US EPA RECORDS CENTER REGION 5
405513

Fw: Lindsay Light II Site /OU18/ 515 Peshtigo - Gamma Spec Results

VERNETA SIMON to: Mark Bedford, Phillip Brown 09/07/2011 08:05 AM
Cc: Mary Fulghum, Cathleen Martwick

Please include the data below in the Administrative Record and Site file. I am currently drafting the Action Memo. Thanks, Verneta
----- Forwarded by VERNETA SIMON/R5/USEPA/US on 09/07/2011 08:03 AM -----

From:	"Kornder, Steve" <Steve.Kornder@aecom.com>
To:	VERNETA SIMON/R5/USEPA/US@EPA
Cc:	Cathleen Martwick/R5/USEPA/US@EPA, "Biernacki, Donald" <dbiernacki@relatedmidwest.com>, "Dombrowski, Leo" <Dombrowski@wildman.com>, EUGENE JABLONOWSKI/R5/USEPA/US@EPA, "Koch, Larry" <lkoch@relatedmidwest.com>, Mary Fulghum/R5/USEPA/US@EPA, "Schmidt, Brian" <Brian.Schmidt@aecom.com>
Date:	09/07/2011 07:54 AM
Subject:	515 Peshtigo - Gamma Spec Results

Good Morning:

The gamma spec results attached indicated a total radium value of 76 pCi/g versus the USEPA cleanup criteria of 7.1 pCi/g (radium-228 was 74 pCi/g and radium-226 was 2 pCi/g.

Please contact me if you would like to discuss.

Sincerely,
Steve Kornder, Ph.D.
Senior Project Geochemist
D 847.279.2448 C 847.343.6007

AECOM
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steve.kornder@aecom.com

-----Original Message-----
From: Simon.Verneta@epamail.epa.gov [mailto:Simon.Verneta@epamail.epa.gov]
Sent: Wednesday, September 07, 2011 7:50 AM
To: Kornder, Steve
Cc: Schmidt, Brian; Martwick.Cathleen@epamail.epa.gov; Biernacki, Donald; Dombrowski, Leo; Jablonowski.Eugene@epamail.epa.gov; Koch, Larry; Fulghum.Mary@epamail.epa.gov
Subject: Re: 515 Peshtigo

Any results from RSSI?

G110149 AECOM I-1.9-2'.pdf

ORTEC g v - i (1215) Env32 G53W4.22 02-SEP-2011 11:40:05
RSSI Spectrum name: G110149.An1

Sample description
G110149 AECOM I-1.9-2' 404.7g

Spectrum Filename: H:\GammaVision\User\Spectra\G110149.An1

***** S U M M A R Y O F N U C L I D E S I N S A M P L E *****

Nuclide		Time of Count Activity uCi/g	Uncertainty Counting	1 Sigma Total
PB-214		2.01E-06	9.03E+00%	9.56E+00%
PB-212		7.10E-05	4.04E-01%	3.37E+00%
BI-212		8.31E-05	2.53E+00%	3.42E+00%
AC-228		7.41E-05	9.20E-01%	2.48E+00%
Tl-210	<	2.96E-08		
TL-208		2.36E-05	9.93E-01%	2.54E+00%
K-40	#	1.46E-05	6.64E+00%	7.01E+00%
BI-214		2.01E-06	1.17E+01%	1.20E+01%

- All peaks for activity calculation had bad shape.
* - Activity omitted from total
& - Activity omitted from total and all peaks had bad shape.
< - MDA value printed.
A - Activity printed, but activity < MDA.
B - Activity < MDA and failed test.
C - Area < Critical level.
F - Failed fraction or key line test.
H - Halflife limit exceeded

---------- S U M M A R Y ----------

Total Activity (1620.4 to 1897.3 keV) 2.70E-04 uCi/g

The library has energies which are not separable.

This section based on library: 1001a.Lib

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***** S U M M A R Y O F L I B R A R Y P E A K U S A G E *****

- Nuclide - Name	Code	Average Activity uCi/g	Peak Energy keV	Activity uCi/g	Code	MDA Value uCi/g	COMMENTS
PB-214	N	2.01E-06					
			351.93	2.04E-06	(P	1.34E-07 8.63E+00	G
			295.22	1.53E-06 -	P	2.26E-07 1.48E+01	G
							Energy duplication
			77.11	2.01E-06 }	P	1.85E-06 1.02E+01	XA
			241.99	1.82E-06	(P	9.91E-07 5.26E+01	G
			4 of	5 peaks found			
PB-212	N	7.10E-05					
			238.63	7.10E-05	(P	1.05E-07 4.04E-01	G
							Energy duplication
			77.11	6.70E-05 }	P	7.32E-07 1.06E+00	XA
							Energy duplication
			74.82	7.62E-05 +	P	1.82E-06 2.17E+00	XA
			300.09	7.05E-05	(P	1.56E-06 3.78E+00	G
			4 of	4 peaks found			
BI-212	N	8.31E-05					
			727.33	8.36E-05	(P	1.08E-06 2.53E+00	G
			1620.50	9.16E-05 +	P	5.84E-06 7.72E+00	G
			785.37	8.01E-05	(P	5.21E-06 7.42E+00	G
			893.41	9.68E-05 +	P	1.55E-05 2.17E+01	G
			4 of	4 peaks found			
AC-228	N	7.41E-05					
			911.20	7.36E-05	(P	2.30E-07 1.06E+00	G
			968.97	7.74E-05	(P	2.52E-07 1.14E+00	G
			338.32	7.17E-05	(P	5.25E-07 1.65E+00	G
			964.77	7.16E-05	(P	1.48E-06 2.88E+00	G
			463.00	6.19E-05 -	P	2.05E-06 4.24E+00	G
			5 of	5 peaks found			
TL-208	N	2.36E-05					
			583.19	2.34E-05	(P	8.50E-08 9.91E-01	G
			510.77	2.46E-05	@(P	3.13E-07 2.57E+00	G
			860.58	2.75E-05 +	P	9.29E-07 4.99E+00	G
			277.37	2.25E-05	@(P	7.70E-07 6.32E+00	G
			763.13	2.22E-05 -	P	3.94E-06 1.64E+01	G
			5 of	5 peaks found			
K-40	N	1.46E-05					
			1460.82	1.46E-05	@(P	5.32E-07 5.38E+00	G
			1 of	1 peaks found			
BI-214	N	2.01E-06					
			609.32	2.01E-06	(P	1.46E-07 1.10E+01	G
			1764.49	2.85E-06 +	P	3.66E-07 1.32E+01	G
			1120.29	3.43E-06 +	P	4.61E-07 1.77E+01	G
			1238.12	3.13E-06 +	P	8.71E-07 3.62E+01	G
			768.36	1.34E-06 -	P	1.24E-06 7.94E+01	G

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RSSI                            Spectrum name: G110149.An1

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Spectrum Filename: H:\GammaVision\User\Spectra\G110149.An1

                              5 of   5 peaks found
  ( - This peak used in the nuclide activity average.

  * - Peak is too wide, but only one peak in library.
  ! - Peak is part of a multiplet and this area went
      negative during deconvolution.
  ? - Peak is too narrow.
  @ - Peak is too wide at FW25M, but ok at FWHM.
  % - Peak fails sensitivity test.
  $ - Peak identified, but first peak of this nuclide
      failed one or more qualification tests.
  + - Peak activity higher than counting uncertainty range.
  - - Peak activity lower than counting uncertainty range.
  = - Peak outside analysis energy range.
  & - Calculated peak centroid is not close enough to the
      library energy centroid for positive identification.
  P - Peakbackground subtraction
  } - Peak is too close to another for the activity
      to be found directly.

  Nuclide Codes:                      Peak Codes:
  T - Thermal Neutron Activation      G - Gamma Ray
  F - Fast Neutron Activation         X - X-Ray
  I - Fission Product                 P - Positron Decay
  N - Naturally Occurring Isotope     S - Single-Escape
  P - Photon Reaction                 D - Double-Escape
  C - Charged Particle Reaction       K - Key Line
  M - No MDA Calculation              A - Not in Average
  R - Coincidence Corrected           C - Coincidence Peak
  H - Halflife limit exceeded

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -


This section based on library: 1001a.Lib
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********** U N I D E N T I F I E D P E A K S U M M A R Y **********

Peak Channel	Centroid Energy	Background Counts	Net Area Counts	Intensity Cts/Sec	1 Sigma %	FWHM keV		Suspected Nuclide
137.80	39.01	4696.	3366.	0.935	4.42	1.128	-	sM
166.21	45.59	4152.	177.	0.049	56.53	0.435	-	sM
202.89	54.10	5154.	283.	0.079	42.54	0.919	-	s
333.23	84.32	10509.	2485.	0.690	6.17	1.432	-	D
345.12	87.07	10834.	7545.	2.096	2.27	1.434	-	D
356.93	89.81	11270.	6029.	1.675	2.80	1.436	-	D
371.97	93.30	8772.	6649.	1.847	2.34	1.438	-	D
398.41	99.45	10246.	1465.	0.407	13.00	1.251	-	
422.82	105.11	9845.	2393.	0.665	8.29	1.743	-	s
438.60	108.77	7851.	552.	0.153	26.70	1.055	-	sD
465.28	114.96	9624.	718.	0.199	29.24	0.926	-	s
495.87	122.05	5868.	562.	0.156	29.24	0.856	-	s
526.30	129.11	12439.	3646.	1.013	5.88	1.093	-	s
578.09	141.12	7741.	213.	0.059	73.23	0.587	-	s
633.30	153.92	9337.	1306.	0.363	13.52	1.199	-	
793.07	190.98	8450.	366.	0.102	49.74	0.676	-	s
871.78	209.24	8913.	5955.	1.654	3.28	1.308	-	
941.65	225.44	4293.	388.	0.108	31.27	0.925	-	s
972.69	232.71	6286.	274.	0.076	41.41	1.534	-	D
985.87	235.76	21218.	657.	0.182	31.60	1.536	-	D
1008.58	241.03	46301.	5679.	1.577	5.52	1.540	-	D
1011.44	241.63	7887.	262.	0.073	48.38	1.541	-	D
1048.86	250.21	4299.	101.	0.028	91.90	1.547	-	c
1058.45	252.43	4395.	322.	0.090	29.62	1.548	-	D
1134.47	270.17	4940.	4452.	1.237	4.15	1.322	-	
1211.38	288.01	3421.	516.	0.143	20.75	1.118	-	s
1288.50	305.90	1802.	354.	0.098	26.64	1.091	-	sM
1383.07	327.83	4242.	3306.	0.918	4.31	1.441	-	D
1401.69	332.15	2358.	376.	0.104	23.40	1.197	-	sM
1561.01	369.11	1308.	67.	0.019	80.99	0.582	-	sc
1599.28	377.99	1805.	128.	0.036	54.16	0.342	-	s
1692.64	399.65	2564.	429.	0.119	27.66	0.388	-	s
1734.30	409.31	2398.	1821.	0.506	6.02	1.301	-	
1839.47	433.71	1773.	204.	0.057	37.62	0.660	-	s
1921.83	452.82	1743.	455.	0.126	18.38	0.937	-	s
2394.16	562.41	2011.	775.	0.215	14.99	1.522	-	
2621.74	615.21	784.	64.	0.018	67.41	0.397	-	c
2727.17	639.67	1563.	208.	0.058	40.42	0.716	-	s
2753.70	645.83	1285.	288.	0.080	28.90	0.637	-	s
2855.10	669.36	668.	52.	0.015	72.92	0.599	-	sc
2923.92	685.33	1116.	234.	0.065	36.22	0.639	-	s
3083.12	722.27	749.	62.	0.017	69.55	0.569	-	sc
3133.87	734.36	833.	137.	0.038	30.94	1.895	-	D
3148.41	737.73	781.	103.	0.029	39.74	1.897	-	D
3224.64	755.21	940.	677.	0.188	7.47	1.910	-	D
3239.58	758.68	1375.	65.	0.018	81.22	1.913	-	c
3297.83	772.19	1042.	839.	0.233	6.44	1.923	-	D
3339.63	781.87	1097.	344.	0.096	14.63	1.930	-	D
3395.56	794.78	742.	2356.	0.654	3.41	1.618	-	
3527.94	825.46	629.	115.	0.032	32.12	1.963	-	D
3548.22	830.17	573.	324.	0.090	11.83	1.966	-	D
3571.02	835.51	599.	919.	0.255	5.00	1.970	-	D

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3591.75	840.32	628.	479.	0.133	8.69	1.974	-	D
3864.52	903.62	674.	395.	0.110	17.72	0.841	-	sM
4557.88	1064.56	345.	227.	0.063	19.03	1.550	-	s
4594.47	1073.05	52.	20.	0.006	55.68	0.547	-	sD
4617.92	1078.49	369.	366.	0.102	15.59	1.099	-	s
4754.56	1110.21	414.	296.	0.082	16.97	1.258	-	s
4840.88	1130.25	217.	85.	0.024	41.28	0.392	-	s
4894.24	1142.64	153.	58.	0.016	44.63	0.527	-	s
5162.78	1204.98	110.	38.	0.011	51.19	0.380	-	s
6310.55	1471.48	130.	42.	0.012	62.20	0.663	-	s
6413.45	1495.38	255.	372.	0.103	13.55	0.867	-	s
6619.74	1543.28	63.	50.	0.014	34.76	0.389	-	s
6812.77	1588.12	322.	1209.	0.336	3.56	2.557	-	D
6830.73	1592.29	639.	596.	0.166	7.26	2.560	-	D
6996.15	1630.70	180.	595.	0.165	7.24	2.084	-	sM
7766.24	1809.57	42.	22.	0.006	54.45	0.642	-	s
7907.41	1842.37	138.	118.	0.033	27.06	0.798	-	s

s - Peak fails shape tests.
D - Peak area deconvoluted.
L - Peak written from unknown list.
C - Area < Critical level.
M - Peak is close to a library peak.

This section based on library: 1001a.Lib

```
     ORTEC g v - i (1215) Env32  G53W4.22  02-SEP-2011 11:40:05
RSSI                            Spectrum name: G110149.An1

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Spectrum Filename: H:\GammaVision\User\Spectra\G110149.An1



Acquisition information
       Start time:                 02-Sep-2011 10:35:03
       Live time:               3600
       Real time:               3643
       Dead time:                  1.17 %
       Detector ID:                    1

Detector system
     USER-802B915354 MCB 9


Calibration
       Filename:                   G110149.An1
     08/12/11 calibration


       Energy Calibration
            Created:               02-Sep-2011 10:26:59
            Zero offset:           7.050 keV
            Gain:                  0.232 keV/channel
            Quadratic:             2.516E-08 keV/channel^2

       Efficiency Calibration
            Created:               12-Aug-2011 14:44:46
            Type:                  Polynomial
            Uncertainty:           0.018 %
            Coefficients:         -0.028850  -5.092721   0.819619
                                  -0.106686   0.005580  -0.000121

Library Files
       Main analysis library:      1001a.Lib
       Library Match Width:        0.500
       Peak stripping:             Library based

Analysis parameters
       Analysis engine:            Env32   G53W4.22
       Start channel:             20 (    11.69keV )
       Stop channel:            8144 (  1897.33keV )
       Peak rejection level:     100.000%
       Peak search sensitivity:    2
       Sample Size:                4.0470E+02
       Activity scaling factor:    1.0000E+00/(  1.0000E+00*  4.0470E+02) =
                                   2.4710E-03
       Detection limit method:     Traditional ORTEC method
       Random error:               1.0000000E+00
       Systematic error:           1.0000000E+00
       Fraction Limit:            10.000%
       Background width:           best method (based on spectrum).
       Half lives decay limit:    12.000
       Activity range factor:      2.000
       Min. step backg. energy     0.000
       Multiplet shift channel     2.000

Corrections                          Status          Comments
       Decay correct to date:         NO
```

```
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       Decay during acquisition:      NO
       Decay during collection:       NO
       True coincidence correction:   NO
       Peaked background correction:  YES       10_12_30 30%.Pbc
                                                30-Dec-2010 10:17:12
       Absorption (Internal):         NO
       Geometry correction:           NO
       Random summing:                NO


total peaks alloc.     29  cutoff   20.00000     %
       Energy Calibration
            Normalized diff:       0.1179
```

Laboratory: RSSI