


## Health Physics Sample Records

**Sample ID:** 142433

**Type:** RLSSS

**Type Detail:** SAND

**Status:** APPROVED

**Rasterized:** 

**Description:** 140528BD 04STAR 4-20 Dirt Sample

### Common

**Resp Org:** P4000 - PROJECT MANAGEMEN

**Cross Ref Sample ID:**

**Priority:** N

**Contact:** COOPER, TERRY L

**Survey No:**

**Reference ID:**

**Accounting Subcode:**

**Unknown Mat:** NO

**Hazardous Mat:** NO

**Comments:**

**Reviewed:** DYNES, WILLIAM J

**Date:** 05/29/14 11:11

**Comments:**

### Origin

**Mat. Size/Volume:** 1000 ml

**Docmnt/MO/Act #:**

**Proposed Ship Date:** 00/00/00 00:00

**Description:** STAR 02 SOIL SAMPLE

### Collection

**Sample Tech:** DYNES, WILLIAM J

**Sample Date:** 05/28/14 12:50

**Count Time:** 900 (secs.)

**Tritium Req:** No

**Sample Size/Volume:** 2121 GRAMS

**Instructions:**

**Comments:** COUNT TO MDA

### RLSSS

**Exempt:** No

**Evaluated:** No

**Chem Notification:** No

**State Permit:** No

**Offsite Analysis:** No

**Effluent Permit:** No

**Container Surveyed:** No

**Cleared For Release:** Yes

**Container Evaluated:** Yes

**Form 212 Ready:** ☒

### Location

**Unit:** NON-UNIT RE

**Area:** MS

**Elev:** 100

**Room:**

**Depth:** 3" (in.)

**Equip ID:**

**Stored By:** ,

**Date:** 00/00/00 00:00

**Sample Loc:**

**Other:**

**Material Loc:**

# Health Physics Sample Records

Sample ID: 142433

Type: RLSSS

















Type Detail: SAND

Status: APPROVED

Rasterized: 

Description: 140528BD 04STAR 4-20 Dirt Sample

## Analysis

Geometry	MCA ID	Quant.	Units	Method	FP/AP	Lab	Analysis By	Date	Mod ID	Mod Date
A_1L_marinelli_sand_	30268	2121	GR		.000		ABERNATHY, AGNES B	05/29/14 15:58		
Isotope	Mode	Activity	Activity Uncert.	LLD/MDA	% Abund.	Atom. No.	Comments		Mod Id	Mod Date
0 K-40	NT	0.00001283	1.28E-6		77.252%	40				
0 TL-208	NT	4.393E-7	9.05E-8		2.645%	208				
0 PB-212	NT	7.334E-7	8.77E-8		4.416%	212				
0 BI-214	NT	4.855E-7	1.02E-7		2.923%	214				
0 PB-214	NT	8.088E-7	1.72E-7		4.870%	214				
0 AC-228	NT	1.311E-6	3.0E-7		7.894%	228				
0 BE-7	AP	4.7263E-7			0.000%	7				
0 MN-54	AP	1.0523E-7			0.000%	54				
0 MN-56	AP	8.0656E-8			0.000%	56				
0 CO-57	AP	7.8894E-8			0.000%	57				
0 CO-58	AP	1.1205E-7			0.000%	58				
0 CO-60	AP	1.0707E-7			0.000%	60				
0 SB-124	AP	6.593E-8			0.000%	124				
0 SB-125	FP	1.7856E-7			0.000%	125				
0 CS-134	FP	9.0388E-8			0.000%	134				
0 CS-137	FP	1.1639E-7			0.000%	137				

## Analysis Review

Re-Analyze: No

Lic Rad Mat Present: No

Reviewed: COOPER, TERRY L

Date: 06/10/14 09:24

Hp Eng Rvw Req'd: Yes

Rad Mat Present: Yes

HP Notified Name:

Comments:

## Health Physics Sample Records

**Sample ID:** 142433

**Type:** RLSSS

**Type Detail:** SAND

**Status:** APPROVED

**Rasterized:** 

**Description:** 140528BD 04STAR 4-20 Dirt Sample

### Review/Approve

#### HP Eng Review

**Reviewed:** COOPER, TERRY L

**Date:** 06/10/14 09:25

**Comments:** Peak at 353 keV is not from a plant-produced nuclide

#### Disposition

**Disposition:** OTHER

**Result:** Sample contains only natural isotopes

**Remarks:**

#### Final Approval

**Approved:** COOPER, TERRY L

**Date:** 06/10/14 09:25

**Comments:**

```

*****
*          SONGS                      HEALTH PHYSICS REPORT          29-MAY-2014 15:56  *
*-----*
*          >>>> SAMPLE  PARAMETERS <<<<          *
*-----*
* Title      : 140528BD 04STAR 4-20 DIRT SAMPLE          *
* ID         : 30268                      Acquisition date: 29-MAY-2014 15:52:53 *
* Start Time: 29-MAY-2014 15:52:00          *
* Stop Time : 29-MAY-2014 15:52:00          Counting System   : U2GSP          *
* Quantity  : 2.12100E+03 GR                IHPS Sample Number: 142433          *
* Geometry  : A_1L_marinelli_sand_1        Analysis Library  : HP_NATURAL          *
* Operator  : AGNES ABERNATHY              *
*-----*
*          >>>> A #41-TP11679B  PARAMETERS <<<<          *
*-----*
* Elapsed Live Time : 0 00:03:00.38  Calibration      : 28-MAY-2014 21:10          *
* Elapsed Real Time : 0 00:03:00.45  Energy Offset    : 2.58874E-01          *
* Deadtime          : 0.0%            Energy Slope     : 4.99485E-01          *
* Activity Mult Factor: 1.00000E+00    Energy Tolerance: 1.00000          *
* Half Life Ratio   : 8.00000          Sensitivity     : 5.00000          *
*-----*
*****

```

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1	74.71	33	25	0.86	149.06	146	13	29.4	3.83E-01	PB-212 PB-214 TL-208
1	77.17	30	25	0.86	153.98	146	13	31.7		BI-214 PB-212 PB-214
1	238.62	94	13	1.14	477.21	471	18	12.0	7.37E-01	PB-212
1	242.04	28	8	1.14	484.06	471	18	27.7		PB-214
1	295.41	38	5	1.34	590.92	587	9	21.3	2.28E+00	PB-214
5	351.90	50	2	1.38	704.02	700	10	16.0	1.73E+00	PB-214
5	353.56	7	2	1.08	707.34	700	10	68.6		
1	583.01	36	4	1.28	1166.72	1162	9	20.6	2.35E+00	TL-208
1	609.30	32	5	1.78	1219.35	1215	9	21.0	1.16E+00	BI-214
1	968.85	22	2	2.41	1939.21	1935	9	22.9	1.76E-01	AC-228
1	1460.64	103	0	1.79	2923.85	2918	13	10.0	4.64E-01	K-40

Summary of Nuclide Activity  
Sample ID : 30268

Page : 2  
Acquisition date : 29-MAY-2014 15:52:53

Total number of lines in spectrum 11  
Number of unidentified lines 0  
Number of lines tentatively identified by NID 11 · 100.00%

Nuclide Type : natural

Nuclide	Hlife	Decay	Uncorrected uCi/GR	Decay Corr uCi/GR	Decay Corr 1-Sigma Error	1-Sigma %Error	Flags
K-40	1.28E+09Y	1.00	1.283E-05	1.283E-05	0.128E-05	9.95	A
TL-208	3.05M	1.69	2.600E-07	4.393E-07	0.905E-07	20.60	A
PB-212	10.64H	1.00	7.315E-07	7.334E-07	0.877E-07	11.96	A
BI-214	19.90M	1.09	4.468E-07	4.855E-07	1.020E-07	21.01	A
PB-214	26.80M	1.06	7.604E-07	8.088E-07	1.720E-07	21.27	A
AC-228	6.13H	1.00	1.305E-06	1.311E-06	0.300E-06	22.90	KA
Total Activity :			1.633E-05	1.660E-05			

Grand Total Activity : 1.633E-05 1.660E-05

Flags: "K" = Keyline not found "M" = Manually accepted  
"E" = Manually edited "A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : 30268

Page : 3  
Acquisition date : 29-MAY-2014 15:52:53

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
5	353.56	7	2	1.08	707.34	700	10	4.00E-02	68.6	1.66E+00	T

Flags: "T" = Tentatively associated

Interference Report  
Sample ID : 30268

Page : 4  
Acquisition date : 29-MAY-2014 15:52:53

No interference correction performed

Nuclide Type: natural

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected uCi/GR	Decay Corr uCi/GR	1-Sigma %Error
K-40	1460.83	103	10.67*	5.314E-01	1.283E-05	1.283E-05	9.95
TL-208	72.80	-----	2.14	1.594E+00	-----	Line Not Found	-----
	74.97	33	3.60	1.680E+00	3.830E-06	6.469E-06	29.44
	84.79	-----	1.27	2.058E+00	-----	Line Not Found	-----
	252.45	-----	0.80	2.021E+00	-----	Line Not Found	-----
	277.28	-----	6.80	1.920E+00	-----	Line Not Found	-----
	510.61	-----	21.60	1.265E+00	-----	Line Not Found	-----
	583.02	36	86.00*	1.128E+00	2.600E-07	4.393E-07	20.60
	763.06	-----	1.64	8.744E-01	-----	Line Not Found	-----
	860.30	-----	12.00	7.770E-01	-----	Line Not Found	-----
PB-212	74.81	33	10.50	1.680E+00	1.313E-06	1.316E-06	29.44
	77.11	30	17.70	1.785E+00	6.768E-07	6.786E-07	31.73
	87.19	-----	6.27	2.129E+00	-----	Line Not Found	-----
	90.13	-----	1.86	2.206E+00	-----	Line Not Found	-----
	115.12	-----	0.59	2.535E+00	-----	Line Not Found	-----
	238.58	94	43.60*	2.082E+00	7.315E-07	7.334E-07	11.96
	300.03	-----	3.34	1.834E+00	-----	Line Not Found	-----
BI-214	76.86	30	0.58	1.785E+00	2.065E-05	2.244E-05	31.73
	79.29	-----	0.97	1.869E+00	-----	Line Not Found	-----
	609.31	32	46.10*	1.084E+00	4.468E-07	4.855E-07	21.01
	665.44	-----	1.56	9.985E-01	-----	Line Not Found	-----
	768.35	-----	4.88	8.685E-01	-----	Line Not Found	-----
	806.16	-----	1.23	8.283E-01	-----	Line Not Found	-----
	934.04	-----	3.16	7.177E-01	-----	Line Not Found	-----
	1120.27	-----	15.00	6.114E-01	-----	Line Not Found	-----
	1155.18	-----	1.69	5.973E-01	-----	Line Not Found	-----
	1238.11	-----	5.92	5.697E-01	-----	Line Not Found	-----
	1280.95	-----	1.47	5.585E-01	-----	Line Not Found	-----
	1377.66	-----	4.02	5.401E-01	-----	Line Not Found	-----
	1385.30	-----	0.78	5.391E-01	-----	Line Not Found	-----
	1401.48	-----	1.39	5.370E-01	-----	Line Not Found	-----
	1407.97	-----	2.48	5.362E-01	-----	Line Not Found	-----
	1509.22	-----	2.19	5.292E-01	-----	Line Not Found	-----
	1583.22	-----	0.72	5.296E-01	-----	Line Not Found	-----
	1661.26	-----	1.15	5.351E-01	-----	Line Not Found	-----
	1729.58	-----	3.05	5.442E-01	-----	Line Not Found	-----
	1764.49	-----	15.90	5.503E-01	-----	Line Not Found	-----
	1847.41	-----	2.12	5.694E-01	-----	Line Not Found	-----
PB-214	53.17	-----	1.10	5.543E-01	-----	Line Not Found	-----
	74.81	33	6.52	1.680E+00	2.115E-06	2.249E-06	29.44
	77.11	30	11.00	1.785E+00	1.089E-06	1.158E-06	31.73
	87.19	-----	3.88	2.129E+00	-----	Line Not Found	-----
	90.13	-----	1.15	2.206E+00	-----	Line Not Found	-----
	241.92	28	7.46	2.067E+00	1.286E-06	1.368E-06	27.70
	258.94	-----	0.55	1.994E+00	-----	Line Not Found	-----
	295.09	38	19.20*	1.851E+00	7.604E-07	8.088E-07	21.27
	351.87	50	37.10	1.662E+00	5.698E-07	6.061E-07	15.96
	785.83	-----	1.09	8.495E-01	-----	Line Not Found	-----
	839.00	-----	0.59	7.964E-01	-----	Line Not Found	-----



Nuclide Type: natural

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected Decay Corr		1-Sigma
					uCi/GR	uCi/GR	%Error
AC-228	89.96	-----	3.40	2.201E+00	-----	Line Not Found	-----
	93.35	-----	5.60	2.279E+00	-----	Line Not Found	-----
	99.55	-----	1.30	2.389E+00	-----	Line Not Found	-----
	105.36	-----	2.00	2.463E+00	-----	Line Not Found	-----
	108.99	-----	0.67	2.496E+00	-----	Line Not Found	-----
	129.03	-----	2.90	2.562E+00	-----	Line Not Found	-----
	153.89	-----	0.84	2.496E+00	-----	Line Not Found	-----
	209.39	-----	4.10	2.221E+00	-----	Line Not Found	-----
	216.24	-----	0.80	2.187E+00	-----	Line Not Found	-----
	270.26	-----	3.80	1.948E+00	-----	Line Not Found	-----
	328.07	-----	3.50	1.738E+00	-----	Line Not Found	-----
	338.42	-----	12.40	1.704E+00	-----	Line Not Found	-----
	340.94	-----	0.52	1.696E+00	-----	Line Not Found	-----
	409.62	-----	2.20	1.499E+00	-----	Line Not Found	-----
	463.10	-----	4.60	1.368E+00	-----	Line Not Found	-----
	562.65	-----	1.01	1.164E+00	-----	Line Not Found	-----
	581.52	-----	3.00	1.131E+00	-----	Line Not Found	-----
	726.63	-----	0.87	9.173E-01	-----	Line Not Found	-----
	755.28	-----	1.32	8.833E-01	-----	Line Not Found	-----
	772.28	-----	1.09	8.641E-01	-----	Line Not Found	-----
	782.12	-----	0.59	8.534E-01	-----	Line Not Found	-----
	794.79	-----	4.60	8.400E-01	-----	Line Not Found	-----
	830.59	-----	0.63	8.043E-01	-----	Line Not Found	-----
	835.60	-----	1.71	7.996E-01	-----	Line Not Found	-----
	840.44	-----	0.94	7.951E-01	-----	Line Not Found	-----
	904.29	-----	0.89	7.403E-01	-----	Line Not Found	-----
	911.16	-----	29.00*	7.349E-01	-----	Line Not Found	-----
	964.64	-----	5.80	6.962E-01	-----	Line Not Found	-----
	968.97	22	17.40	6.934E-01	1.305E-06	1.311E-06	22.90
	1246.60	-----	0.57	5.673E-01	-----	Line Not Found	-----
	1459.19	-----	1.06	5.315E-01	-----	Line Not Found	-----
	1496.00	-----	1.05	5.296E-01	-----	Line Not Found	-----
	1501.44	-----	0.58	5.294E-01	-----	Line Not Found	-----
	1580.30	-----	0.71	5.295E-01	-----	Line Not Found	-----
	1588.23	-----	3.60	5.298E-01	-----	Line Not Found	-----
	1630.47	-----	1.95	5.324E-01	-----	Line Not Found	-----
	1638.10	-----	0.54	5.330E-01	-----	Line Not Found	-----

Flag: "\*" = Keyline

Minimum Detectable Activity Report  
Sample ID : 30268

Page : 7  
Acquisition date : 29-MAY-2014 15:52:53

Nuclide	Bckgnd Sum	Energy (keV)	MDA (uCi/GR)
BE-7	2.	477.61	4.7263E-07
MN-54	4.	834.83	1.0523E-07
MN-56	2.	846.81	8.0656E-08
CO-57	22.	122.06	7.8894E-08
CO-58	5.	810.79	1.1205E-07
CO-60	1.	1332.50	1.0707E-07
SB-124	2.	602.73	6.5930E-08
SB-125	3.	427.88	1.7856E-07
CS-134	6.	604.71	9.0388E-08
CS-137	6.	661.66	1.1639E-07