

Molycorp, Inc.
Molybdenum Group
300 Caldwell Avenue
Washington, PA 15301
Telephone (724) 222-5605
Facsimile (724) 222-7336

410-8778
8794

July 24, 2000

Mr. Larry Camper, Chief
Decommissioning Branch
United States Nuclear Regulatory
Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 28052

Subject: Investigation of Canton Volunteer Fire Department Land

Dear Mr. Camper,

In response to a request from the Nuclear Regulatory Commission, Molycorp initiated an investigation of a 3 plus acre parcel of land that Molycorp donated to the Canton VFD in 1998. The NRC's request was prompted by a concern raised by a member of the public that the property may contain contaminated material originating from the Washington site. This letter documents the results of our investigation.

The VFD property was formerly an old farm purchased by Molycorp in the mid 1970's. Molycorp never used this property for any industrial purpose but did raze two old outbuildings and two old houses for public safety reasons. In the mid 1980's Molycorp removed the top several feet of clean fill over a portion of the site for use in another remediation project.

Prior to donating the land, Molycorp completed an assessment to confirm that no contaminated material from the Molycorp site was used as fill on the property. This assessment included hydrocarbon analyses and radiation measurements in each of 20 boreholes that were drilled on the property. There was no significant hydrocarbon material identified. Regarding radiation measurements, the results from one of the 20 boreholes, i.e., Borehole #15, indicated levels that could have been above background levels. A copy of this report has been provided to NRC.

The drilling logs for the boreholes were reviewed to determine whether there was a different type of material in the subsurface area around Borehole #15 that would explain the elevated measurement. The logs indicated traces of gravel at the depth where the readings were made. Note that other boreholes also indicated traces of gravel (as well as traces of asphalt, concrete, and slag) but the radiation measurements in these other boreholes were at background levels. Molycorp concluded at the time that the radiation

Add: Larry Camper
E-RDS
NIMSSDI Public

level measured in Borehole #15 was very low and not attributable to fill material originating from the Molycorp site.

On June 15, 2000, additional splitspoon soil samples were collected at five locations in the vicinity of Borehole #15. One sample was collected as closely as possible to the #15 location and 4 additional samples were collected at surrounding locations. The samples were collected at a 1.5-ft to 3-ft depth, consistent with the depth of the elevated gamma reading in the original survey. In addition to the soil samples, small pieces of slag-like material were identified in two of the boreholes and were also collected. The soil samples and part of the two slag pieces were sent to Severn Trent Laboratories for radioanalytical analysis. The laboratory report is provided in Enclosure 1.

The most important results are the uranium to thorium ratios for the slag samples. The U-238/Th-232 ratios in the slag samples were 586/1 and 710/1. The U-238/Th-232 ratio in slag from the Molycorp site is below 0.12/1. This result provides a compelling argument for concluding that the slag found on the VFD property did not originate from Molycorp operations. The soil sample results indicated naturally occurring radionuclides within the range of natural background.

Samples of the slag were also sent to Hazen Research Laboratories for elemental analysis using x-ray fluorescence. The results are provided in Enclosure 2. Analysis of Molycorp FeCb slag can be found in the Site Characterization Report (Section 5, page 5-11). Elemental analyses of Molycorp slag were also performed by Pacific Northwest Laboratory under an NRC contract (Summary Report, "Solubility and Leaching Controls on Radionuclides in SDMP Waste," Page 9, December 1, 1998). The PNL results are provided in Enclosure 3 (note that Molycorp is "Site A"). A comparison of the Molycorp slag to that found on the VFD land indicates that the ratios of Ca/Si/Al are inconsistent with FeCb slag. The FeCb slag would also have about 3-4% lanthanide's, mostly Ce and La. The slag in question contained less than detection limits of these elements. The elemental analyses support the argument that the slag is not Molycorp material.

In conclusion, the soil samples collected in the vicinity of the Borehole #15 are consistent with natural background. The pieces of slag identified do not appear to be Molycorp material and the slag seems to be present in very limited quantities. The results of this investigation support the findings of the original survey.

Please contact me at 724-222-5605, ext. 517, if you have any questions.

Sincerely,



George W. Dawes
Senior Scientist

Xc; Canton Twp. VFD
Roy Woods, PA DEP
Craig Gordon, NRC Region 1

Molycorp, Inc.
Molybdenum Group
300 Caldwell Avenue
Washington, PA 15301
Telephone (724) 222-5605
Facsimile (724) 222-7336

July 13, 2000

Mr. Larry Camper, Chief
Decommissioning Branch
United States Nuclear Regulatory
Commission
One White Flint North
11555 Rockville Pike
Rockville, MD 28052

Subject: Supplement to Washington Facility Environmental Report, April 1997

Enclose please find a supplement to the Washington Facility Environmental Report (ER) in an "errata" format. The ER was revised to reflect three major changes in Molycorp's decommissioning approach since the ER was submitted. These changes include:

1. Lowering the unrestricted use levels from 30 pCi/g total thorium to 10 pCi/g total thorium.
2. Proposing to send the York waste to Waste Control Specialists as opposed to placement in a temporary storage facility on the Washington site.
3. Replacing 3 onsite cell options with one option as described in the Washington, Pa., Facility Decommissioning Plan Part 2 Revision (Part 2 DP)

An errata format was used since the majority of the information contained in the ER remains valid. In addition, much of the new technical information required is provided in the Part 2 DP and is included in the ER supplement by reference. A complete revision would require extensive duplication of information that currently exists.

Please contact me at 724-222-5605, ext. 517, if you have any questions regarding our request.

Sincerely,


George W. Dawes
Senior Scientist

SEVERN

TRENT

SERVICES

STL St. Louis

13715 Rider Trail North

Earth City, MO 63045

Tel 314 298 8566

Fax 314 298 8757

www.stl-inc.com

ANALYTICAL REPORT

REVISED

No Default

Lot #: F0F210196

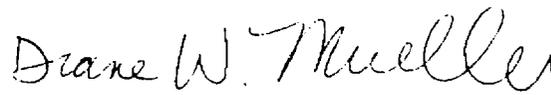
DAVE FAUVER

Radiological Services Inc

31 Shaw Street

New London, CT 06320

SEVERN TRENT LABORATORIES, INC.



Diane W. Mueller

Project Manager

July 24, 2000

REVISED CASE NARRATIVE

**St. Louis
Lot F0F210196
Fire House Lot
Moly Corp**

On June 20, 2000, seven (7) solid samples were received at STL St. Louis Laboratory from Radiological Services Inc. Upon receipt the samples were given a laboratory ID number to correspond with the specific client ID. The cross-reference table can be found on a separate page as part of this report. **This narrative was revised to reflect a correction to the condition upon receipt form and the data sheets.**

I. Sample Receipt

The Condition Upon Receipt was faxed on 6-21-00

Some samples were received in ziplock bags and other in 1 liter plastic bottles. Please refer to the COC, where it was noted how much sample was received.

A five business day TAT was requested.

Results were faxed on 6-28-00 to meet the TAT.

The client requested gamma with the Thorium and Uranium chains.

II. Analysis

GAMMA

The isotope list reported was requested by the client, with additional detected radionuclides also requested and reported. As requested by the client The Ac-228 result was entered and reported for Ra-228. U238 was reported from the spectrum using 63.28 keV line of Th-234 and Th232 was reported from the spectrum using the 338.42 keV line of Ac-228. Ra-226da was reported from the spectrum using the 609 keV line of its daughter Bi-214. The Ra-226 was not ingrown for 21 days to assure the establishment of complete equilibrium with the Bi-214 daughter but the results are supported by the Pb-214 and Bi214 results which also are reported.

In two instances, samples F0F210196 -002 and F0F210196 -004, Ra 224 and Th232 were not reported due to interferences caused by higher concentrations of uranium and daughters. In these samples (F0F210196-002 and -004) Ac-227, Pa-231 and Ra-223 were detected and reported.

RADIOLOGICAL SERVICES INC

Client Sample ID: B1-2

Quanterra, Inc. - Radiochemistry

Lab Sample ID: F0F210196-001
 Work Order: DF2XT
 Matrix: SOLID

Date Collected: 06/15/00 1200
 Date Received: 06/20/00 1410

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	MDC	Prep Date	Analysis Date	Batch #	Yld %
Gamma Cs-137 & Hits by HASL AM-02 MOD				pCi/g	AM-02 MOD			
Actinium 228	1.47		0.62	0.30	06/23/00	06/23/00	0175143	
Bismuth 214	0.85		0.27	0.51	06/23/00	06/23/00	0175143	
Lead 210	2.7		1.3	1.8	06/23/00	06/23/00	0175143	
Lead 212	0.89		0.23	0.38	06/23/00	06/23/00	0175143	
Lead 214	0.81		0.24	0.45	06/23/00	06/23/00	0175143	
Ra-228	1.47		0.62	0.30	06/23/00	06/23/00	0175143	
Thallium 208	0.19	U	0.14	0.25	06/23/00	06/23/00	0175143	
Thorium 232	1.14		0.48	0.26	06/23/00	06/23/00	0175143	
Thorium 234	1.81		0.94	1.6	06/23/00	06/23/00	0175143	
Uranium 238	-1.1	U	1.2	1.6	06/23/00	06/23/00	0175143	
--- Other Detected Radionuclides ---								
Potassium 40	15.2		3.3	1.1	06/23/00	06/23/00	0175143	
Radium 226DA	0.85		0.26	0.19	06/23/00	06/23/00	0175143	
Thorium 232DA	1.14		0.48	0.26	06/23/00	06/23/00	0175143	
Uranium 235	0.15		0.10	0.13	06/23/00	06/23/00	0175143	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

U Result is less than the sample detection limit.

RADIOLOGICAL SERVICES INC

Client Sample ID: B1-4 *slag*

Quanterra, Inc. - Radiochemistry

Lab Sample ID: F0F210196-002
 Work Order: DF308
 Matrix: SOLID

Date Collected: 06/15/00 1200
 Date Received: 06/20/00 1410

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	MDC	Prep Date	Analysis Date	Batch #	Yld %
Gamma Cs-137 & Hits by HASL AM-02 MOD				pCi/g	AM-02 MOD			
Actinium 228	1.4	U	1.5	2.4	06/23/00	06/23/00	0175143	
Bismuth 214	159		19	1	06/23/00	06/23/00	0175143	
Lead 210	188		22	7	06/23/00	06/23/00	0175143	
Lead 212	0.08	U	0.78	0.72	06/23/00	06/23/00	0175143	
Lead 214	184	+	19	1	06/23/00	06/23/00	0175143	
Ra-228	1.4	U	1.5	2.4	06/23/00	06/23/00	0175143	
Thallium 208	-0.12	U	0.40	0.58	06/23/00	06/23/00	0175143	
Thorium 234	710	+	100	6	06/23/00	06/23/00	0175143	
Uranium 238	751		88	18	06/23/00	06/23/00	0175143	
--- Other Detected Radionuclides ---								
Actinium 227	34.7		6.4	2.7	06/23/00	06/23/00	0175143	
Protactinium 231	30.9		8.1	14	06/23/00	06/23/00	0175143	
Radium 223	36.6		7.3	2.2	06/23/00	06/23/00	0175143	
Radium 226DA	158	+	18	1	06/23/00	06/23/00	0175143	
Uranium 235	53	+	11	0.6	06/23/00	06/23/00	0175143	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

+ For informational purposes only. The detection limit does not follow significant figures SOP.

U Result is less than the sample detection limit.

RADIOLOGICAL SERVICES INC

Client Sample ID: B2-2

Quanterra, Inc. - Radiochemistry

Lab Sample ID: F0F210196-003
 Work Order: DF30A
 Matrix: SOLID

Date Collected: 06/15/00 1200
 Date Received: 06/20/00 1410

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	MDC	Prep Date	Analysis Date	Batch #	Yld %
Gamma Cs-137 & Hits by HASL AM-02 MOD				pCi/g	AM-02 MOD			
Actinium 228	1.45		0.69	1.1	06/23/00	06/23/00	0175143	
Bismuth 214	2.96		0.53	0.28	06/23/00	06/23/00	0175143	
Lead 210	2.5		1.6	1.5	06/23/00	06/23/00	0175143	
Lead 212	1.43		0.30	0.43	06/23/00	06/23/00	0175143	
Lead 214	3.24		0.52	0.21	06/23/00	06/23/00	0175143	
Ra-228	1.45		0.69	1.1	06/23/00	06/23/00	0175143	
Thallium 208	0.53		0.15	0.28	06/23/00	06/23/00	0175143	
Thorium 232	1.64		0.53	0.19	06/23/00	06/23/00	0175143	
Thorium 234	2.1		1.2	2.0	06/23/00	06/23/00	0175143	
Uranium 238	2.6		1.7	1.1	06/23/00	06/23/00	0175143	
--- Other Detected Radionuclides ---								
Potassium 40	12.2		2.8	1.2	06/23/00	06/23/00	0175143	
Radium 226DA	2.95		0.52	0.74	06/23/00	06/23/00	0175143	
Uranium 235	0.42		0.15	0.13	06/23/00	06/23/00	0175143	

NOTE(S)

Data are incomplete without the case narrative.
 MDC is determined by instrument performance only.
 Bold results are greater than the MDC

RADIOLOGICAL SERVICES INC

Client Sample ID: B2-4 *slag*

Quanterra, Inc. - Radiochemistry

Lab Sample ID: F0F210196-004
 Work Order: DF30C
 Matrix: SOLID

Date Collected: 06/15/00 1200
 Date Received: 06/20/00 1410

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	MDC	Prep Date	Analysis Date	Batch #	Yld %
Gamma Cs-137 & Hits by HASL AM-02 MOD				pCi/g	AM-02 MOD			
Actinium 228	0.7	U	1.3	2.0	06/23/00	06/23/00	0175143	
Bismuth 214	202	+	85	0.8	06/23/00	06/23/00	0175143	
Lead 210	182		24	6	06/23/00	06/23/00	0175143	
Lead 212	1.15		0.44	0.66	06/23/00	06/23/00	0175143	
Lead 214	232	+	56	0.8	06/23/00	06/23/00	0175143	
Ra-228	0.7	U	1.3	2.0	06/23/00	06/23/00	0175143	
Thallium 208	0.15	U	0.32	0.45	06/23/00	06/23/00	0175143	
Thorium 234	586		76	5	06/23/00	06/23/00	0175143	
Uranium 238	578		59	13	06/23/00	06/23/00	0175143	
--- Other Detected Radionuclides ---								
Actinium 227	50		10	2	06/23/00	06/23/00	0175143	
Protactinium 231	48		12	12	06/23/00	06/23/00	0175143	
Radium 223	51.2		8.8	2.0	06/23/00	06/23/00	0175143	
Radium 226DA	202	+	85	0.8	06/23/00	06/23/00	0175143	
Uranium 235	51	+	10	0.5	06/23/00	06/23/00	0175143	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

+ For informational purposes only. The detection limit does not follow significant figures SOP.

U Result is less than the sample detection limit.

RADIOLOGICAL SERVICES INC

Client Sample ID: B3-2

Quanterra, Inc. - Radiochemistry

Lab Sample ID: FCF210196-005
 Work Order: DF30D
 Matrix: SOLID

Date Collected: 06/15/00 1200
 Date Received: 06/20/00 1410

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	MDC	Prep Date	Analysis Date	Batch #	Yld %
Gamma Cs-137 & Hits by HASL AM-02 MOD				pCi/g	AM-02 MOD			
Actinium 228	0.85		0.57	0.48	06/23/00	06/23/00	0175143	
Bismuth 214	1.24		0.35	0.61	06/23/00	06/23/00	0175143	
Lead 210	2.8		1.3	1.4	06/23/00	06/23/00	0175143	
Lead 212	1.27		0.29	0.17	06/23/00	06/23/00	0175143	
Lead 214	1.02		0.29	0.52	06/23/00	06/23/00	0175143	
Ra-228	0.85		0.57	0.48	06/23/00	06/23/00	0175143	
Thallium 208	0.38		0.14	0.12	06/23/00	06/23/00	0175143	
Thorium 232	1.51		0.66	0.40	06/23/00	06/23/00	0175143	
Thorium 234	1.8	U	1.2	1.8	06/23/00	06/23/00	0175143	
Uranium 238	0.3	U	1.2	1.9	06/23/00	06/23/00	0175143	
--- Other Detected Radionuclides ---								
Potassium 40	16.8		3.2	1.5	06/23/00	06/23/00	0175143	
Radium 226DA	1.23		0.35	0.24	06/23/00	06/23/00	0175143	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

U Result is less than the sample detection limit.

RADIOLOGICAL SERVICES INC

Client Sample ID: B4-2

Quanterra, Inc. - Radiochemistry

Lab Sample ID: F0F210196-006
 Work Order: DF30F
 Matrix: SOLID

Date Collected: 06/15/00 1200
 Date Received: 06/20/00 1410

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	MDC	Prep Date	Analysis Date	Batch #	Yld %
Gamma Cs-137 & Hits by HASL AM-02 MOD				pCi/g	AM-02 MOD			
Actinium 228	1.29		0.51	0.25	06/23/00	06/23/00	0175143	
Bismuth 214	0.96		0.42	0.54	06/23/00	06/23/00	0175143	
Lead 210	3.3		1.9	1.9	06/23/00	06/23/00	0175143	
Lead 212	1.26		0.28	0.16	06/23/00	06/23/00	0175143	
Lead 214	0.84		0.24	0.45	06/23/00	06/23/00	0175143	
Ra-226	1.29		0.51	0.25	06/23/00	06/23/00	0175143	
Thallium 208	0.29		0.13	0.14	06/23/00	06/23/00	0175143	
Thorium 232	0.92		0.53	0.39	06/23/00	06/23/00	0175143	
Thorium 234	1.12	U	0.89	1.6	06/23/00	06/23/00	0175143	
Uranium 238	0.4	U	1.3	1.6	06/23/00	06/23/00	0175143	
--- Other Detected Radionuclides ---								
Potassium 40	15.1		3.2	1.3	06/23/00	06/23/00	0175143	
Radium 226DA	0.96		0.41	0.21	06/23/00	06/23/00	0175143	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

U Result is less than the sample detection limit.

RADIOLOGICAL SERVICES INC

Client Sample ID: B5-2

Quanterra, Inc. - Radiochemistry

Lab Sample ID: F0F210196-C07
 Work Order: DF3CH
 Matrix: SOLID

Date Collected: 06/15/00 1200
 Date Received: 06/20/00 1410

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	MDC	Prep Date	Analysis Date	Batch #	Yld %
Gamma Cs-137 & Hits by HASL AM-02 MOD				pCi/g	AM-02 MOD			
Actinium 228	1.61		0.69	1.2	06/23/00	06/23/00	0175143	
Bismuth 214	1.07		0.33	0.62	06/23/00	06/23/00	0175143	
Lead 210	2.5	U	1.4	2.7	06/23/00	06/23/00	0175143	
Lead 212	1.84		0.44	0.66	06/23/00	06/23/00	0175143	
Lead 214	0.84		0.25	0.26	06/23/00	06/23/00	0175143	
Ra-228	1.61		0.69	1.2	06/23/00	06/23/00	0175143	
Thallium 208	0.67		0.22	0.42	06/23/00	06/23/00	0175143	
Thorium 232	1.12		0.60	0.16	06/23/00	06/23/00	0175143	
Thorium 234	-0.76	U	0.95	1.7	06/23/00	06/23/00	0175143	
Uranium 238	-0.5	U	1.4	1.7	06/23/00	06/23/00	0175143	
--- Other Detected Radionuclides ---								
Potassium 40	15.8		3.6	1.3	06/23/00	06/23/00	0175143	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.

Bold results are greater than the MDC

U Result is less than the sample detection limit.

METHOD BLANK REPORT

Quanterra, Inc. - Radiochemistry

Client Lot ID: F0F210196
 Matrix: SOLID

Parameter	Result	Qual	Total Uncert. (2 σ +/-)	MDC	Prep Date	Lab Sample ID		
						Analysis Date	Batch #	Yld %
Gamma Cs-137 & Hits by HASL AM-02 MOD				pCi/g	AM-02 MOD	F0F230000-143B		
Actinium 228	-0.12	U	0.17	0.28	06/23/00	06/23/00	0175143	
Bismuth 214	-0.056	J	0.075	0.16	06/23/00	06/23/00	0175143	
Lead 210	0.69	U	0.47	0.94	06/23/00	06/23/00	0175143	
Lead 212	-0.072	U	0.054	0.10	06/23/00	06/23/00	0175143	
Lead 214	-0.081	U	0.075	0.14	06/23/00	06/23/00	0175143	
Radium 224	-0.69	U	0.72	0.92	06/23/00	06/23/00	0175143	
Ra-228	-0.12	J	0.17	0.28	06/23/00	06/23/00	0175143	
Thallium 208	-0.048	U	0.044	0.080	06/23/00	06/23/00	0175143	
Thorium 232	0.07	U	0.19	0.1	06/23/00	06/23/00	0175143	
Thorium 234	-1.16	U	0.39	0.76	06/23/00	06/23/00	0175143	
Uranium 238	0.06	U	0.54	0.76	06/23/00	06/23/00	0175143	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only

Bold results are greater than the MDC

U Result is less than the sample detection limit.

Laboratory Control Sample Report

Quanterra, Inc. - Radiochemistry

Client Lot ID: FCF210196

Matrix: SOLID

Parameter	Spike Amount	Result	Total Uncert. (2 σ +/-)	MDC	Lab Sample ID		QC Control Limits
					% Yld	% Rec	
Gamma Cs-137 & Hits by HASL AM-02 MOD			pCi/g	AM-02 MOD		FOF230000-143C	
Americium 241	40300	43700	4700	200		108	75 - 125
Cesium 137	16700	17700	3100	100		106	88 - 117
Cobalt 60	27200	28100	2800	100		103 +	75 - 125
Batch #:			0175143	AnalysisDate		06/23/00	

NOTE (S)

MDC is determined by instrument performance only
Calculations are performed before rounding to avoid round-off error in calculated results

+ For informational purposes only. The detection limit does not follow significant figures SOP.

LOT# F0F210196

STL ST. LOUIS

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 6/21/00
Time: 13:34:09
User Id.: MUELLERD

CLIENT: 418070 RADIOLOGICAL SERVICES INC
PROJECT MANAGER: Diane W. Mueller
PROJECT #:
REPORT TO: DAVE FAUVER
P.O. NUMBER:
SITE: No Default
AMOUNT REC'D: LP
STORAGE LOC: R4F
LOT COMMENTS:
MATRIX: SOLID
SAMPLE ID: B1-2
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 36923
LAB ID: F-0F210196-001
WORK ORDER: DF2XT
RECEIVING DATE: 6/20/00
SAMPLING DATE: 6/15/00
ANALYTICAL DUE DATE: 6/28/00N
REPORT DUE DATE: 6/28/00
PRIORITY: 07
SAMPLING TIME: 12:00
RECEIVING TIME: 14:10
SDG# :

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****

Gamma Cs-137 & Hits by HASL AM-02 MOD
PREP RC0003 , RC0025 , CT RD0101
(A-G6-0A-01) DF2XT-1-01 Protocol: A

WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
------------	-----------------	------------------------	----------------------

06 6/21/00 0/00/00 12/12/00

QC Program: STANDARD TEST SET

STL ST. LOUIS

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 6/21/00
Time: 13:34:09
User Id.: MUELLERD

CLIENT: 418070 RADIOLOGICAL SERVICES INC
PROJECT MANAGER: Diane W. Mueller
PROJECT #:
REPORT TO: DAVE FAUVER
P.O. NUMBER:
SITE: No Default
AMOUNT REC"D: PLASBAG8
STORAGE LOC: R4F
LOT COMMENTS:
MATRIX: SOLID
SAMPLE ID: B1-4
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 36923
LAB ID: F-0F210196-002
WORK ORDER: DF308
RECEIVING DATE: 6/20/00
SAMPLING DATE: 6/15/00
ANALYTICAL DUE DATE: 6/28/00N
REPORT DUE DATE: 6/28/00
PRIORITY: 07
SAMPLING TIME: 12:00
RECEIVING TIME: 14:10
SDG# :

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****

WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
06	6/21/00	0/00/00	12/12/00

Gamma Cs-137 & Hits by HASL AM-02 MOD
PREP RC0003 , RC0025 , CT RD0101
(A-G6-0A-01) DF308-1-01 Protocol: A QC Program: STANDARD TEST SET

STL ST. LOUIS

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 6/21/00
Time: 13:34:09
User Id.: MUELLERD

CLIENT: 418070 RADIOLOGICAL SERVICES INC
PROJECT MANAGER: Diane W. Mueller
PROJECT #:
REPORT TO: DAVE FAUVER
P.O. NUMBER:
SITE: No Default
AMOUNT REC"D: LP
STORAGE LOC: R4F
LOT COMMENTS:
MATRIX: SOLID
SAMPLE ID: B2-2
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 36923
LAB ID: F-0F210196-003
WORK ORDER: DF30A
RECEIVING DATE: 6/20/00
SAMPLING DATE: 6/15/00
ANALYTICAL DUE DATE: 6/28/00N
REPORT DUE DATE: 6/28/00
PRIORITY: 07
SAMPLING TIME: 12:00
RECEIVING TIME: 14:10
SDG# :

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****

WRK	REQUEST	EXTRACTION	ANALYSIS
LOC	DATE	EXP DATE	EXP DATE

Gamma Cs-137 & Hits by HASL AM-02 MOD	06	6/21/00	0/00/00	12/12/00
PREP RC0003 , RC0025 , CT RD0101				
(A-G6-0A-01) DF30A-1-01 Protocol: A				

QC Program: STANDARD TEST SET

STL ST. LOUIS

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 6/21/00
Time: 13:34:09
User Id.: MUELLERD

CLIENT: 418070 RADIOLOGICAL SERVICES INC
PROJECT MANAGER: Diane W. Mueller
PROJECT #:
REPORT TO: DAVE FAUVER
P.O. NUMBER:
SITE: No Default
AMOUNT REC'D: PLASBAG8
STORAGE LOC: R4F
LOT COMMENTS:
MATRIX: SOLID
SAMPLE ID: B2-4
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 36923
LAB ID: F-0F210196-004
WORK ORDER: DF30C
RECEIVING DATE: 6/20/00
SAMPLING DATE: 6/15/00
ANALYTICAL DUE DATE: 6/28/00N
REPORT DUE DATE: 6/28/00
PRIORITY: 07
SAMPLING TIME: 12:00
RECEIVING TIME: 14:10
SDG# :

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****

WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
------------	-----------------	------------------------	----------------------

Gamma Cs-137 & Hits by HASL AM-02 MOD PREP RC0003 , RC0025 , CT RD0101 (A-G6-0A-01) DF30C-1-01 Protocol: A	06	6/21/00	0/00/00	12/12/00
--	----	---------	---------	----------

QC Program: STANDARD TEST SET

STL ST. LOUIS

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 6/21/00
Time: 13:34:09
User Id.: MUELLERD

CLIENT: 418070 RADIOLOGICAL SERVICES INC
PROJECT MANAGER: Diane W. Mueller
PROJECT #:
REPORT TO: DAVE FAUVER
P.O. NUMBER:
SITE: No Default
AMOUNT REC"D: LP
STORAGE LOC: R4F
LOT COMMENTS:
MATRIX: SOLID
SAMPLE ID: B3-2
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 36923
LAB ID: F-0F210196-005
WORK ORDER: DF30D
RECEIVING DATE: 6/20/00
SAMPLING DATE: 6/15/00
ANALYTICAL DUE DATE: 6/28/00N
REPORT DUE DATE: 6/28/00
PRIORITY: 07
SAMPLING TIME: 12:00
RECEIVING TIME: 14:10
SDG# :

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****

WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
------------	-----------------	------------------------	----------------------

Gamma Cs-137 & Hits by HASL AM-02 MOD PREP RC0003 , RC0025 , CT RD0101 (A-G6-0A-01) DF30D-1-01 Protocol: A	06	6/21/00	0/00/00	12/12/00
--	----	---------	---------	----------

QC Program: STANDARD TEST SET

STL ST. LOUIS

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 6/21/00
Time: 13:34:09
User Id.: MUELLERD

CLIENT: 418070 RADIOLOGICAL SERVICES INC
PROJECT MANAGER: Diane W. Mueller
PROJECT #:
REPORT TO: DAVE FAUVER
P.O. NUMBER:
SITE: No Default
AMOUNT REC'D: PLASBAG8
STORAGE LOC: R4F
LOT COMMENTS:
MATRIX: SOLID
SAMPLE ID: B4-2
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 36923
LAB ID: F-0F210196-006
WORK ORDER: DF30F
RECEIVING DATE: 6/20/00
SAMPLING DATE: 6/15/00
ANALYTICAL DUE DATE: 6/28/00N
REPORT DUE DATE: 6/28/00
PRIORITY: 07
SAMPLING TIME: 12:00
RECEIVING TIME: 14:10
SDG# :

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****

WRK	REQUEST	EXTRACTION	ANALYSIS
LOC	DATE	EXP DATE	EXP DATE

Gamma Cs-137 & Hits by HASL AM-02 MOD	06	6/21/00	0/00/00	12/12/00
PREP RC0003 , RC0025 , CT RD0101				
(A-G6-0A-01) DF30F-1-01 Protocol: A				

QC Program: STANDARD TEST SET

STL ST. LOUIS

PSL20300
Page 1

SEVERN TRENT LABORATORIES, INC
CLIENT ANALYSIS SUMMARY
STL St. Louis

Run Date: 6/21/00
Time: 13:34:09
User Id.: MUELLERD

CLIENT: 418070 RADIOLOGICAL SERVICES INC
PROJECT MANAGER: Diane W. Mueller
PROJECT #:
REPORT TO: DAVE FAUVER
P.O. NUMBER:
SITE: No Default
AMOUNT REC"D: PLASBAG8
STORAGE LOC: R4F
LOT COMMENTS:
MATRIX: SOLID
SAMPLE ID: B5-2
QC PACKAGE: Report
SAMPLE COMMENTS:

QUOTE/SAR #: 36923
LAB ID: F-0F210196-007
WORK ORDER: DF30H
RECEIVING DATE: 6/20/00
SAMPLING DATE: 6/15/00
ANALYTICAL DUE DATE: 6/28/00N
REPORT DUE DATE: 6/28/00
PRIORITY: 07
SAMPLING TIME: 12:00
RECEIVING TIME: 14:10
SDG# :

Beginning Depth: .00 Ending Depth: .00

***** ANALYSIS *****

	<u>WRK</u>	<u>REQUEST</u>	<u>EXTRACTION</u>	<u>ANALYSIS</u>
	<u>LOC</u>	<u>DATE</u>	<u>EXP DATE</u>	<u>EXP DATE</u>
Gamma Cs-137 & Hits by HASL AM-02 MOD PREP RC0003 , RC0025 , CT RD0101 (A-G6-0A-01) DF30H-1-01 Protocol: A	06	6/21/00	0/00/00	12/12/00

QC Program: STANDARD TEST SET

HAZEN RESEARCH, INC.
Oxford ED 2000 Qualitative/Semi-Quantitative X-Ray Fluorescence Analysis

June 29, 2000
 F369/00-2

Project 002-6DP
 B2-5 Slag

Radiological Services, Inc.

Atomic Number	Analyte	Reported as Element	%	Reported as Oxide	%
11	Sodium	Na	3.65	Na2O	4.92
12	Magnesium	Mg	2.51	MgO	4.15
13	Aluminum	Al	4.74	Al2O3	8.95
14	Silicon	Si	10.62	SiO2	22.72
15	Phosphorus	P	0.02	P2O5	0.04
16	Sulfur	S	0.84	SO3	2.10
17	Chlorine	Cl	<0.01	Cl	<0.01
19	Potassium	K	0.12	K2O	0.14
20	Calcium	Ca	34.65	CaO	48.47
21	Scandium	Sc	<0.01	Sc2O3	<0.01
22	Titanium	Ti	0.28	TiO2	0.46
23	Vanadium	V	3.60	V2O5	6.43
24	Chromium	Cr	0.03	Cr2O3	0.05
25	Manganese	Mn	0.06	MnO	0.07
26	Iron	Fe	0.76	Fe2O3	1.08
27	Cobalt	Co	<0.01	CoO	<0.01
28	Nickel	Ni	<0.01	NiO	<0.01
29	Copper	Cu	0.02	CuO	0.02
30	Zinc	Zn	0.01	ZnO	0.02
31	Gallium	Ga	<0.01	GaO	<0.01
32	Germanium	Ge	<0.01	GeO2	<0.01
33	Arsenic	As	<0.01	As2O3	<0.01
34	Selenium	Se	0.01	SeO2	0.01
35	Bromine	Br	<0.01	Br	<0.01
37	Rubidium	Rb	<0.01	Rb2O	<0.01
38	Strontium	Sr	0.07	SrO	0.09
39	Yttrium	Y	<0.01	Y2O3	<0.01
40	Zirconium	Zr	<0.01	ZrO2	<0.01
41	Niobium	Nb	<0.01	Nb2O5	<0.01
42	Molybdenum	Mo	<0.01	MoO2	<0.01
72	Hafnium	Hf	<0.01	HfO2	<0.01
74	Tungsten	W	0.02	WO3	0.03
80	Mercury	Hg	<0.01	Hg2O	<0.01
81	Thallium	Tl	<0.01	Tl2O	<0.01
82	Lead	Pb	<0.01	PbO	<0.01
83	Bismuth	Bi	<0.01	BiO3	<0.01
47	Silver	Ag	<0.01	Ag2O	<0.01
48	Cadmium	Cd	<0.01	CdO	<0.01
49	Indium	In	<0.01	In2O3	<0.01
50	Tin	Sn	<0.01	SnO	<0.01
51	Antimony	Sb	<0.01	Sb2O3	<0.01
52	Tellurium	Te	<0.01	TeO2	<0.01
53	Iodine	I	<0.01	I	<0.01
56	Barium	Ba	0.05	BaO	0.06
57	Lanthanum	La	<0.01	La2O3	<0.01
58	Cerium	Ce	<0.01	Ce2O3	<0.01
90	Thorium	Th	0.01	ThO2	0.01
92	Uranium	U	0.10	U2O3	0.11

Table 1. Chemical composition of slags at Site A and the highest activity sample at Site B.

Element (ppm)	Site A Slag 1	Site A Slag 2	Site A Slag 3	Site A Slag 4	Site B Soil 1
Al	200000±17000	192000±17000	234000±19000	229000±1800	56100±6200
Si	88800±7400	928000±7900	86100±7500	90400±7600	258000±1,000
K	1110±160	1450±180	1050±170	1130±160	20000±1400
Ca	75700±5300	85100±6000	85100±6000	82200±5800	13970±1000
Mn	840±160	950±180	690±170	660±160	460±71
Fe	27300±1900	31200±2200	26000±1900	26700±1900	42700±3000
Ni	<57±57	<64±64	<64±64	<57±57	608±52
Cu	218±34	250±39	223±36	436±47	177±20
Zn	66±20	84±23	<38±38	103±20	241±22
Ga	<32±32	<34±34	<35±35	<32±32	21.4±5.7
Hg	<23±23	<24±24	<21±21	<22±22	<7.3±7.3
Se	<35±35	<33±33	<35±35	<332±33	<5.5±5.5
Br	<18±18	<17±17	<17±17	<17±17	<5.7±5.7
Rb	<19±19	<18±18	<18±18	<18±18	100.9±9.1
U	248±22	218±20	230±21	262±23	65.2±8.5
Sr	169±28	330±25	382±28	372±28	118.4±9.4
Y	68±11	67.3±10	64±10	76±11	31±3.9
Nb	27500±1900	23600±1700	26900±1900	26800±1900	75.6±6.5
Mo	2980±210	3530±250	2260±160	2460±170	21.5±4.1
Th	13290±940	12060±850	14190±1000	13760±970	28±10

Site A = Molybdenum Thorium slag storage P.C