

Health Physics Sample Records

Sample ID: 142460

Type: RLSSS

Type Detail: SAND

Status: APPROVED

Rasterized:

Description: 140529BD 27 STARYARD SURVEY PT 27

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: 06/04/14 07:38

Comments:

Origin

Mat. Size/Volume: 1714 GRAMS

Docmnt/MO/Act #:

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

Description: STARYARD SURVEY PT 27

Collection

Sample Tech: DYNES, WILLIAM J

Sample Date: 05/29/14 12:15

Count Time: 900 (secs.)

Tritium Req: No

Sample Size/Volume: 1714 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: (in.)

Equip ID:

Stored By: ,

Date: 00/00/00 00:00

Sample Loc:

Other:

Material Loc:

## Health Physics Sample Records

Sample ID: **142460**

Type: RLSSS

Type Detail: SAND

Status: APPROVED

Rasterized:

Description: 140529BD 27 STARYARD SURVEY PT 27

### Analysis

| Geometry             | MCA ID | Quant. | Units | Method | FP/AP | Lab | Analysis By     | Date           | Mod ID | Mod Date |
|----------------------|--------|--------|-------|--------|-------|-----|-----------------|----------------|--------|----------|
| B_1L_marinelli_sand_ | 30341  | 1714   | GR    |        | .000  |     | PARK, MICHAEL C | 06/04/14 15:48 |        |          |

  

| Isotope | Mode   | Activity | Activity Uncert. | LLD/MDA   | % Abund. | Atom. No. | Comments | Mod Id | Mod Date |
|---------|--------|----------|------------------|-----------|----------|-----------|----------|--------|----------|
| 0       | K-40   | NT       | 0.00001073       | 1.62E-6   |          | 5.037%    | 40       |        |          |
| 0       | TL-208 | NT       | 2.971E-7         | 8.58E-8   |          | 0.139%    | 208      |        |          |
| 0       | PB-212 | NT       | 5.584E-7         | 9.52E-8   |          | 0.262%    | 212      |        |          |
| 0       | BI-214 | NT       | 6.36E-7          | 1.181E-7  |          | 0.299%    | 214      |        |          |
| 0       | PB-214 | NT       | 7.529E-7         | 1.325E-7  |          | 0.353%    | 214      |        |          |
| 0       | RN-222 | NT       | 0.0001971        | 0.0000467 |          | 92.518%   | 222      |        |          |
| 0       | RA-224 | NT       | 2.966E-6         | 7.94E-7   |          | 1.392%    | 224      |        |          |
| 0       | BE-7   | AP       | 1.151E-6         |           |          | 0.000%    | 7        |        |          |
| 0       | MN-54  | AP       | 1.2421E-7        |           |          | 0.000%    | 54       |        |          |
| 0       | MN-56  | AP       | 1.0188E-7        |           |          | 0.000%    | 56       |        |          |
| 0       | CO-57  | AP       | 8.9216E-8        |           |          | 0.000%    | 57       |        |          |
| 0       | CO-58  | AP       | 1.5692E-7        |           |          | 0.000%    | 58       |        |          |
| 0       | CO-60  | AP       | 1.3393E-7        |           |          | 0.000%    | 60       |        |          |
| 0       | SB-124 | AP       | 7.3627E-8        |           |          | 0.000%    | 124      |        |          |
| 0       | SB-125 | FP       | 1.8204E-7        |           |          | 0.000%    | 125      |        |          |
| 0       | CS-134 | FP       | 1.0826E-7        |           |          | 0.000%    | 134      |        |          |
| 0       | CS-137 | FP       | 1.3883E-7        |           |          | 0.000%    | 137      |        |          |

### Analysis Review

Re-Analyze: No

Lic Rad Mat Present: No

Reviewed: COOPER, TERRY L

Date: 06/10/14 13:29

Hp Eng Rvw Req: Yes

Rad Mat Present: Yes

HP Notified Name:

Comments:

Health Physics Sample Records

Sample ID: 142460

Type: RLSSS

Type Detail: SAND

Status: APPROVED

Rasterized:

Description: 140529BD 27 STARYARD SURVEY PT 27

Review/Approve

HP Eng Review

Reviewed: COOPER, TERRY L

Date: 06/10/14 13:29

Comments:

Disposition

Disposition: OTHER

Result: Sample contains only natural isotopes

Remarks:

Final Approval

Approved: COOPER, TERRY L

Date: 06/10/14 13:29

Comments:

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*****
*          SONGS                      HEALTH PHYSICS REPORT          4-JUN-2014 15:42  *
*-----*
*                >>>> SAMPLE PARAMETERS <<<<<                *
*-----*
* Title       : 140529BD 27 STARYARD SURVEY PT 27                *
* ID          : 30341                      Acquisition date: 4-JUN-2014 15:39:42. *
* Start Time: 4-JUN-2014 15:39:00.                      *
* Stop Time: 4-JUN-2014 15:39:00.                      Counting System : U2GSP *
* Quantity   : 1.71400E+03 GR                      IHPS Sample Number: 142460 *
* Geometry   : B_1L_marinelli_sand_1                Analysis Library : HP_NATURAL *
*                               Operator: MICHAEL PARK *
*-----*
*                >>>> B #42-TP11663A PARAMETERS <<<<<                *
*-----*
* Elapsed Live Time : 0 00:03:00.47 Calibration : 3-JUN-2014 20:43: *
* Elapsed Real Time : 0 00:03:00.50 Energy Offset : -4.80178E-01 *
* Deadtime          : 0.0% Energy Slope : 5.00073E-01 *
* Activity Mult Factor: 1.00000E+00 Energy Tolerance: 1.00000 *
* Half Life Ratio   : 8.00000 Sensitivity : 5.00000 *
*-----*
*****

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Post-NID Peak Search Report

| It | Energy  | Area | Bkgnd | FWHM | Channel | Left | Pw | %Err | Fit      | Nuclides |
|----|---------|------|-------|------|---------|------|----|------|----------|----------|
| 5  | 238.47  | 50   | 8     | 1.25 | 477.82  | 473  | 15 | 17.1 | 9.45E-01 | PB-212   |
| 5  | 241.58  | 24   | 4     | 1.78 | 484.04  | 473  | 15 | 26.8 |          | RA-224   |
|    |         |      |       |      |         |      |    |      |          | PB-214   |
| 1  | 352.00  | 42   | 3     | 2.03 | 704.85  | 699  | 12 | 17.6 | 6.42E-01 | PB-214   |
| 1  | 510.59  | 16   | 0     | 1.50 | 1021.97 | 1018 | 7  | 23.7 | 2.46E-01 | RN-222   |
|    |         |      |       |      |         |      |    |      |          | TL-208   |
| 1  | 583.65  | 17   | 2     | 1.40 | 1168.08 | 1163 | 8  | 28.9 | 5.26E-01 | TL-208   |
| 1  | 609.45  | 27   | 0     | 2.11 | 1219.65 | 1215 | 9  | 18.6 | 5.07E-01 | BI-214   |
| 1  | 1460.99 | 55   | 2     | 1.82 | 2922.42 | 2916 | 11 | 15.1 | 1.86E+00 | K-40     |

Summary of Nuclide Activity  
Sample ID : 30341

Page : 2  
Acquisition date : 4-JUN-2014 15:39:42

Total number of lines in spectrum 7  
Number of unidentified lines 0  
Number of lines tentatively identified by NID 7 100.00%

Nuclide Type : natural

| Nuclide          | Hlife     | Decay | Uncorrected<br>uCi/GR | Decay Corr<br>uCi/GR | Decay Corr<br>1-Sigma Error | 1-Sigma<br>%Error | Flags |
|------------------|-----------|-------|-----------------------|----------------------|-----------------------------|-------------------|-------|
| K-40             | 1.28E+09Y | 1.00  | 1.073E-05             | 1.073E-05            | 0.162E-05                   | 15.12             | A     |
| TL-208           | 3.05M     | 1.62  | 1.837E-07             | 2.971E-07            | 0.858E-07                   | 28.87             | A     |
| PB-212           | 10.64H    | 1.00  | 5.571E-07             | 5.584E-07            | 0.952E-07                   | 17.05             | A     |
| BI-214           | 19.90M    | 1.08  | 5.892E-07             | 6.360E-07            | 1.181E-07                   | 18.57             | A     |
| PB-214           | 26.80M    | 1.06  | 7.113E-07             | 7.529E-07            | 1.325E-07                   | 17.60             | KA    |
| RN-222           | 3.83D     | 1.00  | 1.970E-04             | 1.971E-04            | 0.467E-04                   | 23.69             | A     |
| RA-224           | 3.66D     | 1.00  | 2.965E-06             | 2.966E-06            | 0.794E-06                   | 26.76             | A     |
| Total Activity : |           |       | 2.128E-04             | 2.130E-04            |                             |                   |       |

Grand Total Activity : 2.128E-04 2.130E-04

Flags: "K" = Keyline not found  
"E" = Manually edited

"M" = Manually accepted  
"A" = Nuclide specific abn. limit

Unidentified Energy Lines  
Sample ID : 30341

Page : 3  
Acquisition date : 4-JUN-2014 15:39:42

None

Flags: "T" = Tentatively associated

Interference Report  
Sample ID : 30341

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Acquisition date : 4-JUN-2014 15:39:42

No interference correction performed

Nuclide Type: natural

| Nuclide | Energy  | Area   | %Abn      | %Eff      | Uncorrected Decay Corr |                | 1-Sigma<br>%Error |       |
|---------|---------|--------|-----------|-----------|------------------------|----------------|-------------------|-------|
|         |         |        |           |           | uCi/GR                 | uCi/GR         |                   |       |
| K-40    | 1460.83 | 55     | 10.67*    | 4.211E-01 | 1.073E-05              | 1.073E-05      | 15.12             |       |
| TL-208  | 72.80   | -----  | 2.14      | 1.070E+00 | -----                  | Line Not Found | -----             |       |
|         | 74.97   | -----  | 3.60      | 1.156E+00 | -----                  | Line Not Found | -----             |       |
|         | 84.79   | -----  | 1.27      | 1.506E+00 | -----                  | Line Not Found | -----             |       |
|         | 252.45  | -----  | 0.80      | 1.745E+00 | -----                  | Line Not Found | -----             |       |
|         | 277.28  | -----  | 6.80      | 1.645E+00 | -----                  | Line Not Found | -----             |       |
|         | 510.61  | 16     | 21.60     | 1.035E+00 | 6.386E-07              | 1.033E-06      | 23.69             |       |
|         | 583.02  | 17     | 86.00*    | 9.190E-01 | 1.837E-07              | 2.971E-07      | 28.87             |       |
|         | 763.06  | -----  | 1.64      | 7.126E-01 | -----                  | Line Not Found | -----             |       |
|         | 860.30  | -----  | 12.00     | 6.341E-01 | -----                  | Line Not Found | -----             |       |
|         | PB-212  | 74.81  | -----     | 10.50     | 1.150E+00              | -----          | Line Not Found    | ----- |
| 77.11   |         | -----  | 17.70     | 1.239E+00 | -----                  | Line Not Found | -----             |       |
| 87.19   |         | -----  | 6.27      | 1.579E+00 | -----                  | Line Not Found | -----             |       |
| 90.13   |         | -----  | 1.86      | 1.662E+00 | -----                  | Line Not Found | -----             |       |
| 115.12  |         | -----  | 0.59      | 2.085E+00 | -----                  | Line Not Found | -----             |       |
| 238.58  |         | 50     | 43.60*    | 1.805E+00 | 5.571E-07              | 5.584E-07      | 17.05             |       |
| 300.03  |         | -----  | 3.34      | 1.562E+00 | -----                  | Line Not Found | -----             |       |
| BI-214  |         | 76.86  | -----     | 0.58      | 1.229E+00              | -----          | Line Not Found    | ----- |
|         |         | 79.29  | -----     | 0.97      | 1.320E+00              | -----          | Line Not Found    | ----- |
|         |         | 609.31 | 27        | 46.10*    | 8.831E-01              | 5.892E-07      | 6.360E-07         | 18.57 |
|         | 665.44  | -----  | 1.56      | 8.131E-01 | -----                  | Line Not Found | -----             |       |
|         | 768.35  | -----  | 4.88      | 7.078E-01 | -----                  | Line Not Found | -----             |       |
|         | 806.16  | -----  | 1.23      | 6.754E-01 | -----                  | Line Not Found | -----             |       |
|         | 934.04  | -----  | 3.16      | 5.861E-01 | -----                  | Line Not Found | -----             |       |
|         | 1120.27 | -----  | 15.00     | 4.982E-01 | -----                  | Line Not Found | -----             |       |
|         | 1155.18 | -----  | 1.69      | 4.860E-01 | -----                  | Line Not Found | -----             |       |
|         | 1238.11 | -----  | 5.92      | 4.615E-01 | -----                  | Line Not Found | -----             |       |
| 1280.95 | -----   | 1.47   | 4.510E-01 | -----     | Line Not Found         | -----          |                   |       |
| 1377.66 | -----   | 4.02   | 4.323E-01 | -----     | Line Not Found         | -----          |                   |       |
| 1385.30 | -----   | 0.78   | 4.311E-01 | -----     | Line Not Found         | -----          |                   |       |
| 1401.48 | -----   | 1.39   | 4.287E-01 | -----     | Line Not Found         | -----          |                   |       |
| 1407.97 | -----   | 2.48   | 4.277E-01 | -----     | Line Not Found         | -----          |                   |       |
| 1509.22 | -----   | 2.19   | 4.165E-01 | -----     | Line Not Found         | -----          |                   |       |
| 1583.22 | -----   | 0.72   | 4.120E-01 | -----     | Line Not Found         | -----          |                   |       |
| 1661.26 | -----   | 1.15   | 4.103E-01 | -----     | Line Not Found         | -----          |                   |       |
| 1729.58 | -----   | 3.05   | 4.114E-01 | -----     | Line Not Found         | -----          |                   |       |
| 1764.49 | -----   | 15.90  | 4.128E-01 | -----     | Line Not Found         | -----          |                   |       |
| 1847.41 | -----   | 2.12   | 4.187E-01 | -----     | Line Not Found         | -----          |                   |       |
| PB-214  | 53.17   | -----  | 1.10      | 2.929E-01 | -----                  | Line Not Found | -----             |       |
|         | 74.81   | -----  | 6.52      | 1.150E+00 | -----                  | Line Not Found | -----             |       |
|         | 77.11   | -----  | 11.00     | 1.239E+00 | -----                  | Line Not Found | -----             |       |
|         | 87.19   | -----  | 3.88      | 1.579E+00 | -----                  | Line Not Found | -----             |       |
|         | 90.13   | -----  | 1.15      | 1.662E+00 | -----                  | Line Not Found | -----             |       |
|         | 241.92  | 24     | 7.46      | 1.792E+00 | 1.550E-06              | 1.640E-06      | 26.76             |       |
|         | 258.94  | -----  | 0.55      | 1.718E+00 | -----                  | Line Not Found | -----             |       |
|         | 295.09  | -----  | 19.20*    | 1.579E+00 | -----                  | Line Not Found | -----             |       |
|         | 351.87  | 42     | 37.10     | 1.395E+00 | 7.113E-07              | 7.529E-07      | 17.60             |       |
|         | 785.83  | -----  | 1.09      | 6.925E-01 | -----                  | Line Not Found | -----             |       |
| 839.00  | -----   | 0.59   | 6.497E-01 | -----     | Line Not Found         | -----          |                   |       |



Nuclide Type: natural

| Nuclide | Energy | Area  | %Abn  | %Eff      | Uncorrected<br>uCi/GR | Decay Corr<br>uCi/GR | 1-Sigma<br>%Error |
|---------|--------|-------|-------|-----------|-----------------------|----------------------|-------------------|
| RN-222  | 510.00 | 16    | 0.07* | 1.035E+00 | 1.970E-04             | 1.971E-04            | 23.69             |
| RA-224  | 83.79  | ----- | 0.20  | 1.474E+00 | -----                 | Line Not Found       | -----             |
|         | 240.76 | 24    | 3.90* | 1.792E+00 | 2.965E-06             | 2.966E-06            | 26.76             |

Flag: "\*" = Keyline

Minimum Detectable Activity Report  
Sample ID : 30341

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Acquisition date : 4-JUN-2014 15:39:42

| Nuclide | Bkgnd<br>Sum | Energy<br>(keV) | MDA<br>(uCi/GR) |
|---------|--------------|-----------------|-----------------|
| BE-7    | 7.           | 477.61          | 1.1510E-06      |
| MN-54   | 2.           | 834.83          | 1.2421E-07      |
| MN-56   | 1.           | 846.81          | 1.0188E-07      |
| CO-57   | 12.          | 122.06          | 8.9216E-08      |
| CO-58   | 4.           | 810.79          | 1.5692E-07      |
| CO-60   | 1.           | 1173.24         | 1.3393E-07      |
| SB-124  | 1.           | 602.73          | 7.3627E-08      |
| SB-125  | 1.           | 427.88          | 1.8204E-07      |
| CS-134  | 3.           | 604.71          | 1.0826E-07      |
| CS-137  | 3.           | 661.66          | 1.3883E-07      |