0059227

SAF-B02-066
618-5 Burial Ground – Quick Turn Metals
FINAL DATA PACKAGE

FAX RESULTS TO:

Jeff Lerch 373-5373 _____N/A_____
INITIAL/DATE

VERIFICATION OF CLIENT RECEIPT:

Phone or CC:Mail to Jeff Lerch _____N/A_____
INITIAL/DATE

MAIL COMPLETE COPY OF DATA PACKAGE TO:

Jeff Lerch L6-06 _____N/A_____
INITIAL/DATE

Doug Bowers H9-09 _____N/A_____
INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE FAX COVER SHEET)

SDG ____W03939____ SAF-B02-066

Rad only X Chem only Rad & Chem

X Complete Partial

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Analytical Data Package Prepared For

Bechtel Hanford, Inc.

Analysis Provided By

STL Richland
2800 George Washington Way
Richland WA, 99352
(509)375-3131
Assigned Laboratory Code: STLR

SDG Number: W03939

Data Package Contains 50 Pages

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CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

February 3, 2003

Attention: Joan Kessner

SAF Number	:	B02-066
Date SDG Closed	:	January 30, 2003
Number of Samples	:	Fourty one (41))
Sample Type	:	Soil
SDG Number	:	W03939
Data Deliverable	:	Quick Turn Metals / Summary

I. Introduction

Between January 7, 2003 and January 30, 2003, fourty one soil samples were received at STL Richland (STLR) for ICP metals analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

BHI ID#	STLR ID#	MATRIX	DATE OF RECEIPT
J00801	FFPPC	Soil	1/7/03
J00D87	FGEGF	Soil	1/21/03
J00D88	FGEGG	Soil	1/21/03
J00D89	FGEGJ	Soil	1/21/03
J00D90	FGEGN	Soil	1/21/03
J00D91	FGEGT	Soil	1/21/03
J00D92	FGEGV	Soil	1/21/03
J00D93	FGEG1	Soil	1/21/03
J00D94	FGEG3	Soil	1/21/03
J00D95	FGEG4	Soil	1/21/03
J00D96	FGEG5	Soil	1/21/03
J00D97	GGEG7	Soil	1/21/03
J00D98	FGEG8	Soil	1/21/03

BHI ID#	STLR ID#	MATRIX	DATE OF RECEIPT
J00D99	FGEHD	Soil	1/21/03
J00DB0	FGEHF	Soil	1/21/03
J00DB1	FGEHJ	Soil	1/21/03
J00DB3	FGH69	Soil	1/23/03
J00DB4	FGH7D	Soil	1/23/03
J00DB5	FGH7G	Soil	1/23/03
J00DB6	FGH7J	Soil	1/23/03
J00DB7	FGH7K	Soil	1/23/03
J00DB8	FGH7L	Soil	1/23/03
J00DB9	FGH7Q	Soil	1/23/03
J00DC0	FGH7X	Soil	1/23/03
J00DC1	FGH74	Soil	1/23/03
J00DC2	FGH75	Soil	1/23/03
J00DC3	FGPRD	Soil	1/27/03
J00DC4	FGPR1	Soil	1/27/03
J00DC5	FGPR5	Soil	1/27/03
J00DC6	FGPR8	Soil	1/27/03
J00DC7	FGPTC	Soil	1/27/03
J00DC8	FGPTE	Soil	1/27/03
J00DC9	FGPTF	Soil	1/27/03
J00DD0	FGPTG	Soil	1/27/03
J00DD1	FGV4W	Soil	1/30/03
J00DD2	FGV44	Soil	1/30/03
J00DD3	FGV47	Soil	1/30/03
J00DD4	FGV5A	Soil	1/30/03
J00DD5	FGV5D	Soil	1/30/03
J00DD6	FGV5H	Soil	1/30/03
J00DD7	FGV5J	Soil	1/30/03

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical errors.

The requested analysis was: **ICP Metals**
ICP Metals by method SW-846 6010A

III. Quality Control

The analytical results for each analysis performed under SDG W03939 includes a minimum of one Laboratory Control Samples (LCS) and one method (reagent) blank. A duplicate sample, matrix spike sample and a matrix spike duplicate sample will be analyzed per 20 samples or per month, whichever is more frequent. Any exceptions have been noted in the "Comments" section.

Blanks and LCS are reported in mg/L unites, other QC and sample results are reported in the same units.

IV. Comments

All samples analyzed for this project are reported in one SDG for the month of sampling. A summary of the results and a copy of the COCs are included.

ICP Metals
ICP Metals by method SW-846 6010A
The following non-conformances were noted.

For the samples received 1/7/02, the LCS recovery for silver and cadmium are below expected values.

For the samples received 1/21/02, the LCS percent recovery was above the QC limits for arsenic, silver and cadmium.

For the samples received 1/27/02, all QC was within acceptable limits.

For the samples received 1/30/02, the LCS percent recovery was slightly below the QC limits for silver. The CCV was slightly below the QC limit for cadmium and arsenic

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I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Barbara M. Gillespie
Project Manager

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**STL Richland's SOP number**
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/vn), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) *u_c - Combined Uncertainty.*	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, *u_c the combined uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03939
Digestion Date: 01/07/03
Analytical Date: 01/07/03
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			FFPRA-1-AA	FFPRA-1-AC	FFPRA-1-AD	FFPRA-1-AE	FPRA-1-AFFPF	FFPRA-1-AG	FFPRA-1-AH
J3A070000-309	----------	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			FFPRA-1-AJ	FFPRA-1-AK	FFPRA-1-AL	FFPRA-1-AM	FFPRA-1-AN	FFPRA-1-AP	FFPRA-1-AQ
J3A070000-309	----------	mg/L	1.795	1.524	1.765	1.595	1.766	1.664	1.600
J3A070209-001	J00801		FFPPC-1-AA	FFPPC-1-AC	FFPPC-1-AD	FFPPC-1-AE	FPPC-1-AFFPF	FFPPC-1-AG	FFPPC-1-AH
		mg/kg	401.2	106.9	207.5	10.71	114.2	< 0.0035	656.0
J3A070209-001	J00801		FFPPC-1-A1	FFPPC-1-A2	FFPPC-1-A3	FFPPC-1-A4	FFPPC-1-A5	FFPPC-1-A6	FFPPC-1-A7
DUPLICATE		mg/kg	486.2	78.04	165.7	11.34	89.23	< 0.0035	1406
J3A070209-001	J00801		FFPPC-1-AJ	FFPPC-1-AL	FFPPC-1-AN	FFPPC-1-AQ	FFPPC-1-AT	FFPPC-1-AV	FFPPC-1-AX
MATRIX SPIKE		mg/kg	824.4	187.1	334.7	159.8	300.1	138.8	653.9
J3A070209-001	J00801		FFPPC-1-AK	FFPPC-1-AM	FFPPC-1-AP	FFPPC-1-AR	FFPPC-1-AU	FFPPC-1-AW	FFPPC-1-A0
MATRIX SPIKE DUPLICATE		mg/kg	558.3	209.8	338.7	171.3	317.7	155.8	680.8

SMG 1/8/03
DM 1/8/03

mg/kg = mg/L*0.1L/kg sample used

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SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03939
Digestion Date: 01/21/03
Analytical Date: 01/21/03
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			FGE48-1-AA	FGE48-1-AC	FGE48-1-AD	FGE48-1-AE	FGE48-1-AF	FGE48-1-AG	FGE48-1-AH
J3A210000-335	----------	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			FGE48-1-AJ	FGE48-1-AK	FGE48-1-AL	FGE48-1-AM	FGE48-1-AN	FGE48-1-AP	FGE48-1-AQ
J3A210000-335	----------	mg/L	1.867	1.624	1.917	1.698	1.830	1.760	1.752
J3A210156-001	J00D87		FGEGF-1-AA	FGEGF-1-AC	FGEGF-1-AD	FGEGF-1-AE	FGEGF-1-AF	FGEGF-1-AG	FGEGF-1-AH
		mg/kg	63.60	2.034	65.00	< 0.0005	7.839	< 0.0035	1.284
J3A210156-001	J00D87		FGEGF-1-A1	FGEGF-1-A2	FGEGF-1-A3	FGEGF-1-A4	FGEGF-1-A5	FGEGF-1-A6	FGEGF-1-A7
DUPLICATE		mg/kg	58.16	2.016	58.09	0.046	8.805	1.361	1.441
J3A210156-001	J00D87		FGEGF-1-AJ	FGEGF-1-AL	FGEGF-1-AN	FGEGF-1-AQ	FGEGF-1-AT	FGEGF-1-AV	FGEGF-1-AX
MATRIX SPIKE		mg/kg	244.6	163.9	257.9	170.0	185.1	171.0	171.3
J3A210156-001	J00D87		FGEGF-1-AK	FGEGF-1-AM	FGEGF-1-AP	FGEGF-1-AR	FGEGF-1-AU	FGEGF-1-AW	FGEGF-1-A0
MATRIX SPIKE DUPLICATE		mg/kg	249.3	163.5	250.8	168.3	183.2	169.3	169.8
J3A210156-002	J00D88		FGEGG-1-AA	FGEGG-1-AC	FGEGG-1-AD	FGEGG-1-AE	FGEGG-1-AF	FGEGG-1-AG	FGEGG-1-AH
		mg/kg	67.47	2.070	67.82	0.079	7.662	< 0.0035	1.349
J3A210156-003	J00D89		FGEGJ-1-AA	FGEGJ-1-AC	FGEGJ-1-AD	FGEGJ-1-AE	FGEGJ-1-AF	FGEGJ-1-AG	FGEGJ-1-AH
		mg/kg	66.83	2.216	63.95	< 0.0005	7.759	< 0.0035	2.151
J3A210156-004	J00D90		FGEGN-1-AA	FGEGN-1-AC	FGEGN-1-AD	FGEGN-1-AE	FGEGN-1-AF	FGEGN-1-AG	FGEGN-1-AH
		mg/kg	72.39	2.095	60.02	0.057	10.23	< 0.0035	1.309

mg/kg = mg/L*0.1L/kg sample used

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03939
Digestion Date: 01/21/03
Analytical Date: 01/21/03
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J3A210156-005	J00D91		FGEGT-1-AA	FGEGT-1-AC	FGEGT-1-AD	FGEGT-1-AE	FGEGT-1-AF	FGEGT-1-AG	FGEGT-1-AH
		mg/kg	223.4	42.37	110.0	4.076	42.39	< 0.0035	278.9
J3A210156-006	J00D92		FGEGV-1-AA	FGEGV-1-AC	FGEGV-1-AD	FGEGV-1-AE	FGEGV-1-AF	FGEGV-1-AG	FGEGV-1-AH
		mg/kg	116.3	47.29	74.78	0.863	25.93	< 0.0035	1430
J3A210156-007	J00D93		FGEG1-1-AA	FGEG1-1-AC	FGEG1-1-AD	FGEG1-1-AE	FGEG1-1-AF	FGEG1-1-AG	FGEG1-1-AH
		mg/kg	215.8	18.00	111.2	4.713	39.40	< 0.0035	136.7
J3A210156-008	J00D94		FGEG3-1-AA	FGEG3-1-AC	FGEG3-1-AD	FGEG3-1-AE	FGEG3-1-AF	FGEG3-1-AG	FGEG3-1-AH
		mg/kg	278.3	16.77	101.8	3.377	30.32	< 0.0035	350.4
J3A210156-009	J00D95		FGEG4-1-AA	FGEG4-1-AC	FGEG4-1-AD	FGEG4-1-AE	FGEG4-1-AF	FGEG4-1-AG	FGEG4-1-AH
		mg/kg	253.8	16.77	114.4	2.767	45.72	< 0.0035	119.4
J3A210156-010	J00D96		FGEG5-1-AA	FGEG5-1-AC	FGEG5-1-AD	FGEG5-1-AE	FGEG5-1-AF	FGEG5-1-AG	FGEG5-1-AH
		mg/kg	494.2	56.41	131.9	8.917	288.4	< 0.0035	3355
J3A210156-011	J00D97		FGEG7-1-AA	FGEG7-1-AC	FGEG7-1-AD	FGEG7-1-AE	FGEG7-1-AF	FGEG7-1-AG	FGEG7-1-AH
		mg/kg	99.51	19.19	97.12	1.504	18.24	< 0.0035	72.39
J3A210156-012	J00D98		FGEG8-1-AA	FGEG8-1-AC	FGEG8-1-AD	FGEG8-1-AE	FGEG8-1-AF	FGEG8-1-AG	FGEG8-1-AH
		mg/kg	145.1	4.204	85.24	0.543	10.90	< 0.0035	18.67

DM 1/22/03
ESD 1/22/03

mg/kg = mg/L*0.1L/kg sample used

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03939
Digestion Date: 01/21/03
Analytical Date: 01/21/03
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J3A210156-013	J00D99		FGEHD-1-AA	FGEHD-1-AC	FGEHD-1-AD	FGEHD-1-AE	FGEHD-1-AF	FGEHD-1-AG	FGEHD-1-AH
		mg/kg	110.6	3.772	89.04	0.345	11.74	< 0.0035	14.83
J3A210156-014	J00DB0		FGEHF-1-AA	FGEHF-1-AC	FGEHF-1-AD	FGEHF-1-AE	FGEHF-1-AF	FGEHF-1-AG	FGEHF-1-AH
		mg/kg	78.61	2.864	74.33	0.560	7.940	< 0.0035	5.451
J3A210156-015	J00DB1		FGEHJ-1-AA	FGEHJ-1-AC	FGEHJ-1-AD	FGEHJ-1-AE	FGEHJ-1-AF	FGEHJ-1-AG	FGEHJ-1-AH
		mg/kg	125.9	9.738	142.0	2.291	36.72	< 0.0035	172.6

mg/kg = mg/L*0.1L/kg sample used

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03939
Digestion Date: 01/23/03
Analytical Date: 01/23/03
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			FGLM8-1-AA	FGLM8-1-AC	FGLM8-1-AD	FGLM8-1-AE	FGLM8-1-AF	FGLM8-1-AG	FGLM8-1-AH
J3A240000-318	----------	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			FGLM8-1-AJ	FGLM8-1-AK	FGLM8-1-AL	FGLM8-1-AM	FGLM8-1-AN	FGLM8-1-AP	FGLM8-1-AQ
J3A240000-318	----------	mg/L	1.865	1.666	1.912	1.708	1.902	1.819	1.755
J3A230160-001	J00DB3		FGH69-1-AA	FGH69-1-AC	FGH69-1-AD	FGH69-1-AE	FGH69-1-AF	FGH69-1-AG	FGH69-1-AH
		mg/kg	567.8	47.39	116.3	28.64	77.10	< 0.0035	397.3
J3A230160-001	J00DB3		FGH69-1-A1	FGH69-1-A2	FGH69-1-A3	FGH69-1-A4	FGH69-1-A5	FGH69-1-A6	FGH69-1-A7
DUPLICATE		mg/kg	342.6	25.80	143.8	21.96	422.6	< 0.0035	458.7
J3A230160-001	J00DB3		FGH69-1-AJ	FGH69-1-AL	FGH69-1-AN	FGH69-1-AQ	FGH69-1-AT	FGH69-1-AV	FGH69-1-AX
MATRIX SPIKE		mg/kg	508.5	173.5	295.0	199.8	287.3	159.3	772.9
J3A230160-001	J00DB3		FGH69-1-AK	FGH69-1-AM	FGH69-1-AP	FGH69-1-AR	FGH69-1-AU	FGH69-1-AW	FGH69-1-A0
MATRIX SPIKE DUPLICATE		mg/kg	549.4	186.6	292.9	174.3	242.9	162.1	401.9
J3A230160-002	J00DB4		FGH7D-1-AA	FGH7D-1-AC	FGH7D-1-AD	FGH7D-1-AE	FGH7D-1-AF	FGH7D-1-AG	FGH7D-1-AH
		mg/kg	541.6	33.91	141.8	24.62	348.9	< 0.0035	2044
J3A230160-003	J00DB5		FGH7G-1-AA	FGH7G-1-AC	FGH7G-1-AD	FGH7G-1-AE	FGH7G-1-AF	FGH7G-1-AG	FGH7G-1-AH
		mg/kg	158.2	20.29	96.06	4.258	52.67	< 0.0035	141.2
J3A230160-004	J00DB6		FGH7J-1-AA	FGH7J-1-AC	FGH7J-1-AD	FGH7J-1-AE	FGH7J-1-AF	FGH7J-1-AG	FGH7J-1-AH
		mg/kg	155.4	5.986	56.59	4.318	22.73	0.352	47.19

mg/kg = mg/L*0.1L/kg sample used

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03939
Digestion Date: 01/23/03
Analytical Date: 01/23/03
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J3A230160-005	J00DB7		FGH7K-1-AA	FGH7K-1-AC	FGH7K-1-AD	FGH7K-1-AE	FGH7K-1-AF	FGH7K-1-AG	FGH7K-1-AH
		mg/kg	406.3	109.5	184.5	20.58	140.2	< 0.0035	214.2
J3A230160-006	J00DB8		FGH7L-1-AA	FGH7L-1-AC	FGH7L-1-AD	FGH7L-1-AE	FGH7L-1-AF	FGH7L-1-AG	FGH7L-1-AH
		mg/kg	624.4	20.18	118.8	9.057	107.1	< 0.0035	152.4
J3A230160-007	J00DB9		FGH7Q-1-AA	FGH7Q-1-AC	FGH7Q-1-AD	FGH7Q-1-AE	FGH7Q-1-AF	FGH7Q-1-AG	FGH7Q-1-AH
		mg/kg	230.1	10.19	73.10	2.864	37.09	< 0.0035	177.9
J3A230160-008	J00DC0		FGH7X-1-AA	FGH7X-1-AC	FGH7X-1-AD	FGH7X-1-AE	FGH7X-1-AF	FGH7X-1-AG	FGH7X-1-AH
		mg/kg	368.5	13.22	72.55	4.985	169.0	< 0.0035	164.5
J3A230160-009	J00DC1		FGH74-1-AA	FGH74-1-AC	FGH74-1-AD	FGH74-1-AE	FGH74-1-AF	FGH74-1-AG	FGH74-1-AH
		mg/kg	190.0	10.22	119.1	1.651	23.20	< 0.0035	181.4
J3A230160-010	J00DC2		FGH75-1-AA	FGH75-1-AC	FGH75-1-AD	FGH75-1-AE	FGH75-1-AF	FGH75-1-AG	FGH75-1-AH
		mg/kg	144.0	4.493	46.68	1.139	18.53	< 0.0035	43.07

DM 1/24/03
EEB 1/24/03

mg/kg = mg/L*0.1L/kg sample used

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03939
Digestion Date: 01/27/03
Analytical Date: 01/28/03
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			FGPW3-1-AA	FGPW3-1-AC	FGPW3-1-AD	FGPW3-1-AE	FGPW3-1-AF	FGPW3-1-AG	FGPW3-1-AH
J3A270000-491	----------	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			FGPW3-1-AJ	FGPW3-1-AK	FGPW3-1-AL	FGPW3-1-AM	FGPW3-1-AN	FGPW3-1-AP	FGPW3-1-AQ
J3A270000-491	----------	mg/L	1.829	1.704	1.883	1.775	1.858	1.772	1.771
J3A270195-001	J00DC3		FGPRD-1-AA	FGPRD-1-AC	FGPRD-1-AD	FGPRD-1-AE	FGPRD-1-AF	FGPRD-1-AG	FGPRD-1-AH
		mg/kg	197.5	5.806	74.82	2.646	33.68	< 0.0035	58.46
J3A270195-001	J00DC3		FGPRD-1-AJ	FGPRD-1-AK	FGPRD-1-AL	FGPRD-1-AM	FGPRD-1-AN	FGPRD-1-AP	FGPRD-1-AQ
DUPLICATE		mg/kg	188.4	7.723	80.31	2.168	30.30	< 0.0035	48.06
J3A270195-002	J00DC4		FGPR1-1-AA	FGPR1-1-AC	FGPR1-1-AD	FGPR1-1-AE	FGPR1-1-AF	FGPR1-1-AG	FGPR1-1-AH
		mg/kg	199.0	7.065	76.38	1.741	19.79	< 0.0035	66.98
J3A270195-003	J00DC5		FGPR5-1-AA	FGPR5-1-AC	FGPR5-1-AD	FGPR5-1-AE	FGPR5-1-AF	FGPR5-1-AG	FGPR5-1-AH
		mg/kg	265.4	6.174	103.9	1.772	26.29	< 0.0035	52.73
J3A270195-004	J00DC6		FGPR8-1-AA	FGPR8-1-AC	FGPR8-1-AD	FGPR8-1-AE	FGPR8-1-AF	FGPR8-1-AG	FGPR8-1-AH
		mg/kg	366.8	3.574	79.14	1.173	17.33	< 0.0035	36.94
J3A270195-005	J00DC7		FGPTC-1-AA	FGPTC-1-AC	FGPTC-1-AD	FGPTC-1-AE	FGPTC-1-AF	FGPTC-1-AG	FGPTC-1-AH
		mg/kg	259.1	11.05	118.3	3.103	70.54	< 0.0035	85.34
J3A270195-006	J00DC8		FGPTE-1-AA	FGPTE-1-AC	FGPTE-1-AD	FGPTE-1-AE	FGPTE-1-AF	FGPTE-1-AG	FGPTE-1-AH
		mg/kg	301.2	59.90	107.7	2.787	50.32	< 0.0035	77.84

mg/kg = mg/L*0.1L/kg sample used

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03939
Digestion Date: 01/27/03
Analytical Date: 01/28/03
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J3A270195-007	J00DC9		FGPTF-1-AA	FGPTF-1-AC	FGPTF-1-AD	FGPTF-1-AE	FGPTF-1-AF	FGPTF-1-AG	FGPTF-1-AH
		mg/kg	192.4	3.999	91.49	1.479	13.15	< 0.0035	34.05
J3A270195-008	J00DD0		FGPTG-1-AA	FGPTG-1-AC	FGPTG-1-AD	FGPTG-1-AE	FGPTG-1-AF	FGPTG-1-AG	FGPTG-1-AH
		mg/kg	219.5	5.731	103.9	1.060	22.18	< 0.0035	38.77

SRB 1/28/03 DM 1/28/03

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mg/kg = mg/L*0.1L/kg sample used

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03939
Digestion Date: 01/30/03
Analytical Date: 01/30/03
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			FGV7R-1-AA	FGV7R-1-AC	FGV7R-1-AD	FGV7R-1-AE	FGV7R-1-AF	FGV7R-1-AG	FGV7R-1-AH
J3A300000-291	----------	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			FGV7R-1-AJ	FGV7R-1-AK	FGV7R-1-AL	FGV7R-1-AM	FGV7R-1-AN	FGV7R-1-AP	FGV7R-1-AQ
J3A300000-291	----------	mg/L	1.818	1.544	1.781	1.623	1.749	1.747	1.685
J3A300152-001	J00DD1		FGV4W-1-AA	FGV4W-1-AC	FGV4W-1-AD	FGV4W-1-AE	FGV4W-1-AF	FGV4W-1-AG	FGV4W-1-AH
		mg/kg	166.9	23.80	79.10	1.887	122.9	< 0.0035	188.4
J3A300152-001	J00DD1		FGV4W-1-A1	FGV4W-1-A2	FGV4W-1-A3	FGV4W-1-A4	FGV4W-1-A5	FGV4W-1-A6	FGV4W-1-A7
DUPLICATE		mg/kg	180.3	5.570	64.48	1.171	22.91	< 0.0035	44.97
J3A300152-001	J00DD1		FGV4W-1-AJ	FGV4W-1-AL	FGV4W-1-AN	FGV4W-1-AQ	FGV4W-1-AT	FGV4W-1-AV	FGV4W-1-AX
MATRIX SPIKE		mg/kg	338.1	153.0	234.8	159.4	184.8	162.4	216.5
J3A300152-001	J00DD1		FGV4W-1-AK	FGV4W-1-AM	FGV4W-1-AP	FGV4W-1-AR	FGV4W-1-AU	FGV4W-1-AW	FGV4W-1-A0
MATRIX SPIKE DUPLICATE		mg/kg	370.1	156.1	242.2	161.6	195.9	168.3	338.1
J3A300152-002	J00DD2		FGV44-1-AA	FGV44-1-AC	FGV44-1-AD	FGV44-1-AE	FGV44-1-AF	FGV44-1-AG	FGV44-1-AH
		mg/kg	100.5	3.236	52.43	1.134	14.96	< 0.0035	27.03
J3A300152-003	J00DD3		FGV47-1-AA	FGV47-1-AC	FGV47-1-AD	FGV47-1-AE	FGV47-1-AF	FGV47-1-AG	FGV47-1-AH
		mg/kg	172.2	2.797	71.95	0.528	10.90	< 0.0035	13.70
J3A300152-004	J00DD4		FGV5A-1-AA	FGV5A-1-AC	FGV5A-1-AD	FGV5A-1-AE	FGV5A-1-AF	FGV5A-1-AG	FGV5A-1-AH
		mg/kg	141.4	3.739	72.77	0.595	12.31	< 0.0035	21.24

mg/kg = mg/L*0.1L/kg sample used

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03939
Digestion Date: 01/30/03
Analytical Date: 01/30/03
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J3A300152-005	J00DD5		FGV55-1-AA	FGV55-1-AC	FGV55-1-AD	FGV55-1-AE	FGV55-1-AF	FGV55-1-AG	FGV55-1-AH
		mg/kg	268.4	16.38	94.21	2.693	30.09	< 0.0035	199.2
J3A300152-006	J00DD6		FGV5H-1-AA	FGV5H-1-AC	FGV5H-1-AD	FGV5H-1-AE	FGV5H-1-AF	FGV5H-1-AG	FGV5H-1-AH
		mg/kg	165.2	8.275	114.8	1.383	41.43	< 0.0035	47.21
J3A300152-007	J00DD7		FGV5J-1-AA	FGV5J-1-AC	FGV5J-1-AD	FGV5J-1-AE	FGV5J-1-AF	FGV5J-1-AG	FGV5J-1-AH
		mg/kg	277.9	8.215	93.84	1.483	38.68	< 0.0035	73.19

EJA 1/31/03 DM 1/31/03

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mg/kg = mg/L*0.1L/kg sample used

CHAIN OF CUSTODY

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-02	Page 1 of 1

Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 24 Hours
Project Designation 618-5 Burial Ground - Quick Turn Metals	Sampling Location 300-FF-1 618-5 Burial Ground		SAF No. B02-066		
Ice Chest No. ERC 97-079	Field Logbook No. EL 1395-6	COA RG618529W0	Method of Shipment Government Vehicle		
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A		

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
Tie To J00CF7

Special Handling and/or Storage
None

Preservation	None										
Type of Container	aG										
No. of Container(s)	1										
Volume	60mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

SDG W03939 Due

SAMPLE ANALYSIS J3A070209

Sample No.	Matrix *	Sample Date	Sample Time										
J00801	SOIL	12-13-02	~~1235~~ 1349	X				J00CF7					
FFPPC	SOIL		1349 12-13-02										
	SOIL												
	SOIL												
	SOIL												

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From Doug	Doug Bowers	12-13-02/1500	300FF-1 change trailer	12-13-02/1500
Relinquished By/Removed From 300FF1 change trailer		12-16-02/0900	Received By/Stored In Doug Bowers	12-16-02/0900
Relinquished By/Removed From Doug	Doug Bowers	12-16-02/1245	Received By/Stored In RLF 1A 3728	12-16-02/1245
Relinquished By/Removed From 1A 3728		01-07-03 1215	Received By/Stored In R. Fuller R. Fuller	01-07-03 1215
Relinquished By/Removed From ERC	R. Fuller R. Fuller	01-07-03 1230	Received By/Stored In STL Louisville	1230
Relinquished By/Removed From		Date/Time	Received By/Stored In A. Rhineheart	1/7/03 Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Activity Scan

Personnel not available to relinquish samples from the 3728
Ref # 1A on 01/07/03

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

VMS Gamma Spectroscopy Report generated 19-DEC-2002 14:40:43

Configuration	: DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_RCF10742_DET1_750ML9001360		
Sample ID	: J00CF7	Project Number	: 300-FF-1
RFC Number	: RCF10742	SAF Number	: B02-065
Sample Quantity	: 1.00000E+00 EACH		
Sample Type	: OTHER SOLID	Sample Geometry	:
Sample Date	: 13-DEC-2002 12:35:00	Acquisition date	: 19-DEC-2002 13:40:1
Decay time	: 6 01:05:26.31	% dead time	: 0.0%
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.49
Energy cal. time	: 14-FEB-2002 16:05:03	Effic. cal. time	: 3-APR-2002 13:21:12
Detector name	: BEGE 3820	Counting geometry	: 750 ml >900<1360
Peak Sensitivity	: 3.00000		
Efficiency Type	: EMPIRICA	Energy tolerance	: 2.00000

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/EACH)	Act error	MDA (pCi/EACH)	MDA error	Act/M
K-40	5.620E+03	8.471E+02	2.449E+02	2.319E+01	22.9
CS-137	~~2.716E+01~~	~~2.321E+01~~	3.437E+01	3.321E+00	0.7
TL-208	~~9.155E+01~~	~~2.970E+01~~	2.701E+01	2.712E+00	3.3
PB-212	3.240E+02	4.444E+01	3.612E+01	3.971E+00	8.9
PB-214	3.412E+02	5.280E+01	4.561E+01	4.505E+00	7.4
AC-228	2.579E+02	1.045E+02	1.837E+02	1.843E+01	1.4
TH-234	1.514E+04	1.591E+03	6.189E+02	2.567E+02	24.4
U-235	7.246E+02	7.130E+01	3.091E+01	3.017E+00	23.4

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/EACH)	K.L. Ided	Act error	MDA (pCi/EACH)	MDA error	Act/MD
CO-60	-2.012E+01		2.023E+01	3.191E+01	2.914E+00	-0.63
EU-152	2.037E+01		3.595E+01	6.277E+01	7.384E+00	0.32
EU-154	1.188E+01		2.608E+01	4.531E+01	4.466E+00	0.26
EU-155	5.677E+01	+	4.108E+01	8.372E+01	9.183E+00	0.67
BI-212	3.412E+02		2.714E+02	5.366E+02	5.807E+01	0.63
BI-214	2.990E+02	+	8.857E+01	1.296E+02	1.323E+01	2.30
RA-226	1.265E+04	+	1.368E+03	1.628E+03	1.462E+02	7.76
AM-241	-2.303E+01		5.368E+01	8.788E+01	1.021E+01	-0.26

Approved by: _____ Approval Date: 12 / 23 / 02

TIMOTHY J. SNIDER

QUALITATIVE ONLY

MS Gamma Spectroscopy Report generated 23-DEC-2002 10:31:40

Configuration : DKA100:[GAMMA.SCUSR.ARCHIVE]SMP__ORTEC_750MAR9001360_1064.CN
Sample ID : 300-FF-1-BKGD
Project Number : 300-FF-1
RFC Number :
SAF Number : NONE
Sample Quantity : 1.00000E+00 EACH
Sample Type : OTHER SOLID
Sample Geometry :
Sample Date :
Acquisition date : 23-DEC-2002 09:31:26
Decay time :
% dead time : 0.0%
Elapsed live time: 0 01:00:00.00
Elapsed real time: 0 01:00:00.45
Energy cal. time : 17-SEP-2002 06:13:11
Effic. cal. time : 24-SEP-2002 09:37:48
Detector name : Theortec
Counting geometry: 750MAR 900-1360
Peak Sensitivity : 3.00000
Efficiency Type : EMPIRICA
Energy tolerance: 2.00000

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/EACH)	Act error	MDA (pCi/EACH)	MDA error	Act/MD
K-40	2.693E+03	3.873E+02	1.062E+02	9.772E+00	25.36
TL-208	4.833E+01	1.951E+01	1.490E+01	1.600E+00	3.24
PB-212	1.634E+02	2.828E+01	2.839E+01	3.222E+00	5.75
BI-214	5.358E+02	5.620E+01	3.197E+01	3.569E+00	16.75
PB-214	5.385E+02	4.885E+01	3.113E+01	3.083E+00	17.29
RA-226	1.565E+03	3.765E+02	3.557E+02	3.198E+01	4.39
AC-228	1.168E+02	5.251E+01	1.071E+02	1.066E+01	1.09
TH-234	6.297E+02	2.512E+02	3.285E+02	1.354E+02	1.91

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (pCi/EACH)	K.L. Ided	Act error	MDA (pCi/EACH)	MDA error	Act/MD
CS-137	-1.374E+02		2.565E+02	4.292E+02	5.210E+01	-0.32
BI-212	2.992E+02		1.495E+02	2.883E+02	3.462E+01	1.03
U-235	8.922E+01	+	2.174E+01	3.163E+01	3.089E+00	2.82
AM-241	2.030E+01		3.351E+01	5.015E+01	5.262E+00	0.40

Approved by: _____ Approval Date: __ / __ / ____

DRAFT

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 01/07/03 @ 12:30 AR

Client: BHI SDG #: W03939 NA [ ] SAF #: B02-066 NA [ ]

Work Order Number: J3A070209 Chain of Custody # B02-066-02

Shipping Container ID: ERC 97-079 Air Bill # N/A

1. Custody Seals on shipping container intact? NA [ ] Yes [X] No [ ]
2. Custody Seals dated and signed? NA [ ] Yes [X] No [ ]
3. Chain of Custody record present? Yes [X] No [ ]
4. Cooler temperature: _____ NA [X] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [X]
6. Number of samples in shipping container: 1
7. Sample holding times exceeded? NA [X] Yes [ ] No [ ]
8. Samples have:
   - ___ tape
   - X custody seals
   - X hazard labels
   - X appropriate samples labels
9. Samples are:
   - X in good condition
   - ___ broken
   - ___ leaking
   - ___ have air bubbles (Only for samples requiring head space)
10. Sample pH taken? NA [X] pH<2 [ ] pH>2 [ ]
11. Sample Location, Sample Collector Listed? * Yes [X] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [X]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: [illegible] / Richard Date: 01/07/03

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/01, Rev. 4

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-066-02	Page 1 of 1
Collector: Doug Bowers / Bob Fokl Dog	Company Contact: Jeff Lerch	Telephone No.: 373-5904	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround
Project Designation: 618-5 Burial Ground - Quick Turn Metals	Sampling Location: 300-FF-1 618-5 Burial Ground		SAF No.: B02-066	Air Quality ☐ / 24 Hours
Ice Chest No.: ERC 97-079	Field Logbook No.: EL 1395-6	COA: RG618529W0	Method of Shipment: Government Vehicle	
Shipped To: Severn Trent Incorporated, Richland	Offsite Property No.: None		Bill of Lading/Air Bill No.: None	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
SEE Attached Report
Special Handling and/or Storage
None

SDG W03939

SAMPLE ANALYSIS Due 2-14

J3A210156

Preservation	None												
Type of Container	aG												
No. of Container(s)	1												
Volume	60mL												
	See item (1) in Special Instructions.												
Sample No.	Matrix *	Sample Date	Sample Time										
J00D87	SOIL	1-20-03	1240	X	FGE	GF							
J00D88	SOIL	1-20-03	1242	X	FGE	GG							
J00D89	SOIL	1-20-03	1244	X	FGE	GJ							
J00D90	SOIL	1-20-03	1246	X	FGE	GN							
J00D91	SOIL	1-20-03	1250	X	FGE	GT							

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: Doug Bowers / Doug Bowers	Date/Time: 1-20-03 / 1530	Received By/Stored In: Ref 1A 3728
Date/Time: 1-20-03 / 1530		
Relinquished By/Removed From: 1A 3728	Date/Time: 1-21-03 0945	Received By/Stored In: R. Kelly R. Fabiano
Date/Time: 0945		
Relinquished By/Removed From: ERC / R. Kelly R. Fabiano	Date/Time: 1000 / 1-21-03	Received By/Stored In: SIL <100cfm / Alicia A. Rhinehart
Date/Time: 1-21-03		
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:
Date/Time:		
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:
Date/Time:		
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:
Date/Time:		

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Activity Scan

Personnel not available to relinquish samples from the 3728 Ref # 1A on 1/21/03

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-02	Page 1 of 1

Collector Doug Bowers / Bob Fohl	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 24 Hours
Project Designation 618-5 Burial Ground - Quick Turn Metals	Sampling Location 300-FF-1 618-5 Burial Ground		SAF No. B02-066		
Ice Chest No. ERC 97-079	Field Logbook No. EL 1395-6	COA RG618529W0	Method of Shipment Government Vehicle		
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. NA		Bill of Lading/Air Bill No. NA		

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

SEE ATTACHED Report

Special Handling and/or Storage

None

Preservation	None										
Type of Container	aG										
No. of Container(s)	1										
Volume	60mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
J00D92	SOIL	1-20-03	1252	X	FGE	G1							
J00D93	SOIL	1-20-03	1254	X	FGE	G1							
J00D94	SOIL	1-20-03	1258	X	FGE	G3							
J00D95	SOIL	1-20-03	1300	X	FGE	G4							
J00D96	SOIL	1-20-03	1302	X	FGE	G5							

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CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers Bowers	Date/Time 1-20-03/1730	Received By/Stored In Bob Fohl 1A3728	Date/Time 1-20-03/1730
Relinquished By/Removed From 1A 3728	Date/Time 1-21-03 0945	Received By/Stored In R. Fohl R. Fohl	Date/Time 1-21-03 0945
Relinquished By/Removed From R. Fohl R. Fohl	Date/Time 1-21-03 1000	Received By/Stored In A. Rhinehart	Date/Time 1-21-03 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Activity Scan

Personnel not available to relinquish samples from the 3728 Ref # 1A on 1/21/03

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-02	Page 1 of 1
Collector: Doug Bowers / Bob Fehlberg	Company Contact: Jeff Lerch; Telephone No.: 373-5904	Project Coordinator: KESSNER, JH	Price Code: Air Quality ☐ / Data Turnaround: 24 Hours
Project Designation: 618-5 Burial Ground - Quick Turn Metals	Sampling Location: 300-FF-1 618-5 Burial Ground	SAF No.: B02-066	
Ice Chest No.: ERC 97-079	Field Logbook No.: EL 1395-6 / COA: RG618529W0	Method of Shipment: Government Vehicle	
Shipped To: Severn Trent Incorporated, Richland	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: NA	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
SEE Attached Report

Special Handling and/or Storage
None

Preservation	None										
Type of Container	aG										
No. of Container(s)	1										
Volume	60mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
J00D97	SOIL	1-20-03	1306	X	FGE	G7							
J00D98	SOIL	1-20-03	1308	X	FGE	G8							
J00D99	SOIL	1-20-03	1310	X	FGE	HD							
J00DB0	SOIL	1-20-03	1312	X	FGE	HE							
J00DB1	SOIL	1-20-03	1314	X	FGE	HJ							

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CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers / Bowers	1-20-03 / 1530	Ref 1A 3728	1-20-03 / 1530
1A 3728	1-21-03 0945	R. Fehlberg / R. Fehlberg	1-21-03 0945
ERC / R. Fehlberg / R. Fehlberg	1-21-03 1000	STL 100 (A) / A. Rhineheart	1-21-03 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Activity Scan

Personnel not available to relinquish samples from the 3728 Ref # 1A on 1/21/03

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

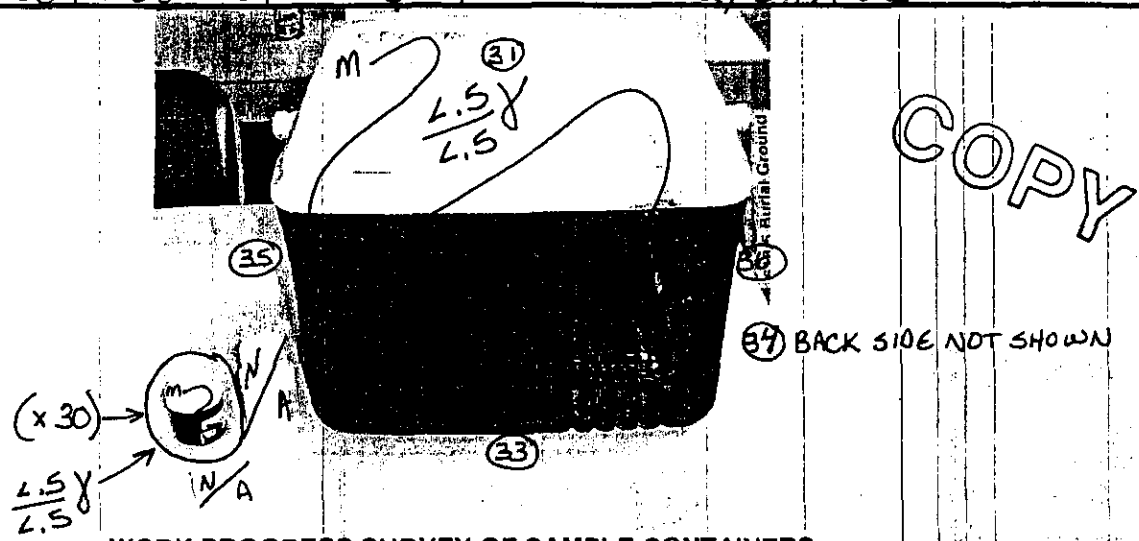
BHI-EE-011 (03/01/2002)

ERC RADIOLOGICAL SURVEY RECORD

Type of Survey (check one only)
☐ *Release ☐ Routine N/A ■ Work Progress ☐ Shipment
* The potential for internal contamination was evaluated.

Survey # RSR - FF2-03-0087

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010/Rev.00	1-20-03	1530	FF2/SAMPLES



WORK PROGRESS SURVEY OF SAMPLE CONTAINERS

All radiation readings are γ dose rates in units of mR/hr unless otherwise indicated.

Technical Assessment # ~~TA-97-SR-31~~ 1-20-03 TA-01-SR-116

CA Contamination Area	HCA High Contamination Area	RBA Radiological Buffer Area	ARA Airborne Radioactivity Area	RMA Radioactive Materials Area	RA Radiation Area	HRA High Radiation Area	VHRA Very High Radiation Area

○ Technical Smear	# Direct	M Large Area Wipe	Contact / 30 cm General Area Dose Rates =Uncorrected Meter Reading (mR/hr)	Radiological Boundary x-----x-----x	Δ Micro Rem (μR/hr)	N Neutrons (mRem/hr)	[AS] Air Sample Location	SCA Soil Contamination Area	RMSA Radioactive Material Storage Area

Instruments

Model	Serial #	Source ✓ (Initial)	CF	Cal Due Date	Model	Serial #	Source ✓ (Initial)	CF	Cal Due Date
2224-2/DP6B0	0072/0071	MK	8β	11-8-03	~~2929~~ 1-20-03	N	MK	N/A	
RO-20	0087	MK	1	11-26-03	~~43-10-01~~		MK 1-20-03	A	

RCT Name/Signature/Date:
M. KNAPPEK / M. Knappek / 1-20-03

RCT Supervisor Name/Signature/Date:

ERC RADIOLOGICAL SURVEY RECORD (continuation)

Contamination Measurement Information

Circled values indicate Removable β contamination in mrad/hr β

COPY

No.	Description of Item or Location	Removable (dpm/100 cm²) α	Removable α C-F	Removable β-γ	Removable β-γ C-F	Total (dpm/100 cm²) α	Total α C-F	Total β-γ	Total β-γ C-F
M	ALL L.A.W.'S	N/A	N/A	<1K	8	N/A	N/A	N/A	N/A
1	TECH. SMEARS	~~*<20+20-03~~ N/A	N/A	<1K	8				
↓	↓	N/A	↓	↓	↓				
36	TECH. SMEARS	~~*<20+20-03~~ N/A	N/A	<1K	8				
N/A	N/A	N/A	N/A	N/A	N/A				
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Corrected Dose Rate Calculations

Show all work. CF = 1 unless noted.

Location	Contact Readings β (mrad/hr) (WO-WC) X CF = DR	Contact Readings γ (mR/hr) WC X CF = DR	30 cm Readings β (mrad/hr) (WO-WC) X CF = DR	30 cm Readings γ (mR/hr) WC X CF = DR
ALL SAMPLES	N/A	<.5 X 1 = <.5	N/A	<.5 X 1 = <.5
COOLER	N/A	<.5 X 1 = <.5	N/A	<.5 X 1 = <.5

ERC RADIOLOGICAL SURVEY RECORD (continuation)	Page: 3 of 4 Survey # RSR- FF2-03-0087

Additional Information
(Drawing, Map, Etc.)

GCPM to pCi/gm Conversion Chart

Refer to SSI #300RA-03

$$\frac{\text{GCPM - BKGD}}{4} = \text{pCi/gm}$$

COPY

Sample # J00CJ7, J00D87 — (379 - 226) / 4 = 38 pCi/gm

Sample # J00CJ8, J00D88 — (367 - 226) / 4 = 35 pCi/gm

Sample # J00CJ9, J00D89 — (381 - 226) / 4 = 39 pCi/gm

Sample # J00CK0, J00D90 — (420 - 226) / 4 = 49 pCi/gm

Sample # J00CK1, J00D91 — (601 - 226) / 4 = 94 pCi/gm

Sample # J00CK2, J00D92 — (556 - 226) / 4 = 83 pCi/gm

Sample # J00CK3, J00D93 — (544 - 226) / 4 = 80 pCi/gm

Sample # J00CK4, J00D94 — (453 - 226) / 4 = 57 pCi/gm

Sample # J00CK5, J00D95 — (496 - 226) / 4 = 68 pCi/gm

Sample # J00CK6, J00D96 — (490 - 226) / 4 = 66 pCi/gm

ERC RADIOLOGICAL SURVEY RECORD (continuation)

Survey # RSR- FF2-03-0087

Additional Information
(Drawing, Map, Etc.)

GCPM to pCi/gm Conversion Chart

Refer to SSI #300RA-03

$$\frac{\text{GCPM - BKGD}}{4} = \text{pCi/gm}$$

COPY

Sample # 300CK7, 300D97 — (473 - 226) / 4 = 62 pCi/gm

Sample # 300CK8, 300D98 — (450 - 226) / 4 = 56 pCi/gm

Sample # 300CK9, 300D99 — (472 - 226) / 4 = 62 pCi/gm

Sample # 300CL0, 300DB0 — (402 - 226) / 4 = 44 pCi/gm

Sample # 300CL1, 300DB1 — (430 - 226) / 4 = 51 pCi/gm

Sample # _____, _____ — (-) / 4 = _____ pCi/gm

Sample # _____, _____ — (-) / 4 = _____ pCi/gm

Sample # _____, _____ — (-) / 4 = _____ pCi/gm

Sample # _____, _____ — (-) / 4 = _____ pCi/gm

Sample # _____, _____ — (-) / 4 = _____ pCi/gm

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 1/21/03 @ 10:00 AM

Client: BHI SDG #: W03939 NA [ ] SAF #: B22-066 NA [ ]

Work Order Number: J3A210156 Chain of Custody # B22-066-02

Shipping Container ID: ERC-97-079 Air Bill # N/A

1. Custody Seals on shipping container intact? NA [ ] Yes [X] No [ ]
2. Custody Seals dated and signed? NA [ ] Yes [X] No [ ]
3. Chain of Custody record present? Yes [X] No [ ]
4. Cooler temperature: _____ NA [X] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [X]
6. Number of samples in shipping container: 15
7. Sample holding times exceeded? NA [X] Yes [ ] No [ ]
8. Samples have:
   - [X] tape
   - [X] custody seals
   - [X] hazard labels
   - [X] appropriate samples labels
9. Samples are:
   - [X] in good condition
   - [ ] broken
   - [ ] leaking
   - [ ] have air bubbles (Only for samples requiring head space)
10. Sample pH taken? NA [X] pH<2 [ ] pH>2 [ ]
11. Sample Location, Sample Collector Listed? * Yes [X] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [X]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: [signature] Date: 1/21/03

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/01, Rev. 4

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-02	Page 1 of 1

Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 24 Hours
Project Designation 618-5 Burial Ground - Quick Turn Metals	Sampling Location 300-FF-1 618-5 Burial Ground		SAF No. B02-066		
Ice Chest No. ERC 97-079	Field Logbook No. EL 1395-6	COA RG618529W0	Method of Shipment Government Vehicle		
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. NA		Bill of Lading/Air Bill No. NA		

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
SEE Attached Report

Special Handling and/or Storage
None

Preservation	None										
Type of Container	aG										
No. of Container(s)	1										
Volume	60mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions										

SDG W03939 Due 2-14

J3A230160

Sample No.	Matrix *	Sample Date	Sample Time										
J00DB3	SOIL	1-22-03	1400	X	FGH69								
J00DB4	SOIL	1-22-03	1402	X	FGH7D								
J00DD5	SOIL	1-22-03	1406	X	FGH7G								
J00DB6	SOIL	1-22-03	1408	X	FGH7J								
J00DB7	SOIL	1-22-03	1410	X	FGH7K								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time 1-22-03/1608	Received By/Stored In Ref 1A 3728	Date/Time 1-22-03/1600
Relinquished By/Removed From Ref 1-A 3728	Date/Time 1-23-03 0830	Received By/Stored In R. Fellows	Date/Time 0830
Relinquished By/Removed From R. Fellows	Date/Time 1-23-03 0845	Received By/Stored In T. Heidelberg	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Activity Scan

1-23-03 0845
Personnel not available to relinquish samples from the 3728 Ref # 1A on 1/23/03

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-02	Page 1 of 1

Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 24 Hours
Project Designation 618-5 Burial Ground - Quick Turn Metals	Sampling Location 300-FF-1 618-5 Burial Ground		SAF No. B02-066		
Ice Chest No. ERC 97-029	Field Logbook No. EL 1395-6	COA RG618529W0	Method of Shipment Government Vehicle		
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A		

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
SEE Attached Report

Special Handling and/or Storage
None

Preservation	None										
Type of Container	aG										
No. of Container(s)	1										
Volume	60mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
J00DB8	SOIL	1-23-03	1412	X	FGH7	L							
J00DB9	SOIL	1-23-03	1416	X	FGH7	Q							
J00DC0	SOIL	1-23-03	1418	X	FGH7	X							
J00DC1	SOIL	1-23-03	1422	X	FGH7	4							
J00DC2	SOIL	1-23-03	1424	X	FGH7	5							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	1-23-03 1600	RF 1-23-03 RF 3728	1-23-03 1600
RF 3728	1-23-03 0830	R. Fuller R. Fuller	1-23-03 0830
ERC R. Fuller R. Fuller	1-23-03 0845		

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Activity Scan

Personnel not available to relinquish samples from the 3728
Ref # 10 on 1/23/03

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

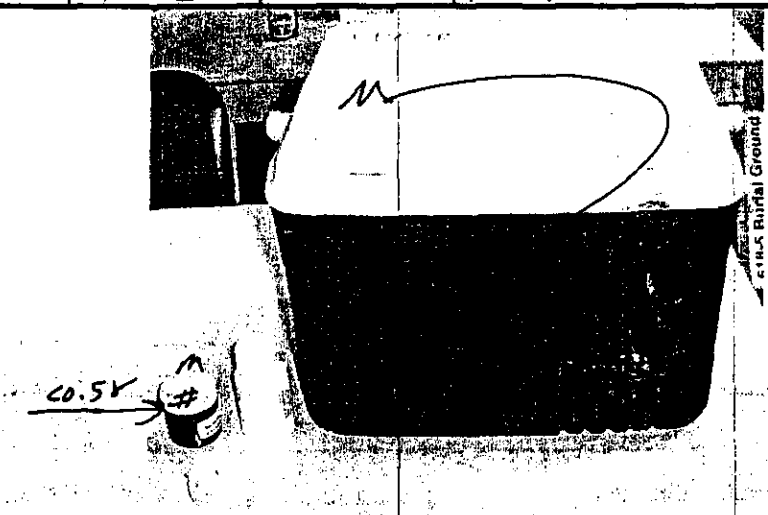
BHI-EE-011 (03/01/2002)

ERC RADIOLOGICAL SURVEY RECORD

Type of Survey (check one only)
☐ *Release ☐ Routine N/A ☒ Work Progress ☐ Shipment
* The potential for internal contamination was evaluated.

Survey # RSR - FFZ-03 - 0104

RWP # / Rev. #	Date	Time	Location Code/Description
FFZ-02-010 Rev 00	01/22/03	1510	FFZ/618-5



WORK PROGRESS SURVEY OF SAMPLE CONTAINERS,
including ice chest; S/S & P/S
60 ml sample bottles x 20

All radiation readings are γ dose rates in units of mR/hr unless otherwise indicated.

Technical Assessment # TA-01-SR-16

CA Contamination Area	HCA High Contamination Area	RBA Radiological Buffer Area	ARA Airborne Radioactivity Area	RMA Radioactive Materials Area	RA Radiation Area	HRA High Radiation Area	VHRA Very High Radiation Area

○ Technical Smear	# Direct	M Large Area Wipe	Contact / 30 cm General Area Dose Rates =Uncorrected Meter Reading (mR/hr)	Radiological Boundary x----x-----x	Δ Micro Rem (μR/hr)	N Neutrons (mRem/hr)	[AS] Air Sample Location	SCA Soil Contamination Area	RMSA Radioactive Material Storage Area

Instruments

Model	Serial #	Source ✓ (Initial)	CF	Cal Due Date	Model	Serial #	Source ✓ (Initial)	CF	Cal Due Date
LZ224.2	0041	SH	N/A	12-11-03	RO-20	0087	SH	1	11-26-03
DP6BD	0001	SH	BK 7.3	12-11-03	N/A				

RCT Name/Signature/Date:
SJ Huddleston
01-22-03
SJ Huddleston

RCT Supervisor Name/Signature/Date:

ERC RADIOLOGICAL SURVEY RECORD (continuation)

Contamination Measurement Information

Circled values indicate Removable β contamination in mrad/hr β

No.	Description of Item or Location	Removable (dpm/100 cm²)				Total (dpm/100 cm²)			
		α	α C-F	β-γ	β-γ C-F	α	α C-F	β-γ	β-γ C-F
1	ALL LAWS / DIRECTS	N/A →		<1000	7.3	N/A →		<5000	7.3

Corrected Dose Rate Calculations

Show all work. CF = 1 unless noted.

Location	Contact Readings		30 cm Readings	
	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR
ALL DOSE RATES	N/A →	<0.5	N/A →	

BHI-TM-R006a (08/02/2000)

ERC RADIOLOGICAL SURVEY RECORD (continuation)	Page: 3 of 3 Survey # RSR- FF2-03 - 0104

Additional Information
(Drawing, Map, Etc.)

GCPM to pCi/gm Conversion Chart

Refer to SSI #300RA-03/1

$$\frac{\text{GCPM - BKGD}}{4} = \text{pCi/gm}$$

Sample # J00CL3, ~~J00B8~~ J00D83 1.22.03	488	- 273	= 54	pCi/gm	4
Sample # J00CL4, J00D84	557	- 273	= 71	pCi/gm	4
Sample # J00CL5, J00D85	435	- 273	= 41	pCi/gm	4
Sample # J00CL6, J00D86	739	- 273	= 117	pCi/gm	4
Sample # J00CL7, J00D87	537	- 273	= 66	pCi/gm	4
Sample # J00CL8, J00D88	510	- 273	= 59	pCi/gm	4
Sample # J00CL9, J00D89	448	- 273	= 44	pCi/gm	4
Sample # J00CCM0, J00DC0	553	- 273	= 70	pCi/gm	4
Sample # J00CCM1, J00DC1	414	- 273	= 35	pCi/gm	4
Sample # J00CCM2, J00DC2	473	- 273	= 50	pCi/gm	4

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 1-23-03 0845

Client: BHI SDG #: W03939 NA [ ] SAF #: B02-066 NA [ ]

Work Order Number: J3A230160 Chain of Custody # B02-066-02

Shipping Container ID: ERC 97-079 Air Bill # _____

1. Custody Seals on shipping container intact? NA [ ] Yes [X] No [ ]
2. Custody Seals dated and signed? NA [ ] Yes [X] No [ ]
3. Chain of Custody record present? Yes [X] No [ ]
4. Cooler temperature: _____ NA [X] 5. Vermiculite/packing materials is NA [X] Wet [ ] Dry [ ]
6. Number of samples in shipping container: 10
7. Sample holding times exceeded? NA [ ] Yes [X] No [X] JH 1-23-03
8. Samples have:
   - ___ tape
   - ✓ custody seals
   - ___ hazard labels
   - ✓ appropriate samples labels
9. Samples are:
   - ✓ in good condition
   - ___ broken
   - ___ leaking
   - ___ have air bubbles (Only for samples requiring head space)
10. Sample pH taken? NA [X] pH<2 [ ] pH>2 [ ]
11. Sample Location, Sample Collector Listed? * Yes [ ] No [✓]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: [signature] Date: 1-23-03

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/01, Rev. 4

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-02	Page 1 of 1

Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 24 Hours
Project Designation 618-5 Burial Ground - Quick Turn Metals	Sampling Location 300-FF-1 618-5 Burial Ground		SAF No. B02-066		
Ice Chest No. ERC 96 - 079	Field Logbook No. EL 1395-6	COA RG618529W0	Method of Shipment Government Vehicle		
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A		

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

J3A270195

Preservation	None
Type of Container	aG
No. of Container(s)	1
Volume	60mL

SAMPLE ANALYSIS

W03939

See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
J00DC3	SOIL	1-24-03	0914	X	FGPRD								
J00DC4	SOIL	1-24-03	0916	X	FGPR1								
J00DC5	SOIL	1-24-03	0920	X	FGPR5								
J00DC6	SOIL	1-24-03	0922	X	FGPR8								
J00DC7	SOIL	1-24-03	0926	X	FGPTC								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time Doug Bowers 1-24-03 1500	Received By/Stored In REF 1A 3728	Date/Time 1-24-03 1500
Relinquished By/Removed From REF 1A 3728	Date/Time 12703 1000	Received By/Stored In SIGNATURE	Date/Time 12703 1000
Relinquished By/Removed From ERC SIGNATURE	Date/Time 12703 1245	Received By/Stored In STL <100cpm A. Rhinehart	Date/Time 13:45 1/27/03
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Activity Scan

Personnel not available to relinquish samples from the 3728 Ref # 1A on 1/27/03

Matrix *
S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-02	Page 1 of 1

Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH	Price Code Air Quality ☐	Data Turnaround 24 Hours
Project Designation 618-5 Burial Ground - Quick Turn Metals	Sampling Location 300-FF-1 618-5 Burial Ground		SAF No. B02-066		
Ice Chest No. ERC-96-079	Field Logbook No. EL 1395-6	COA RG618529W0	Method of Shipment Government Vehicle		
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A		

POSSIBLE SAMPLE HAZARDS/REMARKS

Q-27038 Due 2/14/03

Special Handling and/or Storage

J3A270195

Preservation	None											
Type of Container	aG											
No. of Container(s)	1											
Volume	60mL											
SAMPLE ANALYSIS	See item (1) in Special Instructions											
SDG# W03939												
Sample No.	Matrix *	Sample Date	Sample Time									
J00DC8	SOIL	1-24-03	0928	X	FGPTE							
J00DC9	SOIL	1-24-03	0932	X	FGPTF							
J00DD0	SOIL	1-24-03	0934	X	FGPTG							
	SOIL											
	SOIL											

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers Doug Bowers	Date/Time 1-24-03/1500	Received By/Stored In Ref 1A 3728	Date/Time 1-24-03/1500
Relinquished By/Removed From REF 1A 3728	Date/Time 12703 1000	Received By/Stored In S J Gale	Date/Time 12703 1000
Relinquished By/Removed From ERC S J Gale	Date/Time 12703 1345	Received By/Stored In 372 400cfm April Rhinehart A. Rhinehart	Date/Time 13:45 1/27/03
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; Activity Scan

Personnel not available to relinquish samples from the 3728 Ref # 1A on 1/27/03

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

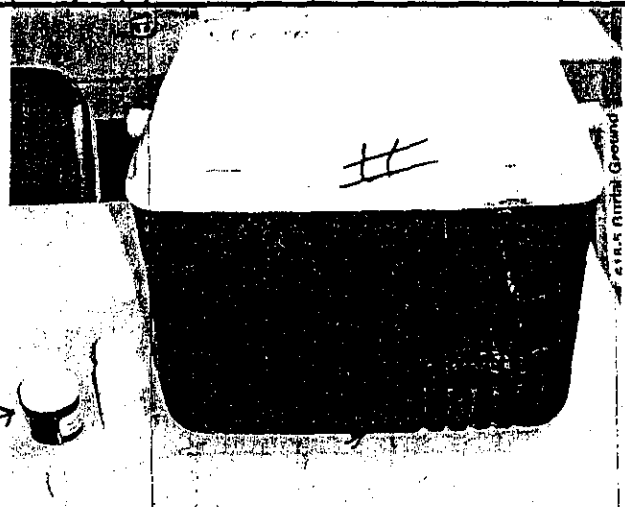
ERC RADIOLOGICAL SURVEY RECORD

Page 1 of 4 5

Type of Survey (check one only)
☐ *Release ☐ Routine _____ ☒ Work Progress ☐ Shipment
* The potential for internal contamination was evaluated.

Survey # RSR - FF 2-03-011 1-24-03

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010 R00	1-24-03	1020	FF2 / Change TLR - Sample Survey



#, 1-16
60 mL samples

WORK PROGRESS SURVEY OF SAMPLE CONTAINERS

COPY

B Bck @ Change Trailer = 118 cpm

All radiation readings are γ dose rates in units of mR/hr unless otherwise indicated.

Technical Assessment # TA-01-SR-16

CA Contamination Area	HCA High Contamination Area	RBA Radiological Buffer Area	ARA Airborne Radioactivity Area	RMA Radioactive Materials Area	RA Radiation Area	HRA High Radiation Area	VHRA Very High Radiation Area

○ Technical Smear	# Direct	M Large Area Wipe	Contact / 30 cm General Area Dose Rates =Uncorrected Meter Reading (mR/hr)	Radiological Boundary x-----x-----x	Δ Micro Rem (μR/hr)	N Neutrons (mRem/hr)	[AS] Air Sample Location	SCA Soil Contamination Area	RMSA Radioactive Material Storage Area

Instruments

Model	Serial #	Source ✓ (Initial)	CF	Cal Due Date	Model	Serial #	Source ✓ (Initial)	CF	Cal Due Date
L-2224 / DP6	0014/0015		7.7	12/11/03 12/11/03					
L-2929	95564		NA	12-3-03					

RCT Name/Signature/Date: JJ Goos / 1-24-03

RCT Supervisor Name/Signature/Date:

ERC RADIOLOGICAL SURVEY RECORD (continuation)

Contamination Measurement Information

Circled values indicate Removable β contamination in mrad/hr β

No.	Description of Item or Location	Removable (dpm/100 cm²)				Total (dpm/100 cm²)			
		α	α C-F	β-γ	β-γ C-F	α	α C-F	β-γ	β-γ C-F
#	As Shown		N/A					<5k	7.7
M's	As Shown	N/A		<1k	7.7		N/A		

Corrected Dose Rate Calculations

Show all work. CF = 1 unless noted.

Location	Contact Readings		30 cm Readings	
	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR

COPY

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Page: 3 of 5

Survey # RSR- FF2-03-0115

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
300 FF2	α	0.29	2.8	5.9	.339
	βγ	418.4	28	75	.369

Sample			Counting Results				Final Analysis
No	Description of Smear Location		Con. Type	Sample Count Duration (min.)	Gross CPM	Net CPM	Removable (dpm 100 cm²)
1	60mL Sample		α	1	0	< DL	[< 20
			βγ	1	25		< 1 K]
2			α	1	0		
			βγ	1	45		
3			α	1	0		
			βγ	1	40		
4			α	1	0		
			βγ	1	53		
5			α	1	0		
			βγ	1	47		
6			α	1	0		
			βγ	1	39		
7			α	1	0		
			βγ	1	47		
8			α	1	0		
			βγ	1	54		
9			α	1	0		
			βγ	1	39		
10			α	1	0		
			βγ	1	42		
11			α	1	0		
			βγ	1	34		
12			α	1	0		
			βγ	1	43		
13			α	1	0		
			βγ	1	38		
14			α	1	0		
			βγ	1	47		

COPY

BHI-TM-R006k (7/31/2000)

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Page: 4 of ~~4~~ 5

Survey # RSR-FF2-03-0116

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
300 FF2	α	0.29	2.8	5.9	.339
	βγ	48.4	28	75	.369

Sample		Counting Results				Final Analysis
No	Description of Smear Location	Con. Type	Sample Count Duration (min.)	Gross CPM	Net CPM	Removable (dpm 100 cm²)
15	60 ml sample	α	1	0	<DL	[<20
		βγ	1	51		<1K]
16	60 ml sample	α	1	0		
		βγ	1	38		
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				

COPY

BHI-TM-R006k (7/31/2000)

ERC RADIOLOGICAL SURVEY RECORD (continuation)

Survey # RSR-FF2-03-0116

Additional Information
(Drawing, Map, Etc.)

GCPM to pCi/gm Conversion Chart

Refer to SSI #300RA-03

$$\frac{\text{GCPM - BKGD}}{4} = \text{pCi/gm}$$

Sample # J00 DC3, J00cm3 — (275 - 118) / 4 = 39 pCi/gm

Sample # J00DC4, J00cm4 — (233 - 118) / 4 = 28.7 pCi/gm

Sample # J00DC5, J00cm5 — (279 - 118) / 4 = 40 pCi/gm

Sample # J00DC6, J00cm6 — (309 - 118) / 4 = 48 pCi/gm

Sample # J00DC7, J00cm7 — (469 - 118) / 4 = 88 pCi/gm

Sample # J00DC8, J00cm8 — (405 - 118) / 4 = ~~37~~ 72 pCi/gm — 1-24-03

Sample # J00DC9, J00cm9 — (267 - 118) / 4 = 37 pCi/gm

Sample # J00DD0, J00cm0 — (321 - 118) / 4 = 51 pCi/gm

Sample # _____, _____ — (-) / 4 = _____ pCi/gm

Sample # _____, _____ — (-) / 4 = _____ pCi/gm

COPY

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 1/27/03@ 13:45 ak

Client: BHI SDG #: W03939 NA [ ] SAF #: B02-066 NA [ ]

Work Order Number: J3A270195 Chain of Custody # B02-066-02

Shipping Container ID: ERC-96-079 Air Bill # N/A

1. Custody Seals on shipping container intact? NA [ ] Yes [X] No [ ]
2. Custody Seals dated and signed? NA [ ] Yes [X] No [ ]
3. Chain of Custody record present? Yes [X] No [ ]
4. Cooler temperature: _____ NA [X] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [X]
6. Number of samples in shipping container: 8
7. Sample holding times exceeded? NA [X] Yes [ ] No [ ]
8. Samples have:
   - X tape
   - X custody seals
   - X hazard labels
   - X appropriate samples labels
9. Samples are:
   - X in good condition
   - ____ broken
   - ____ leaking
   - ____ have air bubbles
   - (Only for samples requiring head space)
10. Sample pH taken? NA [X] pH<2 [ ] pH>2 [ ]
11. Sample Location, Sample Collector Listed? * Yes [X] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [X]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: April Bruntrad / Richard Date: 1/27/03

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on_____ by_____ Person contacted_____

[ ] No action necessary; process as is.

Project Manager_____ Date_____

LS-023, 9/01, Rev. 4

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-02	Page 1 of 1
Collector: Doug Bowers	Company Contact: Jeff Lerch; Telephone No.: 373-5904	Project Coordinator: KESSNER, JH	Price Code / Data Turnaround: 24 Hours
Project Designation: 618-5 Burial Ground - Quick Turn Metals	Sampling Location: 300-FF-1 618-5 Burial Ground	SAF No.: B02-066	Air Quality ☐
Ice Chest No.: ERC 99116	Field Logbook No.: EL 1395-6; COA: RG618529W0	Method of Shipment: Government Vehicle	
Shipped To: Severn Trent Incorporated, Richland	Offsite Property No.: N/A	Bill of Lading/Air Bill No.: N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None										
Type of Container	aG										
No. of Container(s)	1										
Volume	60mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

SDG W03939 — Due 2-14 — J3A300152

Sample No.	Matrix *	Sample Date	Sample Time										
J00DD1	SOIL	1-29-03	0943	X	FG-V	4W							
J00DD2	SOIL	1-29-03	0947	X	FG-V	4H							
J00DD3	SOIL	1-29-03	0951	X	FG-V	4J							
J00DD4	SOIL	1-29-03	0953	X	FG-V	5A							
J00DD5	SOIL	1-29-03	0957	X	FG-V	5D							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
D Bowers / Bowers	0943 1-29-03/1530	D Bowers / T.F. 1A 3728	1-29-03/1530
REF 1A 3728	13003 0800	SJGALE	13003 0800
ERC / SJGALE	13003 0930	STL / T. Heidelberg	13003 0930

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Activity Scan

Personnel not available to relinquish samples from the 3728 Ref # 1A on 1 13003

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-066-02	Page 1 of 1
Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH	Price Code Air Quality ☐
Project Designation 618-5 Burial Ground - Quick Turn Metals	Sampling Location 300-FF-1 618-5 Burial Ground		SAF No. B02-066	Data Turnaround 24 Hours
Ice Chest No. ERC 99 116	Field Logbook No. EL 1395-6	COA RG618529W0	Method of Shipment Government Vehicle	
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A	

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

Preservation	None										
Type of Container	aG										
No. of Container(s)	1										
Volume	60mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
J00006	SOIL	1-29-03	0959	X	FGV	5H							
J00007	SOIL	1-29-03	1001	X	FGV	5J							
	SOIL			X									
	SOIL												
	SOIL												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time Doug Bowers 1-29-03/1430	Received By/Stored In REF 1A 3728	Date/Time 1-29-03/1530
Relinquished By/Removed From REF 1A 3728	Date/Time 1 30 03 0800	Received By/Stored In SJ Grace	Date/Time 1 30 03 0800
Relinquished By/Removed From ERC SJ Grace	Date/Time 1 30 03 0730	Received By/Stored In T. Heidelberg	Date/Time 1 30 03 0730
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Activity Scan

Personnel not available to relinquish samples from the 3728 Ref # 1A on 1 30 03

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

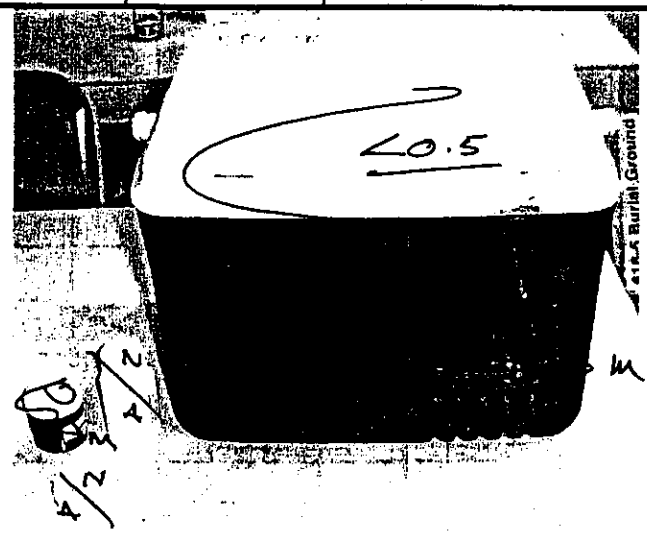
BHI-EE-011 (03/01/2002)

ERC RADIOLOGICAL SURVEY RECORD

Type of Survey (check one only)
☐ *Release ☐ Routine _____ ☒ Work Progress ☐ Shipment
* The potential for internal contamination was evaluated.

Survey # RSR - FF2-03-0145

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010/00	1.29.03	1230	FF2/ 618-5 SITE SAMPLES



WORK PROGRESS SURVEY OF SAMPLE CONTAINERS

COPY

All radiation readings are γ dose rates in units of mR/hr unless otherwise indicated.

Technical Assessment # TA-01-SR-16

CA Contamination Area	HCA High Contamination Area	RBA Radiological Buffer Area	ARA Airborne Radioactivity Area	RMA Radioactive Materials Area	RA Radiation Area	HRA High Radiation Area	VHRA Very High Radiation Area

○ Technical Smear	# Direct	M Large Area Wipe	Contact / 30 cm General Area Dose Rates =Uncorrected Meter Reading (mR/hr)	Radiological Boundary x----x----x	Δ Micro Rem (μR/hr)	N Neutrons (mRem/hr)	[AS] Air Sample Location	SCA Soil Contamination Area	RMSA Radioactive Material Storage Area

Instruments

Model	Serial #	Source ✓ (Initial)	CF	Cal Due Date	Model	Serial #	Source ✓ (Initial)	CF	Cal Due Date
CMNE3 DP4BD	0006 0042	Bam	160 4.8	10.10.03		N			
R020	0094	BRM	5/6	11.26.03		A			

RCT Name/Signature/Date:
Bill Marcen
[illegible]
1.29.03

RCT Supervisor Name/Signature/Date:

ERC RADIOLOGICAL SURVEY RECORD (continuation)

Contamination Measurement Information

Circled values indicate Removable β contamination in mrad/hr β

No.	Description of Item or Location	Removable (dpm/100 cm²)				Total (dpm/100 cm²)			
		α	α C-F	β-γ	β-γ C-F	α	α C-F	β-γ	β-γ C-F
ALL LAWS		N/A		<1K	4.8	N/A			
				N					
				A					

COPY

Corrected Dose Rate Calculations

Show all work. CF = 1 unless noted.

Location	Contact Readings		30 cm Readings	
	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR	β (mrad/hr) (WO-WC) X CF = DR	γ (mR/hr) WC X CF = DR
SAMPLES	(<0.5-<0.5)6=<0.5	(<0.5)5=<0.5	N/A	N/A
		N		
		A		

ERC RADIOLOGICAL SURVEY RECORD (continuation)	Page: 3 of 3 Survey # RSR- FF2-03- 0145

Additional Information
(Drawing, Map, Etc.)

GCPM to pCi/gm Conversion Chart

Refer to SSI #300RA-03

$$\frac{\text{GCPM - BKGD}}{4} = \text{pCi/gm}$$

Sample # J00DD1 , J00CN1	510 - 250 / 4	=	65	pCi/gm
Sample # J00DD2 , J00CN2	490 - 250 / 4	=	60	pCi/gm
Sample # J00DD3 , J00CN3	604 - 250 / 4	=	89	pCi/gm
Sample # J00DD4 , J00CN4	575 - 250 / 4	=	81	pCi/gm
Sample # J00DD5 , J00CN5	594 - 250 / 4	=	86	pCi/gm
Sample # J00DD6 , J00CN6	530 - 250 / 4	=	70	pCi/gm
Sample # J00DD7 , J00CN7	670 - 250 / 4	=	105	pCi/gm
Sample # _____ , _____	- / 4	=	_____	pCi/gm
Sample # _____ , _____	- / 4	=	_____	pCi/gm
Sample # _____ , _____	- / 4	=	_____	pCi/gm

COPY

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 1-30 0935

Client: BHI SDG #: W03939 NA [ ] SAF #: B02-066 NA [ ]

Work Order Number: J3A300152 Chain of Custody # B02-066-02

Shipping Container ID: ER 99-11-16 Air Bill # NA

1. Custody Seals on shipping container intact? NA [ ] Yes [ ] No [✓]
2. Custody Seals dated and signed? NA [ ] Yes [ ] No [✓]
3. Chain of Custody record present? Yes [✓] No [ ]
4. Cooler temperature:_____ NA [✓] 5. Vermiculite/packing materials is NA [✓] Wet [ ] Dry [ ]
6. Number of samples in shipping container: 7
7. Sample holding times exceeded? NA [ ] Yes [ ] No [✓]
8. Samples have:
   - ___ tape
   - ✓ custody seals
   - ___ hazard labels
   - ✓ appropriate samples labels
9. Samples are:
   - ✓ in good condition
   - ___ broken
   - ___ leaking
   - ___ have air bubbles (Only for samples requiring head space)
10. Sample pH taken? NA [✓] pH<2 [ ] pH>2 [ ]
11. Sample Location, Sample Collector Listed? * Yes [ ] No [✓]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [✓]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: Heidelberg Date: 1-30-03

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on_____ by_____ Person contacted_____

[ ] No action necessary; process as is.

Project Manager_____ Date_____

LS-023, 9/01, Rev. 4