0.143						0.698																	
Ave Conc. Th-232, RS			0.000						0.059						0.000						4.532						0.250						1.050																	
Ave Conc. U-234, RS			0.000						0.684						0.080						2.493						0.133						1.230																	
Ave Conc. U-235, RS			0.000						0.921						0.020						2.574						0.140						0.951																	
Ave Conc. U-238, RS			0.000						0.124						0.210						2.250						0.120						1.140																	
Ave Conc. Ra-226, ES			0.000						0.058						0.000						1.104						0.056						0.874																	
Ave Conc. Tc-99, ES			0.000						5.110						0.060						7.712						0.426						1.510																	
Ave Conc. Th-232, ES			0.000						1.720						0.080						1.501						0.076						1.260																	
Ave Conc. U-234, ES			0.000						0.000						0.000						0.000						0.000						0.000																	
Ave Conc. U-235, ES			0.000						0.000						0.000						0.000						0.000						0.000																	
Ave Conc. U-238, ES			0.000						0.000						0.000						0.000						0.000						0.000																	

HDP-PR-FSS-721 Final Status Survey Data Evaluation
 Steps 8.3 Preliminary Data Review and 8.4 Calculation of the Sum-of-Fractions (SOF)

Use corrected net results for all DE calcs 721 Sec. 8.4.2

Step 8.4.1 DCLG_y, Measure Tc-99, All SEAs

	Uniform
U-234	195.4
U-235	51.6
U-238	168.8
Tc-99	25.1
Th-232	2.0
Ra-226	1.9

Step 8.4.5b

weighted SOF _{REAR}	0.99		
fractions	SS	RS	ES
	0.5	0.5	0

Step 8.4.5c SOF_{REAR} Re-use Backfill Material

(0)

Step 8.4.5e SOF_{REAR} Groundwater

(0.16)

Step 8.4.5g (C=1)

SOF _{REAR SU}	0.25	PASS
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Infer U234 Step 8.3.4			
U-238/U235	U-234/U235	U-234	%
9.9	18.8	1.9	1.6
0.0	0.0	0.7	0.7
10.2	18.8	1.1	1.6
4.2	18.1	4.5	3.6
5.9	18.3	2.2	2.6
9.2	18.7	2.5	1.7
6.2	18.3	3.2	2.5
6.8	18.4	2.6	2.3
6.2	18.3	3.5	2.5
9.5	18.7	2.2	1.7
4.8	18.2	4.2	3.2
15.7	19.9	1.1	1.0
6.4	18.3	4.0	2.4
3.5	18.1	7.7	4.3
15.6	19.9	1.0	1.0
16.7	19.9	1.5	1.0
6.3	18.3	3.2	2.4
5.8	18.3	5.4	2.6
2.9	18.1	4.6	5.1
Average Enrichment (%)			2.31

Infer U-234 MDC using U-235 MDC * ratio of U-234:U-235 @ that sample's enrichment

0.46178
5.84009
3.7181
8.57603
11.6226
2.82059
7.557
2.85722
12.2286
2.96122
7.96109
3.41292
4.54405
5.7971
2.00153
4.07349
4.02287
1.74151

Step 8.4.6 Calculate the dose contribution for the SU by multiplying SOF_{REAR SU} (including contribution from Re-use backfill and Groundwater) by 25 mrem.

6.2 mrem

HDP-PR-FSS-721 Final Status Survey Data Evaluation
Step 8.5 Performance of Statistical Tests

WRS TEST						
SAMPLE ID	AREA (Reference, Survey Unit)	Gross SOF ($X_{i,ref}$, $Y_{i,SU}$) Step 8.5.3a	ADJUSTED SOF (Z_i) Step 8.5.3b	RANKS Step 8.5.3d	REFERENCE AREA RANKS	
9574-SS-140910-01-01	Reference	1.31	2.310	46	46	
9574-SS-140910-01-02	Reference	1.18	2.179	37	37	
9574-SS-140910-01-03	Reference	1.06	2.064	32	32	
9574-SS-140910-01-04	Reference	1.10	2.101	33	33	
9574-SS-140910-01-05	Reference	1.29	2.293	45	45	
9574-SS-140910-01-07	Reference	1.34	2.339	47	47	
9574-SS-140910-01-08	Reference	1.15	2.154	36	36	
9574-SS-140910-01-09	Reference	1.18	2.182	38	38	
9574-SS-140910-01-10	Reference	1.23	2.227	43	43	
9574-SS-140910-01-11	Reference	1.38	2.380	48	48	
9574-SS-140910-01-12	Reference	1.05	2.055	31	31	
9574-SS-140910-01-13	Reference	0.94	1.941	21	21	
9574-SS-140910-01-14	Reference	1.12	2.119	34	34	
9574-SS-140910-01-15	Reference	1.15	2.152	35	35	
9574-SS-140910-01-16	Reference	1.03	2.028	28	28	
9574-SS-140910-01-17	Reference	0.44	1.443	17	17	
9574-SS-140910-01-18	Reference	1.19	2.188	40	40	
9574-SS-140910-01-20	Reference	0.76	1.757	18	18	
9574-SS-140910-01-21	Reference	1.02	2.023	27	27	
9574-SS-140910-01-22	Reference	1.02	2.018	26	26	
9574-SS-140910-01-23	Reference	1.00	2.002	23	23	
9574-SS-140910-01-24	Reference	0.87	1.873	20	20	
9574-SS-140910-01-25	Reference	1.04	2.040	30	30	
9574-SS-140910-01-26	Reference	0.96	1.959	22	22	
9574-SS-140910-01-27	Reference	1.20	2.204	41	41	
9574-SS-140910-01-28	Reference	1.01	2.007	25	25	
9574-SS-140910-01-29	Reference	1.22	2.223	42	42	
9574-SS-140910-01-30	Reference	1.03	2.035	29	29	
9574-SS-140910-01-31	Reference	1.00	2.005	24	24	
9574-SS-140910-01-32	Reference	0.86	1.865	19	19	
9574-SS-140910-01-33	Reference	1.24	2.238	44	44	
9574-SS-140910-01-34	Reference	1.19	2.185	39	39	
L08-15-01-P-S-S-00	Survey Unit	1.01	1.005	7	0	No WRS test necessary
L08-15-02-P-R-S-00	Survey Unit	1.10	1.105	12	0	No WRS test necessary
L08-15-04-P-S-S-00	Survey Unit	0.81	0.812	2	0	No WRS test necessary
L08-15-05-P-R-S-00	Survey Unit	0.97	0.969	6	0	No WRS test necessary
L08-15-07-P-S-S-00	Survey Unit	0.88	0.881	3	0	No WRS test necessary
L08-15-08-P-R-S-00	Survey Unit	1.06	1.063	10	0	No WRS test necessary
L08-15-10-P-S-S-00	Survey Unit	0.97	0.966	5	0	No WRS test necessary
L08-15-11-P-R-S-00	Survey Unit	1.12	1.116	13	0	No WRS test necessary
L08-15-13-P-S-S-00	Survey Unit	0.92	0.918	4	0	No WRS test necessary
L08-15-14-P-R-S-00	Survey Unit	1.29	1.288	15	0	No WRS test necessary
L08-15-16-P-S-S-00	Survey Unit	1.04	1.037	9	0	No WRS test necessary
L08-15-17-P-R-S-00	Survey Unit	1.08	1.082	11	0	No WRS test necessary
L08-15-19-P-S-S-00	Survey Unit	1.02	1.022	8	0	No WRS test necessary
L08-15-20-P-R-S-00	Survey Unit	1.37	1.374	16	0	No WRS test necessary
L08-15-22-P-S-S-00	Survey Unit	0.80	0.802	1	0	No WRS test necessary
L08-15-23-P-R-S-00	Survey Unit	1.18	1.178	14	0	No WRS test necessary
Rank Sums				1176	1040	W_r Step 8.5.3e
# Reference Area Measurements				m	32	
# Survey Unit Measurements				n	16	
Total Number of Measurements Step 8.5.3c				N	48	
(1-α) percentile of a standard normal distribution (MARSSIM Pg. I-10)				z	1.645	$\alpha = 0.05$
WRS Critical Value (MARSSIM Pg. I-10, Eq. I.1)				CV	860	

Step 8.5.1

Min adjusted bkg SOF
1.44

W_r Step 8.5.3e

TEST: PASS

Step 8.5.3f

HDP-PR-FSS-701 Final Status Survey Plan Development

Appendix B.1 Step 8 Calculate the Number of Samples in the Statistical Population

Uniform DCGL Criteria Evaluation	
N/2 Value Verification	
Isotope(s)	SOF (Ra/Tc/Th/Iso U)
St. Dev.	0.08
DCGL _{SOF}	1
LBGR (Mean)	0.09
Shift	0.91
Relative Shift (Δ/σ)	11.68
MARSSIM Table 5.1 (P_r)	1.000000
N	12
N + 20%	14.4
N/2	8
FSS N/2	8
Verification Check	SUFFICIENT MEASUREMENTS
"N/2" Corresponds to the number of survey unit measurement locations required for the WRS Test	

MARSSIM Table 5.1

Δ/σ	P_r
0.1	0.528182
0.2	0.556223
0.3	0.583985
0.4	0.611335
0.5	0.638143
0.6	0.664290
0.7	0.689665
0.8	0.714167
0.9	0.737710
1.0	0.760217
1.1	0.781627
1.2	0.801892
1.3	0.820978
1.4	0.838864
1.5	0.855541
1.6	0.871014
1.7	0.885299
1.8	0.898420
1.9	0.910413
2.0	0.921319
2.25	0.944167
2.5	0.961428
2.75	0.974067
3.0	0.983039
3.5	0.993329
4.0	0.997658
4.01	1.000000

MARSSIM Table 5.2, $\alpha = 0.05$, $\beta = 0.10$

α (or β)	$Z_{1-\alpha}$ (or $Z_{1-\beta}$)
0.005	2.576
0.01	2.326
0.015	2.241
0.025	1.960
0.05	1.645
0.10	1.282
0.15	1.036
0.2	0.842
0.25	0.674
0.30	0.524

α
 β

Hematite Decommissioning Project	Procedure: HDP-PR-FSS-703, Final Status Survey Quality Control		
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**FORM HDP-PR-FSS-703-1
FIELD DUPLICATE SAMPLE ASSESSMENT**

Survey Unit No.:	LSA 08-10				Survey Unit Description:	Central Open Land Area						
Sample ID	Field Duplicate Sample ID	Radionuclide	Sample (pCi/g)		Field Duplicate Sample (pCi/g)		Average Activity (\bar{x}) (pCi/g)	Nuclide DCGL (pCi/g)	Statistic ²	Warning Limit	Control Limit	Statistic Exceeds Limit? (Y/N)
			Activity (x _i)	MDC	Activity (x _i)	MDC						
L08-15-11-P-R-S-00	L08-15-11-P-R-Q-00	Ra-226	1.04	0.0768	0.87	0.0828	0.955	1.9	0.17	0.269	0.403	N
L08-15-11-P-R-S-00	L08-15-11-P-R-Q-00	Tc-99	0.921	0.248	1.08	0.224	1.001	25.1	0.159	3.552	5.321	N
L08-15-11-P-R-S-00	L08-15-11-P-R-Q-00	Th-232	1.02	0.145	1.01	0.172	1.015	2.0	0.010	0.283	0.424	N
L08-15-11-P-R-S-00	L08-15-11-P-R-Q-00	U-234 ¹	2.574	N/A	3.156	N/A	2.865	195.4	0.582	27.649	41.425	N
L08-15-11-P-R-S-00	L08-15-11-P-R-Q-00	U-235	0.14	0.411	0.172	0.222	0.156	51.6	NA	7.301	10.939	NA
L08-15-11-P-R-S-00	L08-15-11-P-R-Q-00	U-238	0.951	0.867	1.09	0.824	1.021	168.8	0.139	23.885	35.786	N

Comments:

- U-234 is inferred, no MDC available.
- Duplicate assessment is not necessary if the result of either sample is < MDC.

Performed by: Thomas Yardy _____

Reviewed by: Clark Evers _____

Date: _____

Date: _____

Quality Record

Hematite Decommissioning Project	Procedure: HDP-PR-FSS-703, Final Status Survey Quality Control										
								Revision: 2	Page 1 of 1		

**FORM HDP-PR-FSS-703-1
FIELD DUPLICATE SAMPLE ASSESSMENT**

Survey Unit No.:	LSA 08-10				Survey Unit Description:	Central Open Land Area						
Sample ID	Field Duplicate Sample ID	Radionuclide	Sample (pCi/g)		Field Duplicate Sample (pCi/g)		Average Activity (\bar{x}) (pCi/g)	Nuclide DCGL (pCi/g)	Statistic ²	Warning Limit	Control Limit	Statistic Exceeds Limit? (Y/N)
			Activity (x_i)	MDC	Activity (x_i)	MDC						
L08-15-20-P-R-S-00	L08-15-20-P-R-Q-00	Ra-226	1.11	0.0678	1.14	0.0855	1.125	1.9	0.03	0.269	0.403	N
L08-15-20-P-R-S-00	L08-15-20-P-R-Q-00	Tc-99	5.11	0.245	8.42	0.24	6.765	25.1	3.31	3.552	5.321	N
L08-15-20-P-R-S-00	L08-15-20-P-R-Q-00	Th-232	1.06	0.137	1.03	0.104	1.045	2.0	0.030	0.283	0.424	N
L08-15-20-P-R-S-00	L08-15-20-P-R-Q-00	U-234 ¹	7.712	N/A	5.394	N/A	6.553	195.4	2.318	27.649	41.425	N
L08-15-20-P-R-S-00	L08-15-20-P-R-Q-00	U-235	0.426	0.251	0.295	0.22	0.361	51.6	0.131	7.301	10.939	N
L08-15-20-P-R-S-00	L08-15-20-P-R-Q-00	U-238	1.51	0.872	1.72	0.988	1.615	168.8	0.210	23.885	35.786	N

Comments:

- U-234 is inferred, no MDC available.
- Duplicate assessment is not necessary if the result of either sample is < MDC.

Performed by: Thomas Yardy _____

Reviewed by: Clark Evers _____

Date: _____

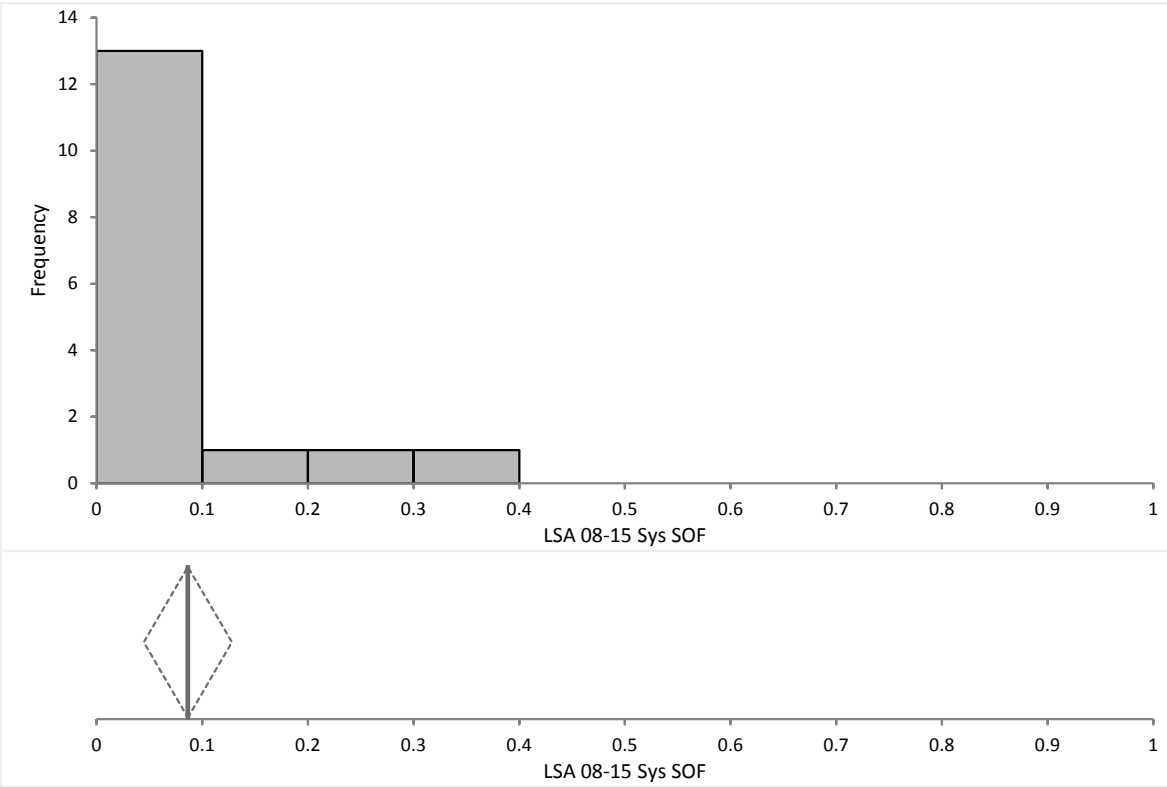
Date: _____

Quality Record

LSA 08-15 Sys SOF

0.1
0.1
0.0
0.0
0.0
0.1
0.1
0.1
0.1
0.2
0.1
0.0
0.0
0.3
0.1
0.1

Descriptives



N	16						
LSA 08-15 Sys SOF	Mean	95% CI	Mean SE	SD	Variance	Skewness	Kurtosis
	0.09	0.04 to 0.13	0.020	0.08	0.01	2.1	4.25
LSA 08-15 Sys SOF	Minimum	1st quartile	Median	97.87% CI	3rd quartile	Maximum	IQR
	0.0	0.04	0.06	0.04 to 0.10	0.09	0.3	0.06