W03872

0058432

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: W03872

Data Package Contains 135 Pages

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CERTIFICATE OF ANALYSIS

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

November 12, 2002

Attention: Joan Kessner

SAF Number	:	B02-066
Date SDG Closed	:	October 31, 2002
Number of Samples	:	Ninety Three (93)
Sample Type	:	Soil
SDG Number	:	W03872
Data Deliverable	:	Quick Turn Metals / Summary

I. Introduction

Between October 2, 2002 and October 29, 2002, ninety three 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:

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
E88L6	J005M6	SOIL	10/2/2002
E88MD	J005M7	SOIL	10/2/2002
E88ME	J005M8	SOIL	10/2/2002
E88MH	J005M9	SOIL	10/2/2002
E88MJ	J005N0	SOIL	10/2/2002
E88MK	J005N1	SOIL	10/2/2002
E88ML	J005N2	SOIL	10/2/2002
E9A6W	J005L9	SOIL	10/3/2002
E9A63	J005M0	SOIL	10/3/2002
E9A67	J005M1	SOIL	10/3/2002
E9A69	J005M2	SOIL	10/3/2002
E9A7E	J005M3	SOIL	10/3/2002
E9ENH	J005N6	SOIL	10/4/2002

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STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
E9ENJ	J005N7	SOIL	10/4/2002
E9ENK	J005N8	SOIL	10/4/2002
E9ENM	J005N9	SOIL	10/4/2002
E9HQH	J005P0	SOIL	10/7/2002
E9HQJ	J005P1	SOIL	10/7/2002
E9HQK	J005P2	SOIL	10/7/2002
E9HQM	J005P3	SOIL	10/7/2002
E9HQN	J005P4	SOIL	10/7/2002
E9MAM	J005P8	SOIL	10/9/2002
E9MAP	J005P9	SOIL	10/9/2002
E9MAR	J005R0	SOIL	10/9/2002
E9MAV	J005R1	SOIL	10/9/2002
E9MAW	J005R2	SOIL	10/9/2002
E9PH6	J005T1	SOIL	10/9/2002
E9PH8	J005T2	SOIL	10/9/2002
E9PJA	J005T3	SOIL	10/9/2002
E92EA	J005T4	SOIL	10/15/2002
E92ED	J005T5	SOIL	10/15/2002
E92EG	J005T6	SOIL	10/15/2002
E92EJ	J005T7	SOIL	10/15/2002
E92EL	J005T8	SOIL	10/15/2002
E92EN	J005T9	SOIL	10/15/2002
E92EQ	J005V0	SOIL	10/15/2002
E92EV	F005V1	SOIL	10/15/2002
E98FA	J005V7	SOIL	10/17/2002
E98FF	J005V8	SOIL	10/17/2002
E98FJ	J005V9	SOIL	10/17/2002
E98JK	J005W0	SOIL	10/17/2002
E98FN	J005W1	SOIL	10/17/2002
E98FR	J005V2	SOIL	10/17/2002
E98FT	J005V3	SOIL	10/17/2002
E98FV	J005V4	SOIL	10/17/2002
E98F0	J005V5	SOIL	10/17/2002
E98F1	J005V6	SOIL	10/17/2002
FAG11	J005W2	SOIL	10/22/2002

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
FAG15	J005W3	SOIL	10/22/2002
FAG17	J005W4	SOIL	10/22/2002
FAG19	J005W5	SOIL	10/22/2002
FAG2D	J005W6	SOIL	10/22/2002
FAG2E	J005W7	SOIL	10/22/2002
FAG2F	J005W8	SOIL	10/22/2002
FAG2G	J005W9	SOIL	10/22/2002
FAG2H	J005X0	SOIL	10/22/2002
FAG2K	J005X1	SOIL	10/22/2002
FAG2L	J005X2	SOIL	10/22/2002
FAG2N	J005X3	SOIL	10/22/2002
FAG2Q	J005X4	SOIL	10/22/2002
FAG2R	J005X5	SOIL	10/22/2002
FAG2T	J005X6	SOIL	10/22/2002
FAG2V	J005X7	SOIL	10/22/2002
FAG2W	J005X8	SOIL	10/22/2002
FAG2X	J005X9	SOIL	10/22/2002
FAM4K	J005Y5	SOIL	10/24/2002
FAM4P	J005Y6	SOIL	10/24/2002
FAM4R	J005Y7	SOIL	10/24/2002
FAM40	J005Y8	SOIL	10/24/2002
FAM41	J005Y9	SOIL	10/24/2002
FAM42	J005Y0	SOIL	10/24/2002
FAM43	J005Y1	SOIL	10/24/2002
FAM44	J005Y2	SOIL	10/24/2002
FAM45	J005Y3	SOIL	10/24/2002
FAM46	J005Y4	SOIL	10/24/2002
FAM48	J00600	SOIL	10/24/2002
FAM5A	J00601	SOIL	10/24/2002
FAM5D	J00602	SOIL	10/24/2002
FAM5E	J00603	SOIL	10/24/2002
FAM5G	J00604	SOIL	10/24/2002
FAW5T	J00793	SOIL	10/28/2002
FAW5W	J00794	SOIL	10/28/2002
FAW51	J00795	SOIL	10/28/2002

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
FAW54	J00796	SOIL	10/28/2002
FAW56	J00797	SOIL	10/28/2002
FAW57	J00798	SOIL	10/28/2002
FAW58	J00799	SOIL	10/28/2002
FAW59	J007B0	SOIL	10/28/2002
FAW6A	J007B1	SOIL	10/28/2002
FAW6D	J007B2	SOIL	10/28/2002
FA11F	J007B3	SOIL	10/29/2002
FA11J	J007B4	SOIL	10/29/2002
FA11M	J007B5	SOIL	10/29/2002

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 W03872 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 sample received 10/2/02, the arsenic ICV concentration was slightly higher than the acceptable limit.

For the set of samples processed 10/4/02 and 10/5/02, the CCV was below the acceptable limit for lead, barium and chromium.

For the set of samples processed 10/4/02, the silver concentration for the LCS was slightly below the acceptable limit.

For the set of samples processed on 10/7/02 and 10/8/02, the LCS and CCV were slightly below the acceptable limit. An incorrect spike solution was used (barium and silver were not added). This batch was re-processed on 10/8/02 and 10/9/02.

For the set of samples processed on 10/9/02, the preparation blank was above the acceptable limit for lead and chromium. The CCV for silver and chromium was slightly below the acceptable limit.

For the samples processed on 10/10/02, the preparation blank concentration for silver was slightly above the acceptable limit.

For the samples processed on 10/15/02, the ICV was low for silver and chromium, the final CCV was slightly high for barium, the LCS was slightly low for silver and chromium, and the CCB was slightly high for chromium.

For the set of samples analyzed 10/17/02 and 10/21/02, the CCV concentrations for cadmium and lead were slightly higher than the acceptable limits, the lead concentrations in the preparation blank are higher in concentration than the acceptable limit, the LCS recovery for silver was lower than the acceptable limit due to the precipitation of silver salts, and sample J005V2-MSD was re-analyzed due to equipment failure.

For the set of samples analyzed on 10/22/02, the ICV for cadmium was slightly greater than the required limit, the CCV for cadmium and lead were slightly above the required limit, the percent recovery for the MS/MSD was low due to matrix effect, and the LCS for silver was lower than the acceptable limit.

For the set of samples analyzed on 10/24/02, the CCV was higher than the acceptable limit for all the metals of interest, the silver, cadmium and lead ICV were slightly high, and the chromium preparation blank was slightly higher than the acceptable limit.

For the set of samples processed 10/28/02, not all of the preparation blank results were below acceptable limits including chromium and lead, the LCS recovery was low for barium, silver and chromium, and the CCV for cadmium, barium, silver, chromium and lead were not within acceptable limits.

For the set of samples processed 10/29/02, the preparation blank was above the acceptable limit for silver, the LCS recovery was below the acceptable limit for silver, and the ICV/CCV was slightly above the acceptable limit for arsenic.

Except as noted, the laboratory control samples, batch blanks, sample duplicate, matrix spike, matrix spike duplicate and sample results are within contractual requirements.

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.

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ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872

Digestion Date: 10/2/02

Analytical Date: 10/2/02

Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			E88TK-1-AA	E88TK-1-AC	E88TK-1-AD	E88TK-1-AE	E88TK-1-AF	E88TK-1-AG	E88TK-1-AH
J2I160000-406	————	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	0.0142	< 0.035	< 0.015
LCS			E88TK-1-AJ	E88TK-1-AK	E88TK-1-AL	E88TK-1-AM	E88TK-1-AN	E88TK-1-AP	E88TK-1-AQ
J2I160000-406	————	mg/L	1.824	1.305	1.708	1.594	1.900	1.352	1.415
J2J020166-001	J005M6		E88L6-1-AA	E88L6-1-AC	E88L6-1-AD	E88L6-1-AE	E88L6-1-AF	E88L6-1-AG	E88L6-1-AH
		mg/kg	74.66	2.281	67.77	0.139	10.51	< 0.0035	0.239
J2J020166-001	J005M6 – DUP		E88L6-1-A1	E88L6-1-A2	E88L6-1-A3	E88L6-1-A4	E88L6-1-A5	E88L6-1-A6	E88L6-1-A7
DUP		mg/kg	76.56	2.164	78.62	0.385	12.35	< 0.0035	2.173
J2J020166-001	J005M6 – MS		E88L6-1-AJ	E88L6-1-AL	E88L6-1-AN	E88L6-1-AQ	E88L6-1-AT	E88L6-1-AV	E88L6-1-AX
MATRIX SPIKE		mg/kg	275.0	163.2	287.3	193.9	226.9	166.7	174.0
J2J020166-001	J005M6 – MSD		E88L6-1-AK	E88L6-1-AM	E88L6-1-AP	E88L6-1-AR	E88L6-1-AU	E88L6-1-AW	E88L6-1-A0
MATRIX SPIKE DUP		mg/kg	257.5	159.4	267.8	188.4	216.2	164.7	166.2
J2J020166-002	J005M7		E88MD-1-AA	E88MD-1-AC	E88MD-1-AD	E88MD-1-AE	E88MD-1-AF	E88MD-1-AG	E88MD-1-AH
		mg/kg	95.99	2.151	83.07	0.149	13.43	< 0.0035	< 0.0015
J2J020166-003	J005M8		E88ME-1-AA	E88ME-1-AC	E88ME-1-AD	E88ME-1-AE	E88ME-1-AF	E88ME-1-AG	E88ME-1-AH
		mg/kg	74.66	2.372	73.95	0.415	13.03	< 0.0035	< 0.0015
J2J020166-004	J005M9		E88MH-1-AA	E88MH-1-AC	E88MH-1-AD	E88MH-1-AE	E88MH-1-AF	E88MH-1-AG	E88MH-1-AH
		mg/kg	71.28	2.048	61.47	0.200	8.203	< 0.0035	< 0.0015

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872

Digestion Date: 10/2/02

Analytical Date: 10/2/02

Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J2J020166-005	J005N0		E88MJ-1-AA	E88MJ-1-AC	E88MJ-1-AD	E88MJ-1-AE	E88MJ-1-AF	E88MJ-1-AG	E88MJ-1-AH
		mg/kg	75.39	2.140	68.2	0.138	9.63	< 0.0035	< 0.0015
J2J020166-006	J005N1		E88MK-1-AA	E88MK-1-AC	E88MK-1-AD	E88MK-1-AE	E88MK-1-AF	E88MK-1-AG	E88MK-1-AH
		mg/kg	62.76	2.032	59.1	0.098	10.25	< 0.0035	0.72
J2J020166-007	J005N2		E88ML-1-AA	E88ML-1-AC	E88ML-1-AD	E88ML-1-AE	E88ML-1-AF	E88ML-1-AG	E88ML-1-AH
		mg/kg	67.19	1.760	61.8	0.315	8.64	< 0.0035	< 0.0015

SOA 10/3/02

DM 10/3/02

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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# W03872

Digestion Date: 10/4/02

Analytical Date: 10/5/02

Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			E9DPD-1-AA	E9DPD-1-AC	E9DPD-1-AD	E9DPD-1-AE	E9DPD-1-AF	E9DPD-1-AG	E9DPD-1-AH
J2J030000-457	————	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			E9DPD-1-AJ	E9DPD-1-AK	E9DPD-1-AL	E9DPD-1-AM	E9DPD-1-AN	E9DPD-1-AP	E9DPD-1-AQ
J2J030000-457	————	mg/L	1.816	1.611	1.860	1.664	1.761	1.718	1.680
J2J030155-001	J005L9		E9A6W-1-AA	E9A6W-1-AC	E9A6W-1-AD	E9A6W-1-AE	E9A6W-1-AF	E9A6W-1-AG	E9A6W-1-AH
		mg/kg	478.0	1.711	539.9	0.175	32.85	< 0.0035	5.516
J2J030155-001	J005L9 – DUP		E9A6W-1-AJ	E9A6W-1-AK	E9A6W-1-AL	E9A6W-1-AM	E9A6W-1-AN	E9A6W-1-AP	E9A6W-1-AQ
DUPLICATE		mg/kg	371.6	1.746	591.1	0.402	29.30	14.39	< 0.0015
J2J030155-002	J005M0		E9A63-1-AA	E9A63-1-AC	E9A63-1-AD	E9A63-1-AE	E9A63-1-AF	E9A63-1-AG	E9A63-1-AH
		mg/kg	44.89	16.54	171.2	0.866	36.04	< 0.0035	414.3
J2J030155-003	J005M1		E9A67-1-AA	E9A67-1-AC	E9A67-1-AD	E9A67-1-AE	E9A67-1-AF	E9A67-1-AG	E9A67-1-AH
		mg/kg	218.0	27.24	446.1	6.577	93.80	< 0.0035	139.3
J2J030155-004	J005M2		E9A69-1-AA	E9A69-1-AC	E9A69-1-AD	E9A69-1-AE	E9A69-1-AF	E9A69-1-AG	E9A69-1-AH
		mg/kg	266.8	1.466	44.73	1.331	80.61	< 0.0035	24.59
J2J030155-005	J005M3		E9A7E-1-AA	E9A7E-1-AC	E9A7E-1-AD	E9A7E-1-AE	E9A7E-1-AF	E9A7E-1-AG	E9A7E-1-AH
		mg/kg	482.7	11.74	97.84	3.720	102.5	< 0.0035	414.8

ESO 10/5/02

DJM 10/4/02

12

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872

Digestion Date: 10/4/02

Analytical Date: 10/4/02

Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			E9DPA-1-AA	E9DPA-1-AC	E9DPA-1-AD	E9DPA-1-AE	E9DPA-1-AF	E9DPA-1-AG	E9DPA-1-AH
J2J030000-456	----------	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			E9DPA-1-AJ	E9DPA-1-AK	E9DPA-1-AL	E9DPA-1-AM	E9DPA-1-AN	E9DPA-1-AP	E9DPA-1-AQ
J2J030000-456	----------	mg/L	1.772	1.602	1.790	1.652	1.690	1.676	1.659
J2J030155-006	J005N3		E9A7G-1-AA	E9A7G-1-AC	E9A7G-1-AD	E9A7G-1-AE	E9A7G-1-AF	E9A7G-1-AG	E9A7G-1-AH
		mg/kg	69.60	1.424	36.38	0.183	6.935	< 0.0035	1.184
J2J030155-006	J005N3 – DUP		E9A7G-1-AJ	E9A7G-1-AK	E9A7G-1-AL	E9A7G-1-AM	E9A7G-1-AN	E9A7G-1-AP	E9A7G-1-AQ
DUPLICATE		mg/kg	72.43	1.745	48.13	0.079	8.672	1.845	2.169
J2J030155-007	J005N4		E9A7J-1-AA	E9A7J-1-AC	E9A7J-1-AD	E9A7J-1-AE	E9A7J-1-AF	E9A7J-1-AG	E9A7J-1-AH
		mg/kg	60.15	0.971	44.667	0.099	8.33	< 0.0035	3.341
J2J030155-008	J005N5		E9A7K-1-AA	E9A7K-1-AC	E9A7K-1-AD	E9A7K-1-AE	E9A7K-1-AF	E9A7K-1-AG	E9A7K-1-AH
		mg/kg	52.50	0.969	40.491	0.122	9.45	< 0.0035	1.583

ESB
10/4/02

DM
10/4/02

13

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872

Digestion Date: 10/5/02

Analytical Date: 10/5/02

Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			E9ET2-1-AA	E9ET2-1-AC	E9ET2-1-AD	E9ET2-1-AE	E9ET2-1-AF	E9ET2-1-AG	E9ET2-1-AH
J2J040000-278	----------	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			E9ET2-1-AJ	E9ET2-1-AK	E9ET2-1-AL	E9ET2-1-AM	E9ET2-1-AN	E9ET2-1-AP	E9ET2-1-AQ
J2J040000-278	----------	mg/L	1.827	1.541	1.723	1.605	1.712	1.709	1.658
J2J040164-001	J005N6		E9ENH-1-AA	E9ENH-1-AC	E9ENH-1-AD	E9ENH-1-AE	E9ENH-1-AF	E9ENH-1-AG	E9ENH-1-AH
		mg/kg	69.31	2.545	40.30	0.890	8.000	< 0.0035	2.421
J2J040164-001	J005N6 -- DUP		E9ENH-1-AJ	E9ENH-1-AK	E9ENH-1-AL	E9ENH-1-AM	E9ENH-1-AN	E9ENH-1-AP	E9ENH-1-AQ
DUPLICATE		mg/kg	72.36	2.017	44.72	0.304	9.058	0.177	2.448
J2J040164-002	J005N7		E9ENJ-1-AA	E9ENJ-1-AC	E9ENJ-1-AD	E9ENJ-1-AE	E9ENJ-1-AF	E9ENJ-1-AG	E9ENJ-1-AH
		mg/kg	67.13	2.322	39.90	0.131	7.861	< 0.0035	1.769
J2J040164-003	J005N8		E9ENK-1-AA	E9ENK-1-AC	E9ENK-1-AD	E9ENK-1-AE	E9ENK-1-AF	E9ENK-1-AG	E9ENK-1-AH
		mg/kg	216.7	5.771	46.67	2.546	34.40	0.232	62.95
J2J040164-004	J005N9		E9ENM-1-AA	E9ENM-1-AC	E9ENM-1-AD	E9ENM-1-AE	E9ENM-1-AF	E9ENM-1-AG	E9ENM-1-AH
		mg/kg	71.82	2.436	37.57	< 0.0005	7.361	< 0.0035	0.323

SEO
10/5/02

DM
10/14/02

14

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872

Digestion Date: 10/8/02

Analytical Date: 10/9/02

Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			E9L6R-1-AA	E9L6R-1-AC	E9L6R-1-AD	E9L6R-1-AE	E9L6R-1-AF	E9L6R-1-AG	E9L6R-1-AH
J2J090000-203	————	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			E9L6R-1-AJ	E9L6R-1-AK	E9L6R-1-AL	E9L6R-1-AM	E9L6R-1-AN	E9L6R-1-AP	E9L6R-1-AQ
J2J090000-203	————	mg/L	1.867	1.701	1.777	1.708	1.776	1.796	1.795
J2J070139-001	J005P0		E9HQH-2-AA	E9HQH-2-AC	E9HQH-2-AD	E9HQH-2-AE	E9HQH-2-AF	E9HQH-2-AG	E9HQH-2-AH
		mg/kg	20.31	0.547	12.10	0.627	122.86	< 0.035	3842.0
J2J070139-001	J005P0-DUP		E9HQH-2-A1	E9HQH-2-A2	E9HQH-2-A3	E9HQH-2-A4	E9HQH-2-A5	E9HQH-2-A6	E9HQH-2-A7
DUPLICATE		mg/kg	18.00	0.609	10.91	0.599	127.00	< 0.035	4054.3
J2J070139-001	J005P0-MS		E9HQH-2-AJ	E9HQH-2-AL	E9HQH-2-AN	E9HQH-2-AQ	E9HQH-2-AT	E9HQH-2-AV	E9HQH-2-AX
MATRIX SPIKE		mg/kg	197.8	162.6	185.2	164.7	251.5	171.4	3894.7
J2J070139-001	J005P0-MSD		E9HQH-2-AK	E9HQH-2-AM	E9HQH-2-AP	E9HQH-2-AR	E9HQH-2-AU	E9HQH-2-AW	E9HQH-2-A0
MATRIX SPIKE		mg/kg	199.3	164.5	187.0	165.4	261.5	176.2	3942.9
J2J070139-002	J005P1		E9HQJ-2-AA	E9HQJ-2-AC	E9HQJ-2-AD	E9HQJ-2-AE	E9HQJ-2-AF	E9HQJ-2-AG	E9HQJ-2-AH
		mg/kg	170.87	5.756	63.27	1.716	35.940	< 0.035	90.29
J2J070139-003	J005P2		E9HQK-2-AA	E9HQK-2-AC	E9HQK-2-AD	E9HQK-2-AE	E9HQK-2-AF	E9HQK-2-AG	E9HQK-2-AH
		mg/kg	141.05	2.961	42.65	0.678	14.484	< 0.035	111.9
J2J070139-004	J005P3		E9HQM-2-AA	E9HQM-2-AC	E9HQM-2-AD	E9HQM-2-AE	E9HQM-2-AF	E9HQM-2-AG	E9HQM-2-AH
		mg/kg	184.03	3.254	44.25	1.091	14.187	< 0.035	66.28

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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# W03872

Digestion Date: 10/8/02

Analytical Date: 10/9/02

Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J2J070139-005	J005P4		E9HQN-2-AA	E9HQN-2-AC	E9HQN-2-AD	E9HQN-2-AE	E9HQN-2-AF	E9HQN-2-AG	E9HQN-2-AH
		mg/kg	714.00	8.906	51.09	2.538	28.451	< 0.035	135.5
J2J070139-006	J005P5		E9HQP-2-AA	E9HQP-2-AC	E9HQP-2-AD	E9HQP-2-AE	E9HQP-2-AF	E9HQP-2-AG	E9HQP-2-AH
		mg/kg	216.71	9.280	60.65	2.133	34.759	< 0.035	147.2
J2J070139-007	J005P6		E9HQQ-2-AA	E9HQQ-2-AC	E9HQQ-2-AD	E9HQQ-2-AE	E9HQQ-2-AF	E9HQQ-2-AG	E9HQQ-2-AH
		mg/kg	80.84	2.154	42.78	0.616	8.817	< 0.035	26.042
J2J070139-008	J005P7		E9HQV-2-AA	E9HQV-2-AC	E9HQV-2-AD	E9HQV-2-AE	E9HQV-2-AF	E9HQV-2-AG	E9HQV-2-AH
		mg/kg	87.52	2.196	62.32	0.229	11.32	< 0.035	18.54

Ens 10/7/02

DM 10/9/02

16

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872
Digestion Date: 10/09/02
Analytical Date: 10/09/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			E9NCF-1-AA	E9NCF-1-AC	E9NCF-1-AD	E9NCF-1-AE	E9NCF-1-AF	E9NCF-1-AG	E9NCF-1-AH
J2J090000-431	----------	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	0.0053	< 0.035	0.0181
LCS			E9NCF-1-AJ	E9NCF-1-AK	E9NCF-1-AL	E9NCF-1-AM	E9NCF-1-AN	E9NCF-1-AP	E9NCF-1-AQ
J2J090000-431	----------	mg/L	1.888	1.641	1.852	1.688	1.718	1.789	1.791
J2J090153-001	J005P8		E9MAM-1-AA	E9MAM-1-AC	E9MAM-1-AD	E9MAM-1-AE	E9MAM-1-AF	E9MAM-1-AG	E9MAM-1-AH
		mg/kg	327.9	14.60	100.6	4.362	68.42	< 0.0035	376.1
J2J090153-001	J005P8--DUP		E9MAM-1-AJ	E9MAM-1-AK	E9MAM-1-AL	E9MAM-1-AM	E9MAM-1-AN	E9MAM-1-AP	E9MAM-1-AQ
DUP		mg/kg	348.8	12.85	78.27	4.192	52.31	0.059	217.0
J2J090153-002	J005P9		E9MAP-1-AA	E9MAP-1-AC	E9MAP-1-AD	E9MAP-1-AE	E9MAP-1-AF	E9MAP-1-AG	E9MAP-1-AH
		mg/kg	308.9	10.18	55.12	2.651	30.11	0.715	177.4
J2J090153-003	J005R0		E9MAR-1-AA	E9MAR-1-AC	E9MAR-1-AD	E9MAR-1-AE	E9MAR-1-AF	E9MAR-1-AG	E9MAR-1-AH
		mg/kg	371.9	7.468	50.96	4.031	26.95	< 0.0035	119.5
J2J090153-004	J005R1		E9MAV-1-AA	E9MAV-1-AC	E9MAV-1-AD	E9MAV-1-AE	E9MAV-1-AF	E9MAV-1-AG	E9MAV-1-AH
		mg/kg	304.3	13.78	66.94	2.596	30.36	0.547	155.4
J2J090153-005	J005R2		E9MAW-1-AA	E9MAW-1-AC	E9MAW-1-AD	E9MAW-1-AE	E9MAW-1-AF	E9MAW-1-AG	E9MAW-1-AH
		mg/kg	279.4	8.656	57.31	5.162	53.85	< 0.0035	117.3
J2J090153-006	J005R3		E9MA0-1-AA	E9MA0-1-AC	E9MA0-1-AD	E9MA0-1-AE	E9MA0-1-AF	E9MA0-1-AG	E9MA0-1-AH
		mg/kg	412.6	5.683	54.48	1.811	31.00	< 0.0035	115.1

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872
Digestion Date: 10/09/02
Analytical Date: 10/09/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J2J090153-007	J005R4		E9MA9-1-AA	E9MA9-1-AC	E9MA9-1-AD	E9MA9-1-AE	E9MA9-1-AF	E9MA9-1-AG	E9MA9-1-AH
		mg/kg	455.9	11.76	62.92	2.782	44.89	0.659	115.6
J2J090153-008	J005R5		E9MCA-1-AA	E9MCA-1-AC	E9MCA-1-AD	E9MCA-1-AE	E9MCA-1-AF	E9MCA-1-AG	E9MCA-1-AH
		mg/kg	324.1	15.97	71.77	3.553	92.19	< 0.0035	155.0
J2J090153-009	J005R6		E9MCC-1-AA	E9MCC-1-AC	E9MCC-1-AD	E9MCC-1-AE	E9MCC-1-AF	E9MCC-1-AG	E9MCC-1-AH
		mg/kg	62.58	1.670	38.52	0.039	8.391	0.540	2.388
J2J090153-010	J005R7		E9MCE-1-AA	E9MCE-1-AC	E9MCE-1-AD	E9MCE-1-AE	E9MCE-1-AF	E9MCE-1-AG	E9MCE-1-AH
		mg/kg	233.4	3.933	44.34	8.707	15.02	1.050	35.44
J2J090153-011	J005R8		E9MCG-1-AA	E9MCG-1-AC	E9MCG-1-AD	E9MCG-1-AE	E9MCG-1-AF	E9MCG-1-AG	E9MCG-1-AH
		mg/kg	140.4	3.903	43.22	0.545	18.84	< 0.0035	24.64
J2J090153-012	J005R9		E9MCH-1-AA	E9MCH-1-AC	E9MCH-1-AD	E9MCH-1-AE	E9MCH-1-AF	E9MCH-1-AG	E9MCH-1-AH
		mg/kg	164.2	6.897	49.39	1.779	18.73	< 0.0035	35.38
J2J090153-013	J005T0		E9MCK-1-AA	E9MCK-1-AC	E9MCK-1-AD	E9MCK-1-AE	E9MCK-1-AF	E9MCK-1-AG	E9MCK-1-AH
		mg/kg	123.0	2.915	42.17	0.778	12.14	< 0.0035	23.13

EBD
10/9/02

DM
10/10/02

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872
Digestion Date: 10/10/02
Analytical Date: 10/11/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			E9QCP-1-AA	E9QCP-1-AC	E9QCP-1-AD	E9QCP-1-AE	E9QCP-1-AF	E9QCP-1-AG	E9QCP-1-AH
J2J100000-339	----------	mg/L	< 0.002	0.003	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			E9QCP-1-AJ	E9QCP-1-AK	E9QCP-1-AL	E9QCP-1-AM	E9QCP-1-AN	E9QCP-1-AP	E9QCP-1-AQ
J2J100000-339	----------	mg/L	1.841	1.693	1.905	1.812	1.832	1.821	1.855
J2J100120-001	J005T1		E9PH6-1-AA	E9PH6-1-AC	E9PH6-1-AD	E9PH6-1-AE	E9PH6-1-AF	E9PH6-1-AG	E9PH6-1-AH
		mg/kg	355.7	18.53	92.14	4.947	112.2	< 0.0035	198.2
J2J100120-001	J005T1–DUP		E9PH6-1-AJ	E9PH6-1-AK	E9PH6-1-AL	E9PH6-1-AM	E9PH6-1-AN	E9PH6-1-AP	E9PH6-1-AQ
DUP		mg/kg	724.5	22.62	79.07	7.499	86.10	< 0.0035	614.1
J2J100120-002	J005T2		E9PH8-1-AA	E9PH8-1-AC	E9PH8-1-AD	E9PH8-1-AE	E9PH8-1-AF	E9PH8-1-AG	E9PH8-1-AH
		mg/kg	288.0	13.49	73.32	6.349	40.40	< 0.0035	148.2
J2J100120-003	J005T3		E9PJA-1-AA	E9PJA-1-AC	E9PJA-1-AD	E9PJA-1-AE	E9PJA-1-AF	E9PJA-1-AG	E9PJA-1-AH
		mg/kg	274.6	12.70	84.42	3.633	45.53	< 0.0035	212.3

ESA 10/11/02

SB 10/11/02

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872

Digestion Date: 10/15/02

Analytical Date: 10/15/02

Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			E9311-1-AA	E9311-1-AC	E9311-1-AD	E9311-1-AE	E9311-1-AF	E9311-1-AG	E9311-1-AH
J2J150000-474	————	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			E9311-1-AJ	E9311-1-AK	E9311-1-AL	E9311-1-AM	E9311-1-AN	E9311-1-AP	E9311-1-AQ
J2J150000-474	————	mg/L	1.888	1.489	1.757	1.661	1.572	1.615	1.744
J2J150154-001	J005T4		E92EA-1-AA	E92EA-1-AC	E92EA-1-AD	E92EA-1-AE	E92EA-1-AF	E92EA-1-AG	E92EA-1-AH
		mg/kg	85.00	2.653	62.30	0.423	11.24	< 0.0035	14.73
J2J150154-001	J005T4 - DUP		E92EA-1-A1	E92EA-1-A2	E92EA-1-A3	E92EA-1-A4	E92EA-1-A5	E92EA-1-A6	E92EA-1-A7
DUPLICATE		mg/kg	85.18	2.984	61.69	0.872	10.23	< 0.0035	12.77
J2J150154-001	J005T4 - MS		E92EA-1-AJ	E92EA-1-AL	E92EA-1-AN	E92EA-1-AQ	E92EA-1-AT	E92EA-1-AV	E92EA-1-AX
MATRIX SPIKE		mg/kg	260.9	133.1	207.5	151.7	153.0	137.1	164.6
J2J150154-001	J005T4 - MSD		E92EA-1-AK	E92EA-1-AM	E92EA-1-AP	E92EA-1-AR	E92EA-1-AU	E92EA-1-AW	E92EA-1-A0
MATRIX SPIKE		mg/kg	246.9	140.9	281.7	160.6	161.8	139.4	164.2
J2J150154-002	J005T5		E92ED-1-AA	E92ED-1-AC	E92ED-1-AD	E92ED-1-AE	E92ED-1-AF	E92ED-1-AG	E92ED-1-AH
		mg/kg	151.8	2.349	48.36	0.038	7.397	< 0.0035	< 0.0015
J2J150154-003	J005T6		E92EG-1-AA	E92EG-1-AC	E92EG-1-AD	E92EG-1-AE	E92EG-1-AF	E92EG-1-AG	E92EG-1-AH
		mg/kg	205.6	2.085	52.92	< 0.0005	8.840	< 0.0035	< 0.0015
J2J150154-004	J005T7		E92EJ-1-AA	E92EJ-1-AC	E92EJ-1-AD	E92EJ-1-AE	E92EJ-1-AF	E92EJ-1-AG	E92EJ-1-AH
		mg/kg	237.8	2.312	55.94	0.161	9.077	< 0.0035	4.959

20

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872

Digestion Date: 10/15/02

Analytical Date: 10/15/02

Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J2J150154-005	J005T8		E92EL-1-AA	E92EL-1-AC	E92EL-1-AD	E92EL-1-AE	E92EL-1-AF	E92EL-1-AG	E92EL-1-AH
		mg/kg	133.4	2.526	53.05	0.215	6.986	0.861	2.317
J2J150154-006	J005T9		E92EN-1-AA	E92EN-1-AC	E92EN-1-AD	E92EN-1-AE	E92EN-1-AF	E92EN-1-AG	E92EN-1-AH
		mg/kg	196.1	1.845	48.32	< 0.0005	6.684	< 0.0035	< 0.0015
J2J150154-007	J005V0		E92EQ-1-AA	E92EQ-1-AC	E92EQ-1-AD	E92EQ-1-AE	E92EQ-1-AF	E92EQ-1-AG	E92EQ-1-AH
		mg/kg	48.16	2.347	0.425	0.893	186.1	6.558	1.994
J2J150154-008	J005V1		E92EV-1-AA	E92EV-1-AC	E92EV-1-AD	E92EV-1-AE	E92EV-1-AF	E92EV-1-AG	E92EV-1-AH
		mg/kg	53.59	2.200	0.203	< 0.0005	178.3	8.301	< 0.0015

SYD 10/15/02 DM 10/16/02

21

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872
Digestion Date: 10/17/02
Analytical Date: 10/21/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			E99C6-1-AA	E99C6-1-AC	E99C6-1-AD	E99C6-1-AE	E99C6-1-AF	E99C6-1-AG	E99C6-1-AH
J2J170000-483	----------	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	0.0157
LCS			E99C6-1-AJ	E99C6-1-AK	E99C6-1-AL	E99C6-1-AM	E99C6-1-AN	E99C6-1-AP	E99C6-1-AQ
J2J170000-483	----------	mg/L	1.814	0.445	1.777	1.846	1.725	1.888	1.898
J2J170280-001	J005V2		E98FA-1-AA	E98FA-1-AC	E98FA-1-AD	E98FA-1-AE	E98FA-1-AF	E98FA-1-AG	E98FA-1-AH
		mg/kg	2832	2.943	44.78	0.276	10.42	< 0.0035	3.394
J2J170280-001	J005V2--DUP		E98FA-1-A1	E98FA-1-A2	E98FA-1-A3	E98FA-1-A4	E98FA-1-A5	E98FA-1-A6	E98FA-1-A7
DUPLICATE		mg/kg	2991	2.847	48.99	0.353	9.862	< 0.0035	7.695
J2J170280-001	J005V2 - MS		E98FA-1-AJ	E98FA-1-AL	E98FA-1-AN	E98FA-1-AQ	E98FA-1-AT	E98FA-1-AV	E98FA-1-AX
MATRIX SPIKE		mg/kg	2627	143.8	206.7	165.4	159.9	167.2	171.6
J2J170280-001	J005V2 - MSD		E98FA-1-AK	E98FA-1-AM	E98FA-1-AP	E98FA-1-AR	E98FA-1-AU	E98FA-1-AW	E98FA-1-A0
MATRIX SPIKE		mg/kg	2785	148.6	209.4	172.5	160.5	172.7	178.9
J2J170280-002	J005V3		E98FF-1-AA	E98FF-1-AC	E98FF-1-AD	E98FF-1-AE	E98FF-1-AF	E98FF-1-AG	E98FF-1-AH
		mg/kg	201.1	2.845	27.12	0.224	9.384	1.386	7.801
J2J170280-003	J005V4		E98FJ-1-AA	E98FJ-1-AC	E98FJ-1-AD	E98FJ-1-AE	E98FJ-1-AF	E98FJ-1-AG	E98FJ-1-AH
		mg/kg	225.1	2.532	27.90	0.120	9.233	< 0.0035	5.330
J2J170280-004	J005V5		E98FK-1-AA	E98FK-1-AC	E98FK-1-AD	E98FK-1-AE	E98FK-1-AF	E98FK-1-AG	E98FK-1-AH
		mg/kg	279.7	3.297	31.82	0.278	8.750	1.870	12.09

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872
Digestion Date: 10/17/02
Analytical Date: 10/21/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J2J170280-005	J005V6		E98FN-1-AA	E98FN-1-AC	E98FN-1-AD	E98FN-1-AE	E98FN-1-AF	E98FN-1-AG	E98FN-1-AH
		mg/kg	85.60	2.292	26.93	0.120	6.859	< 0.0035	3.255
J2J170280-006	J005V7		E98FR-1-AA	E98FR-1-AC	E98FR-1-AD	E98FR-1-AE	E98FR-1-AF	E98FR-1-AG	E98FR-1-AH
		mg/kg	120.7	2.576	33.31	0.390	9.601	< 0.0035	3.598
J2J170280-007	J005V8		E98FT-1-AA	E98FT-1-AC	E98FT-1-AD	E98FT-1-AE	E98FT-1-AF	E98FT-1-AG	E98FT-1-AH
		mg/kg	191.4	2.362	33.12	0.229	7.931	0.198	170.5
J2J170280-008	J005V9		E98FV-1-AA	E98FV-1-AC	E98FV-1-AD	E98FV-1-AE	E98FV-1-AF	E98FV-1-AG	E98FV-1-AH
		mg/kg	162.5	2.216	27.15	0.254	8.401	< 0.0035	5.687
J2J170280-009	J005W0		E98F0-1-AA	E98F0-1-AC	E98F0-1-AD	E98F0-1-AE	E98F0-1-AF	E98F0-1-AG	E98F0-1-AH
		mg/kg	172.8	2.581	33.33	0.157	7.577	< 0.0035	3.112
J2J170280-010	J005W1		E98F1-1-AA	E98F1-1-AC	E98F1-1-AD	E98F1-1-AE	E98F1-1-AF	E98F1-1-AG	E98F1-1-AH
		mg/kg	200.9	2.034	25.41	0.145	7.796	< 0.0035	4.792

10/21/02 DM 10/21/02

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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# W03872
Digestion Date: 10/22/02
Analytical Date: 10/22/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			FAKHL-1-AA	FAKHL-1-AC	FAKHL-1-AD	FAKHL-1-AE	FAKHL-1-AF	FAKHL-1-AG	FAKHL-1-AH
J2J230000-483	----------	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			FAKHL-1-AJ	FAKHL-1-AK	FAKHL-1-AL	FAKHL-1-AM	FAKHL-1-AN	FAKHL-1-AP	FAKHL-1-AQ
J2J230000-483	----------	mg/L	1.874	1.434	1.739	1.861	2.012	1.744	1.742
J2J220131-001	J005W2		FAG11-1-AA	FAG11-1-AC	FAG11-1-AD	FAG11-1-AE	FAG11-1-AF	FAG11-1-AG	FAG11-1-AH
		mg/kg	58.37	2.544	0.351	1.906	407.5	9.348	< 0.0015
J2J220131-001	J005W2--DUP		FAG11-1-A1	FAG11-1-A2	FAG11-1-A3	FAG11-1-A4	FAG11-1-A5	FAG11-1-A6	FAG11-1-A7
DUPLICATE		mg/kg	48.38	1.985	0.271	2.649	337.3	8.249	< 0.0015
J2J220131-001	J005W2 - MS		FAG11-1-AJ	FAG11-1-AL	FAG11-1-AN	FAG11-1-AQ	FAG11-1-AT	FAG11-1-AV	FAG11-1-AX
MATRIX SPIKE		mg/kg	185.1	111.5	135.2	136.7	447.8	140.3	125.5
J2J220131-001	J005W2 - MSD		FAG11-1-AK	FAG11-1-AM	FAG11-1-AP	FAG11-1-AR	FAG11-1-AU	FAG11-1-AW	FAG11-1-A0
MATRIX SPIKE		mg/kg	211.0	122.1	145.3	154.2	489.3	152.9	147.5
J2J220131-002	J005W3		FAG15-1-AA	FAG15-1-AC	FAG15-1-AD	FAG15-1-AE	FAG15-1-AF	FAG15-1-AG	FAG15-1-AH
		mg/kg	56.83	2.617	0.213	1.382	73.91	9.072	2.273
J2J220131-003	J005W4		FAG17-1-AA	FAG17-1-AC	FAG17-1-AD	FAG17-1-AE	FAG17-1-AF	FAG17-1-AG	FAG17-1-AH
		mg/kg	56.02	2.829	0.427	2.752	164.2	9.715	< 0.0015
J2J220131-004	J005W5		FAG19-1-AA	FAG19-1-AC	FAG19-1-AD	FAG19-1-AE	FAG19-1-AF	FAG19-1-AG	FAG19-1-AH
		mg/kg	68.72	2.756	0.166	3.535	682.8	9.531	0.068

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872
Digestion Date: 10/22/02
Analytical Date: 10/22/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J2J220131-005	J005W6		FAG2D-1-AA	FAG2D-1-AC	FAG2D-1-AD	FAG2D-1-AE	FAG2D-1-AF	FAG2D-1-AG	FAG2D-1-AH
		mg/kg	63.85	3.534	0.358	7.118	547.5	10.42	< 0.0015
J2J220131-006	J005W7		FAG2E-1-AA	FAG2E-1-AC	FAG2E-1-AD	FAG2E-1-AE	FAG2E-1-AF	FAG2E-1-AG	FAG2E-1-AH
		mg/kg	47.46	2.265	0.218	4.286	254.0	8.560	< 0.0015
J2J220131-007	J005W8		FAG2F-1-AA	FAG2F-1-AC	FAG2F-1-AD	FAG2F-1-AE	FAG2F-1-AF	FAG2F-1-AG	FAG2F-1-AH
		mg/kg	54.18	2.463	0.286	9.815	455.2	9.986	< 0.0015
J2J220131-008	J005W9		FAG2G-1-AA	FAG2G-1-AC	FAG2G-1-AD	FAG2G-1-AE	FAG2G-1-AF	FAG2G-1-AG	FAG2G-1-AH
		mg/kg	61.16	2.949	0.542	22.69	560.7	11.01	0.422
J2J220131-009	J005X0		FAG2H-1-AA	FAG2H-1-AC	FAG2H-1-AD	FAG2H-1-AE	FAG2H-1-AF	FAG2H-1-AG	FAG2H-1-AH
		mg/kg	55.23	2.225	0.060	3.772	230.8	9.277	0.590
J2J220131-010	J005X1		FAG2K-1-AA	FAG2K-1-AC	FAG2K-1-AD	FAG2K-1-AE	FAG2K-1-AF	FAG2K-1-AG	FAG2K-1-AH
		mg/kg	44.42	2.130	0.391	6.017	209.1	9.222	< 0.0015
J2J220131-011	J005X2		FAG2L-1-AA	FAG2L-1-AC	FAG2L-1-AD	FAG2L-1-AE	FAG2L-1-AF	FAG2L-1-AG	FAG2L-1-AH
		mg/kg	55.23	2.570	0.344	10.44	432.7	10.31	< 0.0015
J2J220131-012	J005X3		FAG2N-1-AA	FAG2N-1-AC	FAG2N-1-AD	FAG2N-1-AE	FAG2N-1-AF	FAG2N-1-AG	FAG2N-1-AH
		mg/kg	45.99	3.056	0.060	1.139	99.81	7.727	< 0.0015
J2J220131-013	J005X4		FAG2Q-1-AA	FAG2Q-1-AC	FAG2Q-1-AD	FAG2Q-1-AE	FAG2Q-1-AF	FAG2Q-1-AG	FAG2Q-1-AH

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872
Digestion Date: 10/22/02
Analytical Date: 10/22/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
		mg/kg	53.08	3.002	0.045	1.660	114.4	8.503	< 0.0015
J2J220131-014	J005X5		FAG2R-1-AA	FAG2R-1-AC	FAG2R-1-AD	FAG2R-1-AE	FAG2R-1-AF	FAG2R-1-AG	FAG2R-1-AH
		mg/kg	58.14	2.630	0.112	1.905	111.9	9.090	< 0.0015
J2J220131-015	J005X6		FAG2T-1-AA	FAG2T-1-AC	FAG2T-1-AD	FAG2T-1-AE	FAG2T-1-AF	FAG2T-1-AG	FAG2T-1-AH
		mg/kg	57.05	3.123	0.401	1.480	111.9	9.105	2.795
J2J220131-016	J005X7		FAG2V-1-AA	FAG2V-1-AC	FAG2V-1-AD	FAG2V-1-AE	FAG2V-1-AF	FAG2V-1-AG	FAG2V-1-AH
		mg/kg	35.32	1.778	0.015	1.106	54.67	6.827	0.078
J2J220131-017	J005X8		FAG2W-1-AA	FAG2W-1-AC	FAG2W-1-AD	FAG2W-1-AE	FAG2W-1-AF	FAG2W-1-AG	FAG2W-1-AH
		mg/kg	39.42	1.871	< 0.003	1.913	61.59	7.949	< 0.0015
J2J220131-018	J005X9		FAG2X-1-AA	FAG2X-1-AC	FAG2X-1-AD	FAG2X-1-AE	FAG2X-1-AF	FAG2X-1-AG	FAG2X-1-AH
		mg/kg	40.35	2.019	0.042	2.232	67.92	7.710	1.302

DM 10/23/02
SAD 10/23/02

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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# W03872
Digestion Date: 10/24/02
Analytical Date: 10/24/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			FANTQ-1-AA	FANTQ-1-AC	FANTQ-1-AD	FANTQ-1-AE	FANTQ-1-AF	FANTQ-1-AG	FANTQ-1-AH
J2J240000-319	————	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	0.0067	< 0.035	0.0333
LCS			FANTQ-1-AJ	FANTQ-1-AK	FANTQ-1-AL	FANTQ-1-AM	FANTQ-1-AN	FANTQ-1-AP	FANTQ-1-AQ
J2J240000-319	————	mg/L	2.145	1.668	1.940	2.321	2.142	2.056	2.206
J2J220131-006	J005Y0		FAM42-1-AA	FAM42-1-AC	FAM42-1-AD	FAM42-1-AE	FAM42-1-AF	FAM42-1-AG	FAM42-1-AH
		mg/kg	276.9	2.683	69.12	0.042	9.629	< 0.0035	11.51
J2J220131-006	J005Y0		FAM42-1-A1	FAM42-1-A2	FAM42-1-A3	FAM42-1-A4	FAM42-1-A5	FAM42-1-A6	FAM42-1-A7
DUPLICATE		mg/kg	126.1	2.575	59.54	< 0.0005	8.473	< 0.0035	13.52
J2J220131-006	J005Y0		FAM42-1-AJ	FAM42-1-AL	FAM42-1-AN	FAM42-1-AQ	FAM42-1-AT	FAM42-1-AV	FAM42-1-AX
MATRIX SPIKE		mg/kg	379.1	150.5	248.7	214.3	200.2	183.3	211.3
J2J220131-006	J005Y0		FAM42-1-AK	FAM42-1-AM	FAM42-1-AP	FAM42-1-AR	FAM42-1-AU	FAM42-1-AW	FAM42-1-A0
MATRIX SPIKE DUPLICATE		mg/kg	329.7	146.0	231.4	206.4	198.8	177.1	200.0
J2J240120-007	J005Y1		FAM43-1-AA	FAM43-1-AC	FAM43-1-AD	FAM43-1-AE	FAM43-1-AF	FAM43-1-AG	FAM43-1-AH
		mg/kg	118.6	2.537	59.43	0.033	8.309	< 0.0035	7.201
J2J240120-008	J005Y2		FAM44-1-AA	FAM44-1-AC	FAM44-1-AD	FAM44-1-AE	FAM44-1-AF	FAM44-1-AG	FAM44-1-AH
		mg/kg	530.2	3.195	92.15	0.834	10.92	2.217	27.44
J2J240120-009	J005Y3		FAM45-1-AA	FAM45-1-AC	FAM45-1-AD	FAM45-1-AE	FAM45-1-AF	FAM45-1-AG	FAM45-1-AH
		mg/kg	82.16	2.608	55.95	0.186	9.467	< 0.0035	5.468

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872
Digestion Date: 10/24/02
Analytical Date: 10/24/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J2J240120-010	J005Y4		FAM46-1-AA	FAM46-1-AC	FAM46-1-AD	FAM46-1-AE	FAM46-1-AF	FAM46-1-AG	FAM46-1-AH
		mg/kg	87.09	2.538	67.90	0.322	9.049	< 0.0035	5.850
J2J240120-001	J005Y5		FAM4K-1-AA	FAM4K-1-AC	FAM4K-1-AD	FAM4K-1-AE	FAM4K-1-AF	FAM4K-1-AG	FAM4K-1-AH
		mg/kg	87.55	2.468	63.30	0.172	9.970	< 0.0035	3.940
J2J240120-002	J005Y6		FAM4P-1-AA	FAM4P-1-AC	FAM4P-1-AD	FAM4P-1-AE	FAM4P-1-AF	FAM4P-1-AG	FAM4P-1-AH
		mg/kg	185.9	0.966	223.6	< 0.0005	7.777	< 0.0035	< 0.0015
J2J240120-003	J005Y7		FAM4R-1-AA	FAM4R-1-AC	FAM4R-1-AD	FAM4R-1-AE	FAM4R-1-AF	FAM4R-1-AG	FAM4R-1-AH
		mg/kg	93.65	2.788	67.66	0.412	9.583	< 0.0035	7.194
J2J240120-004	J005Y8		FAM40-1-AA	FAM40-1-AC	FAM40-1-AD	FAM40-1-AE	FAM40-1-AF	FAM40-1-AG	FAM40-1-AH
		mg/kg	93.29	2.125	54.94	0.008	8.949	< 0.0035	1.937
J2J240120-005	J005Y9		FAM41-1-AA	FAM41-1-AC	FAM41-1-AD	FAM41-1-AE	FAM41-1-AF	FAM41-1-AG	FAM41-1-AH
		mg/kg	88.18	2.447	44.45	0.036	16.91	< 0.0035	6.164
J2J240120-011	J00600		FAM48-1-AA	FAM48-1-AC	FAM48-1-AD	FAM48-1-AE	FAM48-1-AF	FAM48-1-AG	FAM48-1-AH
		mg/kg	139.6	3.278	57.99	0.084	9.323	< 0.0035	8.319
J2J240120-012	J00601		FAM5A-1-AA	FAM5A-1-AC	FAM5A-1-AD	FAM5A-1-AE	FAM5A-1-AF	FAM5A-1-AG	FAM5A-1-AH
		mg/kg	90.17	2.878	67.93	0.300	9.529	< 0.0035	6.452
J2J240120-013	J00602		FAM5D-1-AA	FAM5D-1-AC	FAM5D-1-AD	FAM5D-1-AE	FAM5D-1-AF	FAM5D-1-AG	FAM5D-1-AH

DM 10/25/02

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# W03872
Digestion Date: 10/24/02
Analytical Date: 10/24/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
		mg/kg	75.17	1.832	52.16	< 0.0005	6.955	< 0.0035	< 0.0015
J2J240120-014	J00603		FAM5E-1-AA	FAM5E-1-AC	FAM5E-1-AD	FAM5E-1-AE	FAM5E-1-AF	FAM5E-1-AG	FAM5E-1-AH
		mg/kg	85.28	1.934	52.59	< 0.0005	8.445	< 0.0035	4.267
J2J240120-015	J00604		FAM5G-1-AA	FAM5G-1-AC	FAM5G-1-AD	FAM5G-1-AE	FAM5G-1-AF	FAM5G-1-AG	FAM5G-1-AH
		mg/kg	129.4	1.917	58.04	0.166	7.515	< 0.0035	7.486

SGB 10/25/02

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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# W03872
Digestion Date: 10/28/02
Analytical Date: 10/28/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			FAXWQ-1-AA	FAXWQ-1-AC	FAXWQ-1-AD	FAXWQ-1-AE	FAXWQ-1-AF	FAXWQ-1-AG	FAXWQ-1-AH
J2J280000-511	————	mg/L	< 0.002	< 0.0025	< 0.03	< 0.005	0.0070	< 0.035	0.0163
LCS			FAXWQ-1-AJ	FAXWQ-1-AK	FAXWQ-1-AL	FAXWQ-1-AM	FAXWQ-1-AN	FAXWQ-1-AP	FAXWQ-1-AQ
J2J280000-511	————	mg/L	1.576	0.375	1.661	1.709	1.554	1.676	1.694
J2J280148-001	J00793		FAW5T-1-AA	FAW5T-1-AC	FAW5T-1-AD	FAW5T-1-AE	FAW5T-1-AF	FAW5T-1-AG	FAW5T-1-AH
		mg/kg	538.7	1.910	59.60	0.634	15.56	< 0.0035	67.41
J2J280148-001	J00793		FAW5T-1-AJ	FAW5T-1-AK	FAW5T-1-AL	FAW5T-1-AM	FAW5T-1-AN	FAW5T-1-AP	FAW5T-1-AQ
DUPLICATE		mg/kg	1492	1.655	97.99	1.504	21.50	< 0.0035	70.26
J2J280148-002	J00794		FAW5W-1-AA	FAW5W-1-AC	FAW5W-1-AD	FAW5W-1-AE	FAW5W-1-AF	FAW5W-1-AG	FAW5W-1-AH
		mg/kg	266.0	11.25	38.82	1.934	31.19	< 0.0035	86.17
J2J280148-003	J00795		FAW51-1-AA	FAW51-1-AC	FAW51-1-AD	FAW51-1-AE	FAW51-1-AF	FAW51-1-AG	FAW51-1-AH
		mg/kg	171.2	1.446	31.11	3.708	24.49	< 0.0035	37.68
J2J280148-004	J00796		FAW54-1-AA	FAW54-1-AC	FAW54-1-AD	FAW54-1-AE	FAW54-1-AF	FAW54-1-AG	FAW54-1-AH
		mg/kg	141.1	10.34	39.12	4.667	82.48	< 0.0035	240.8
J2J280148-005	J00797		FAW56-1-AA	FAW56-1-AC	FAW56-1-AD	FAW56-1-AE	FAW56-1-AF	FAW56-1-AG	FAW56-1-AH
		mg/kg	241.4	22.67	60.98	36.03	104.0	< 0.0035	8540
J2J280148-006	J00798		FAW57-1-AA	FAW57-1-AC	FAW57-1-AD	FAW57-1-AE	FAW57-1-AF	FAW57-1-AG	FAW57-1-AH
		mg/kg	151.6	4.267	43.01	2.392	36.61	< 0.0035	171.9

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

SEVERN TRENT SERVICES

ICAP METAL SAMPLE AND QC SAMPLE DATA REPORT

SDG# W03872
Digestion Date: 10/28/02
Analytical Date: 10/28/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
J2J280148-007	J00799		FAW58-1-AA	FAW58-1-AC	FAW58-1-AD	FAW58-1-AE	FAW58-1-AF	FAW58-1-AG	FAW58-1-AH
		mg/kg	210.6	16.19	42.62	2.564	19.28	< 0.0035	123.2
J2J280148-008	J007B0		FAW59-1-AA	FAW59-1-AC	FAW59-1-AD	FAW59-1-AE	FAW59-1-AF	FAW59-1-AG	FAW59-1-AH
		mg/kg	133.9	7.392	46.18	4.147	115.8	< 0.0035	88.79
J2J280148-009	J007B1		FAW6A-1-AA	FAW6A-1-AC	FAW6A-1-AD	FAW6A-1-AE	FAW6A-1-AF	FAW6A-1-AG	FAW6A-1-AH
		mg/kg	247.6	31.05	80.87	14.00	76.44	< 0.0035	476.0
J2J280148-010	J007B2		FAW6D-1-AA	FAW6D-1-AC	FAW6D-1-AD	FAW6D-1-AE	FAW6D-1-AF	FAW6D-1-AG	FAW6D-1-AH
		mg/kg	159.7	3.153	38.85	1.349	24.23	< 0.0035	88.84

SAD 10/28/02 DM 10/29/02

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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# W03872
Digestion Date: 10/29/02
Analytical Date: 10/29/02
Matrix: SOIL

	Client ID	Units	Barium	Silver	Arsenic	Cadmium	Chromium	Selenium	Lead
BLANK			FA2L0-1-AA	FA2L0-1-AC	FA2L0-1-AD	FA2L0-1-AE	FA2L0-1-AF	FA2L0-1-AG	FA2L0-1-AH
J2J290000-539	----------	mg/L	< 0.002	0.021	< 0.03	< 0.005	< 0.005	< 0.035	< 0.015
LCS			FA2L0-1-AJ	FA2L0-1-AK	FA2L0-1-AL	FA2L0-1-AM	FA2L0-1-AN	FA2L0-1-AP	FA2L0-1-AQ
J2J290000-539	----------	mg/L	1.797	1.596	2.035	1.672	1.831	1.698	1.688
J2J290224-001	J007B3		FA11F-1-AA	FA11F-1-AC	FA11F-1-AD	FA11F-1-AE	FA11F-1-AF	FA11F-1-AG	FA11F-1-AH
		mg/kg	53.70	1.679	97.58	0.097	6.674	< 0.0035	< 0.0015
J2J290224-001	J007B3		FA11F-1-AJ	FA11F-1-AK	FA11F-1-AL	FA11F-1-AM	FA11F-1-AN	FA11F-1-AP	FA11F-1-AQ
DUPLICATE		mg/kg	51.96	1.514	91.86	0.141	5.580	< 0.0035	< 0.0015
J2J290224-002	J007B4		FA11J-1-AA	FA11J-1-AC	FA11J-1-AD	FA11J-1-AE	FA11J-1-AF	FA11J-1-AG	FA11J-1-AH
		mg/kg	60.14	1.643	95.56	< 0.0005	7.363	< 0.0035	1.22
J2J290224-003	J007B5		FA11M-1-AA	FA11M-1-AC	FA11M-1-AD	FA11M-1-AE	FA11M-1-AF	FA11M-1-AG	FA11M-1-AH
		mg/kg	62.06	1.507	106.1	< 0.0005	6.646	< 0.0035	0.99

SSD 10/29/02 DM 10/30/02

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

CHAIN OF CUSTODY

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-01	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 RG61852600	Method of Shipment Government Vehicle		
Shipped To Severn Trent Incorporated, Richland	Offsite Property No.	Bill of Lading/Air Bill No.		

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 W03872 Due 11-14 J2J020166

Sample No.	Matrix *	Sample Date	Sample Time									
J00546	SOIL	10-1-02	1110	X	E88	LG						
J00547	SOIL	10-1-02	1112	X	E88	MD						
J00548	SOIL	10-1-02	1114	X	E88	ME						
J00549	SOIL	10-1-02	1405	X	E88	MH						
J00550	SOIL	10-1-02	1407	X	E88	MJ						

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CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	10-1-02/1650	Ref 1A 3728	10-1-02/1650
Ref #1A 3728	10/2/02 0830	R. Nielson	10/2/02 0830
ERC R. Nielson	10/2/02 0845	T. Heidelberg	10/2/02 0845

Sign/Print Names

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 10/2/02

Matrix *
S=Soil
SE=Sediment
SO=Solid
SJ=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	B02-066-01	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 RG61852600	Method of Shipment Government Vehicle		
Shipped To Severn Trent Incorporated, Richland	Offsite Property No.		Bill of Lading/Air Bill No.		

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										
J005N1	SOIL	10-1-02	1410	X	E88	MK							
J005N2	SOIL	10-1-02	1500	X	E88	ML							
	SOIL												
	SOIL												
	SOIL												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time Bowers 10-1-02/1610	Received By/Stored In REF/A 3728	Date/Time 10-1-02/1610
Relinquished By/Removed From REF#1A 3728	Date/Time 10/2/02 0830	Received By/Stored In R.Nielson/R.Nielson	Date/Time 0830 10/2/02
Relinquished By/Removed From ERC R.Nielson/R.Nielson	Date/Time 0845 10/2/02	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

10-2-02
0845

Personnel not available to relinquish samples from the 3728
Ref # 1A on 10/2/02

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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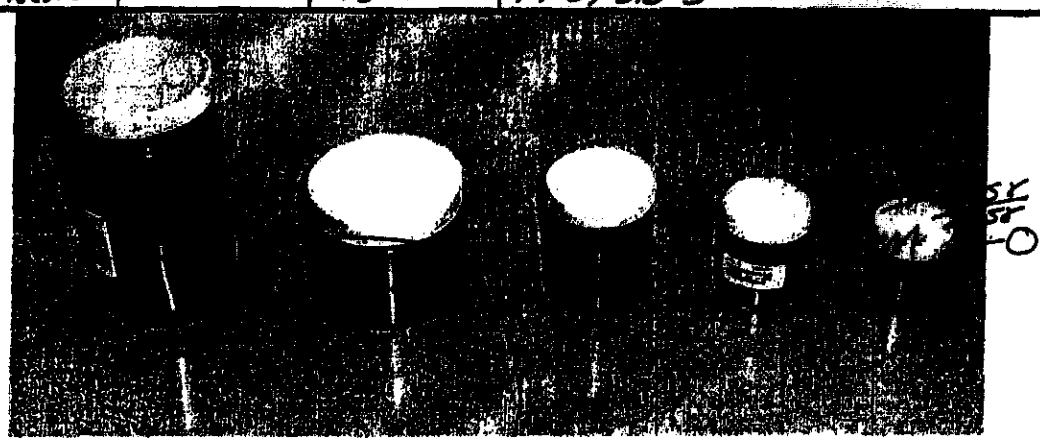
ERC RADIOLOGICAL SURVEY RECORD

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

Survey # RSR - FF2-02-0006

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010 Rev. 00	10-01-02	1620	FF2/618-5



SURVEY OF SAMPLE CONTAINERS

60 ml x 14. from 618-5 Burial Pit.
Used TA-01-SR-16 to remove from "RA".
Used TA-97-SR-31 for Release/shipment.
Used Site-Specific Instruction # 300RA-03
To gather info on pCi/gm per sample.

TA-97-SR-31

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
L2224-2	0055	SJH	N/A	7-23-03	RO-20	1275	SJH	1	6-12-03
D6BD	0063	SJH	BKG 5.6 α 7.1	7-23-03	N/A				

RCT Name/Signature/Date:
SJ Hubbleston / SJ Hubbleston 10/01/02

RCT Supervisor Name/Signature/Date:

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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
N/A	ALL LAWS / DIRECTS	<100	7.1	<1000	5.6	<100	7.1	<5000	5.6
			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
ALL DOSE RATES	N/A	<0.5	N/A	<0.5
	N	A		

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

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ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FF2-02-0006

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.8%
MO-905 / Rm #8	βγ	45.6	27	65	41.3%

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	60 ml. Sample Jar #1	α	1	0	<DL	<20
		βγ		37		<1000
2	#1S	α		0		
		βγ		38		
3	#2	α		0		
		βγ		41		
4	#2S	α		0		
		βγ		44		
5	#3	α		0		
		βγ		47		
6	#3S	α		0		
		βγ		50		
7	#4	α		0		
		βγ		33		
8	#4S	α		0		
		βγ		41		
9	#5	α		0		
		βγ		41		
10	#5S	α		0		
		βγ		40		
11	#6	α		0		
		βγ		53		
12	#6S	α		0		
		βγ		44		
13	#7	α		0		
		βγ		40		
14	60 ml Sample Jar #7S	α		0		<20
		βγ	1	41	<DL	<1000

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

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ERC RADIOLOGICAL SURVEY RECORD (continuation)	Page: 4 of 4 Survey # HSR-PF2-02-0006

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 # J005M6, J00586	(448 - 351) / 4	= 24.3 pCi/gm
Sample # J005M7, J00587	(453 - 351) / 4	= 25.5 pCi/gm
Sample # J005M8, J00588	(422 - 351) / 4	= 17.8 pCi/gm
Sample # J005M9, J00589	(459 - 351) / 4	= 27 pCi/gm
Sample # J005N0, J00590	(442 - 351) / 4	= 22.8 pCi/gm
Sample # J005N1, J00591	(425 - 351) / 4	= 18.5 pCi/gm
Sample # J005N2, J00592	(445 - 351) / 4	= 23.5 pCi/gm
Sample # _____, _____	(-) / 4	= _____ pCi/gm
Sample # _____, _____	(-) / 4	= _____ pCi/gm
Sample # _____, _____	(-) / 4	= _____ pCi/gm

N H

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 10-2 0845

Client: BHI SDG #: W03872 NA [ ] SAF #: B02-066 NA [ ]

Work Order Number: 02J020166 Chain of Custody # B02-0066-01

Shipping Container ID: ERC96-079 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 [X] Wet [ ] Dry [ ]
6. Number of samples in shipping container: 7
7. Sample holding times exceeded? NA [ ] Yes [ ] No [X]
8. Samples have:
   ___ tape
   X custody seals
   ___ 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 [ ] No [X]
    *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: 10-2-02

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

Q-27038

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-01	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	Air Quality ☐	
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: RG61852600	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 W03872

J2J030155

Sample No.	Matrix *	Sample Date	Sample Time										
J005L9 E9A 6W	SOIL	9-30-02	1330	X			J00579						
J005M0 E9A 63	SOIL	9-30-02	1335	X			J00580						
J005M1 E9A 67	SOIL	9-30-02	1340	X			J00581						
J005M2 E9A 69	SOIL	9-30-02	1345	X			J00582						
J005M3 E9A 7E	SOIL	9-30-02	1350	X			J00583						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers	9-30-02/1420	Ref 1A 3728	9-30-02/1420
Ref 1A	10/3/02 0825	R Nielson	10/3/02 0825
ERC R Nielson	10/3/02 0850	STL A. Rhineheart	10/3/02 0850

SPECIAL INSTRUCTIONS

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

Contact Joan Kessner for Data Turnaround.

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=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	B02-066-01	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 RG61852600	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										
J005N3E9A 7G	SOIL	10-2-02	1820	X									
J005N4E9A 7J	SOIL	10-2-02	1030	X									
J005N5E9A 7K	SOIL	10-2-02	1445	X									
	SOIL												
	SOIL												

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CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time 10-2-02/1620	Received By/Stored In Bay 1A 3728	Date/Time 10-2-02/1620
Relinquished By/Removed From Bay 1A 3728	Date/Time 10/3/02 0825	Received By/Stored In R. Nielson	Date/Time 10/3/02 0825
Relinquished By/Removed From ERC R. Nielson	Date/Time 10/3/02 0850	Received By/Stored In SR 410 A. Rhineheart	Date/Time 10/3/02 0850
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

Contact Joan Kessner for Data Turnaround

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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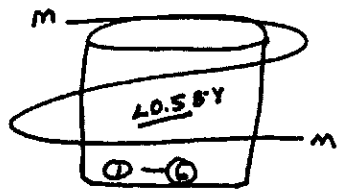
ERC RADIOLOGICAL SURVEY RECORD

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

Survey # RSR - FF2-02-0014

RWP # / Rev. #	Date	Time	Location Code/Description
N/A	10-2-02	1555	~~FF1~~ FF2

* Survey of soil samples for shipment.



(soil sample)

[See attached]

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

Technical Assessment # TA-97-SR-31

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	0079 / 0067	[illegible]	β- 4.6	8-1-03	2929	0020 / 0044	[illegible]	α β- 3 2.4	8-12-03
R020	1275	[illegible]	γ β- 1.2	6-12-03	N/A				

RCT Name/Signature/Date:
J. Tufford / [signature] / 10-2-02

RCT Supervisor Name/Signature/Date:

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ERC RADIOLOGICAL SURVEY RECORD (continuation)	Page: 3 of 4 Survey # RSR- FF2-02-0014

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 # J00593 J005N3	$\frac{413 - 260}{4}$	= 38 pCi/gm
Sample # J00594, J005N4	$\frac{473 - 260}{4}$	= 53 pCi/gm
Sample # J00595, J005N5	$\frac{428 - 260}{4}$	= 42 pCi/gm
Sample # _____, _____	$\frac{___ - ___}{4}$	= _____ pCi/gm
Sample # _____, _____	$\frac{___ - ___}{4}$	= _____ pCi/gm
Sample # _____, _____	$\frac{N\ ___ - ___}{4}$	= _____ pCi/gm
Sample # _____, _____	$\frac{___ - ___}{4}$	= _____ pCi/gm
Sample # _____, _____	$\frac{___ - ___}{4}$	= _____ pCi/gm
Sample # _____, _____	$\frac{___ - ___}{4}$	= _____ pCi/gm
Sample # _____, _____	$\frac{___ - ___}{4}$	= _____ pCi/gm

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ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR- FF2-02-0014

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
FF1	α	0.18	2	6.1	32.9 %
	βγ	46.6	27	62	43.3 %

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	Soil Samples	α	1	0	<DL	<20
		βγ	1	49	<DL	<1K
2		α		0		
		βγ		52		
3		α		0		
		βγ		41		
4		α		0		
		βγ		45		
5		α		0		
		βγ		51		
6		α		0		
		βγ		52		
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α		N		
		βγ		A		
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				

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

Working copy

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 Items surveyed	N/A →		<1k	4.6	N/A →			
				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
All Items surveyed	<0.5 x 2 = <0.5	<0.5 x 1 = <0.5	N/A →	
		N		
		A		

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

VMS Gamma Spectroscopy Report generated 1-OCT-2002 13:49:33

Configuration	: DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_RCF10533_DET1_50GRAMPILLBOX60		
Sample ID	: J00579	Project Number	: 300-FF-1
RFC Number	: RCF10533	SAF Number	: B02-065
Sample Quantity	: 1.30000E+01 GRAMS		
Sample Type	: OTHER SOLID	Sample Geometry	:
Sample Date	: 30-SEP-2002 13:30:00	Acquisition date	: 1-OCT-2002 12:49:17.
Decay time	: 0 23:19:17.43	% dead time	: 0.0%
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.21
Energy cal. time	: 14-FEB-2002 16:05:03	Effic. cal. time	: 4-APR-2002 08:08:29.
Detector name	: BEGE 3820	Counting geometry	: 50Gram pill box
Peak Sensitivity	: 3.00000		
Efficiency Type	: EMPIRICA	Energy tolerance	: 2.00000

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
EU-155	~~5.547E-01~~	~~6.916E-01~~	9.498E-01	1.111E-01	0.584
AC-228	3.966E+00	1.700E+00	0.000E+00	0.000E+00	0.000
TH-234	3.041E+02	3.500E+01	7.074E+00	2.980E+00	42.984
U-235	1.762E+01	1.751E+00	5.971E-01	5.794E-02	29.501

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	1.162E+01		7.348E+00	1.887E+01	1.873E+00	0.616
CO-60	9.175E-02		4.117E-01	1.001E+00	9.692E-02	0.092
CS-137	-2.740E-01		4.640E-01	7.973E-01	9.099E-02	-0.344
EU-152	-9.277E-02		5.673E-01	9.857E-01	1.570E-01	-0.094
EU-154	-1.173E-01		4.103E-01	7.042E-01	1.023E-01	-0.167
TL-208	4.760E-01		3.478E+00	7.288E+00	8.023E-01	0.065
BI-212	2.741E+00		7.582E+00	1.523E+01	1.883E+00	0.180
PB-212	4.733E-01	+	5.918E-01	9.823E-01	1.129E-01	0.482
BI-214	8.769E-01		1.130E+00	2.325E+00	2.669E-01	0.377
PB-214	8.029E-01	+	7.966E-01	1.703E+00	1.730E-01	0.472
RA-226	3.023E+02	+	3.474E+01	4.813E+01	4.295E+00	6.281
AM-241	-2.132E-01		5.634E-01	9.339E-01	1.302E-01	-0.228

Approved by: _____ Approval Date: 10 / 2 / 02

TIMOTHY J. SNIDER

SENT BY: BECHTEL HANFORD, INC. ; 3731224 ; OCT-2-02 12:16; PAGE 3

VMS Gamma Spectroscopy Report generated 1-OCT-2002 15:05:04

Configuration	: DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_RCF10534_DET1_50GRAMPILLBOX60		
Sample ID	: J00580	Project Number	: 300-FF-1
RFC Number	: RCF10534	SAF Number	: B02-065
Sample Quantity	: 5.00000E+00 GRAMS		
Sample Type	: OTHER SOLID	Sample Geometry	:
Sample Date	: 30-SEP-2002 13:35:00	Acquisition date	: 1-OCT-2002 14:04:48.
Decay time	: 1 00:29:48.92	% dead time	: 0.0%
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.10
Energy cal. time	: 14-FEB-2002 16:05:03	Effic. cal. time	: 4-APR-2002 08:08:29.
Detector name	: BEGE 3820	Counting geometry	: 50Gram pill box
Peak Sensitivity	: 3.00000		
Efficiency Type	: EMPIRICA	Energy tolerance	: 2.00000

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
AC-228	1.790E+00	6.455E+00	0.000E+00	0.000E+00	0.000

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	2.262E+01		1.834E+01	4.568E+01	4.534E+00	0.495
CO-60	-9.331E-01		1.354E+00	2.268E+00	2.197E-01	-0.411
CS-137	1.149E+00		1.094E+00	2.571E+00	2.934E-01	0.447
EU-152	-2.922E-01		7.348E-01	1.292E+00	2.058E-01	-0.226
EU-154	-5.796E-02		5.646E-01	1.042E+00	1.514E-01	-0.056
EU-155	5.251E-01	+	5.854E-01	9.915E-01	1.159E-01	0.530
TL-208	1.354E+00		6.682E+00	1.530E+01	1.684E+00	0.089
BI-212	7.456E+00		1.338E+01	3.031E+01	3.748E+00	0.246
PB-212	1.095E-01		1.029E+00	1.933E+00	2.221E-01	0.057
BI-214	-1.900E-01		2.061E+00	3.994E+00	4.584E-01	-0.048
PB-214	1.176E+00		1.829E+00	3.735E+00	3.796E-01	0.315
RA-226	-2.500E+00		1.070E+01	1.952E+01	1.742E+00	-0.128
TH-234	1.996E+00		4.058E+00	7.965E+00	3.355E+00	0.251
U-235	-3.516E-02		5.807E-01	1.092E+00	1.060E-01	-0.032
AM-241	-7.078E-02		4.537E-01	8.316E 01	1.159E 01	0.085

Approved by: _____ Approval Date: 10 / 2 / 02

TIMOTHY J. SNIDER

SENT BY: BECHTEL HANFORD, INC. ; 3731224 ; OCT-2-02 12:16; PAGE 4/8

VMS Gamma Spectroscopy Report generated 1-OCT-2002 16:22:00

Configuration	: DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_RCF10535_DET1_50GRAMPILLBOX60		
Sample ID	: J00581	Project Number	: 300-FF-1
RFC Number	: RCF10535	SAF Number	: B02-065
Sample Quantity	: 1.00000E+01 GRAMS		
Sample Type	: OTHER SOLID	Sample Geometry	:
Sample Date	: 30-SEP-2002 13:40:00	Acquisition date	: 1-OCT-2002 15:21:42.
Decay time	: 1 01:41:42.92	% dead time	: 0.0%
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.10
Energy cal. time	: 14-FEB-2002 16:05:03	Effic. cal. time	: 4-APR-2002 08:08:29.
Detector name	: BEGE 3820	Counting geometry	: 50Gram pill box
Peak Sensitivity	: 3.00000		
Efficiency Type	: EMPIRICA	Energy tolerance	: 2.00000

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
PB-212	9.113E-01	5.041E-01	8.334E-01	9.576E-02	1.094
RA-226	8.~~216E+00~~	~~5.843E+00~~	9.223E+00	8.232E-01	0.891

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	1.304E+01		8.959E+00	2.316E+01	2.298E+00	0.563
CO-60	-1.112E-01		5.365E-01	1.134E+00	1.099E-01	-0.098
CS-137	2.078E-01		5.174E 01	1.119E+00	1.277E-01	0.186
EU-152	9.806E-02		4.217E-01	8.092E-01	1.289E-01	0.121
EU-154	-1.799E-01		2.749E-01	4.568E-01	6.637E-02	-0.394
EU-155	-2.768E-04		2.854E-01	5.505E-01	6.436E-02	-0.001
TL-208	2.588E+00		4.013E+00	9.562E+00	1.053E+00	0.271
BI-212	3.258E+00		5.269E+00	1.297E+01	1.604E+00	0.251
BI-214	1.854E-01		1.137E+00	2.268E+00	2.603E-01	0.082
PB-214	7.627E-01		8.026E-01	1.750E+00	1.779E-01	0.436
AC-228	0.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000
TH-234	1.250E+00		1.876E+00	3.792E+00	1.597E+00	0.330
U-235	4.698E-01	+	3.346E-01	6.539E-01	6.345E-02	0.718
AM-241	-2.731E-02		2.566E-01	4.680E-01	6.522E-02	-0.058

Approved by: _____ Approval Date: 10 / 2 / 02.

TIMOTHY J. SNIDER

SENT BY: BECHTEL HANFORD, INC. ; 3731224 ; OCT-2-02 12:17; PAGE 5/8

VMS Gamma Spectroscopy Report generated 1-OCT-2002 17:24:06

Configuration	: DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_RCF10536_DET1_50GRAMPILLBOX60		
Sample ID	: J00582	Project Number	: 300-FF-1
RFC Number	: RCF10536	SAF Number	: B02-065
Sample Quantity	: 2.20000E+01 GRAMS		
Sample Type	: OTHER SOLID	Sample Geometry	:
Sample Date	: 30-SEP-2002 13:45:00	Acquisition date	: 1-OCT-2002 16:23:50.
Decay time	: 1 02:38:50.20	% dead time	: 0.0%
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.10
Energy cal. time	: 14-FEB-2002 16:05:03	Effic. cal. time	: 4-APR-2002 08:08:29.
Detector name	: BEGE 3820	Counting geometry	: 50Gram pill box
Peak Sensitivity	: 3.00000		
Efficiency Type	: EMPIRICA	Energy tolerance	: 2.00000

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CS-137	6.945E-01	3.646E-01	3.976E-01	4.537E-02	1.747
PB-212	3.202E-01	2.696E-01	5.053E-01	5.806E-02	0.634
PB-214	9.057E-01	3.750E-01	7.194E-01	7.311E-02	1.259
AC-228	7.571E-01	9.527E-01	0.000E+00	0.000E+00	0.000
TH-234	1.773E+00	1.174E+00	1.649E+00	6.944E-01	1.076

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	9.916E+00		5.860E+00	1.386E+01	1.375E+00	0.716
CO-60	-2.220E-01		2.626E-01	3.886E-01	3.765E-02	-0.571
EU-152	3.373E-02		1.951E-01	3.704E-01	5.901E-02	0.091
EU-154	3.521E-02		1.584E-01	2.981E-01	4.332E-02	0.118
EU-155	-2.553E-02		1.521E-01	2.819E-01	3.296E-02	-0.091
TL-208	-2.590E-01		1.717E+00	3.477E+00	3.828E 01	-0.075
BI-212	5.117E-02		2.813E+00	5.800E+00	7.172E-01	0.009
BI-214	4.019E-01		5.801E-01	1.216E+00	1.396E-01	0.330
RA-226	2.646E+00		2.712E+00	5.611E+00	5.008E-01	0.472
U-235	2.238E-03		1.526E-01	2.843E-01	2.758E-02	-0.008
AM-241	2.002E-03		1.268E-01	2.336E 01	3.255E-02	0.009

Approved by: _____ Approval Date: 10 / 2 / 02

TIMOTHY J. SNIDER

SENT BY: BECHTEL HANFORD, INC. ; 3731224 ; OCT-2-02 12:17; PAGE 6/8

VMS Gamma Spectroscopy Report generated 2-OCT-2002 08:06:56

Configuration	: DKA100:[GAMMA.SCUSR.ARCHIVE]SMP_RCF10537_DET1_50GRAMPILLBOX60		
Sample ID	: J00583	Project Number	: 300-FF-1
RFC Number	: RCF10537	SAF Number	: B02-065
Sample Quantity	: 7.00000E+00 GRAMS		
Sample Type	: OTHER SOLID	Sample Geometry	:
Sample Date	: 30-SEP-2002 13:50:00	Acquisition date	: 2-OCT-2002 07:06:41.
Decay time	: 1 17:16:41.42	% dead time	: 0.0%
Elapsed live time	: 0 01:00:00.00	Elapsed real time	: 0 01:00:00.12
Energy cal. time	: 14-FEB-2002 16:05:03	Effic. cal. time	: 4-APR-2002 08:08:29.
Detector name	: BEGE 3820	Counting geometry	: 50Gram pill box
Peak Sensitivity	: 3.00000		
Efficiency Type	: EMPIRICA	Energy tolerance	: 2.00000

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (pCi/GRAM)	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
K-40	2.226E+01	2.080E+01	2.461E+01	2.442E+00	0.905
PB-212	1.248E+00	9.226E-01	1.588E+00	1.825E-01	0.786
TH-234	1.065E+02	1.641E+01	7.040E+00	2.965E+00	15.123
U-235	6.389E+00	1.130E+00	7.163E-01	6.950E-02	8.920

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

Nuclide	Key-Line Activity (pCi/GRAM)	K.L. Ided	Act error	MDA (pCi/GRAM)	MDA error	Act/MDA
CO-60	4.026E-01		7.178E-01	1.942E+00	1.881E-01	0.207
CS-137	6.287E-01		7.307E-01	1.705E+00	1.945E-01	0.369
EU-152	1.060E-01		7.304E-01	1.352E+00	2.154E-01	0.078
EU-154	3.647E-01		5.155E-01	1.017E+00	1.477E-01	0.359
EU-155	8.238E-01	+	6.744E-01	9.760E-01	1.141E-01	0.844
TL-208	3.755E+00		7.234E+00	1.585E+01	1.744E+00	0.237
BI-212	3.893E+00		1.069E+01	2.274E+01	2.812E+00	0.171
BI-214	3.780E+00	+	2.472E+00	4.728E+00	5.426E-01	0.800
PB-214	2.520E+00		1.554E+00	3.366E+00	3.421E-01	0.749
RA-226	1.108E+02	+	2.110E+01	4.051E+01	3.616E+00	2.735
AC-228	0.000E+00		0.000E+00	0.000E+00	0.000E+00	0.000
AM-241	-3.710E-01		5.951E-01	9.736E-01	1.357E-01	-0.381

Approved by: _____ Approval Date: 10 / 2 / 02

TIMOTHY J. SNIDER

SENT BY: BECHTEL HANFORD, INC. ; 3731224 ; OCT-2-02 12:17; PAGE 7/8

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 10/3/02 @ 8:50 AR

Client: BHI SDG #: W03872 NA [ ] SAF #: B02-066 NA [ ]

Work Order Number: J2J030155 Chain of Custody # B02-066-01

Shipping Container ID: N/A 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: [illegible] / [illegible] Date: 10/3/02

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	B02-066-01	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.: ERC96-079	Field Logbook No.: EL 1395-6	COA: RG61852600	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

SDG W03872

Date 11-14

SAMPLE ANALYSIS J2J040164

Preservation	None												
Type of Container	sG												
No. of Container(s)	1												
Volume	60mL												
	See item (1) in Special Instructions.												
Sample No.	Matrix *	Sample Date	Sample Time										
J005N6	SOIL	10-3-02	1030	X	E9E	NH							
J005N7	SOIL	10-3-02	1320	X	E9E	NJ							
J005N8	SOIL	10-3-02	1345	X	E9E	NK							
J005N9	SOIL	10-3-02	1430	X	E9E	NM							
	SOIL												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Doug Bowers	Date/Time: 10-3-02/1700	Received By/Stored In: Ref #3728	Date/Time: 10-3-02/1700
Relinquished By/Removed From: Ref #1A	Date/Time: 10/4/02 0920	Received By/Stored In: R Nielson / R Nielson	Date/Time: 0920 10-4-02
Relinquished By/Removed From: R Nielson / R Nielson	Date/Time: 10/4/02 0935	Received By/Stored In: T. Heidelberg	Date/Time: 10-4-02 0935
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 10/4/02

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=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

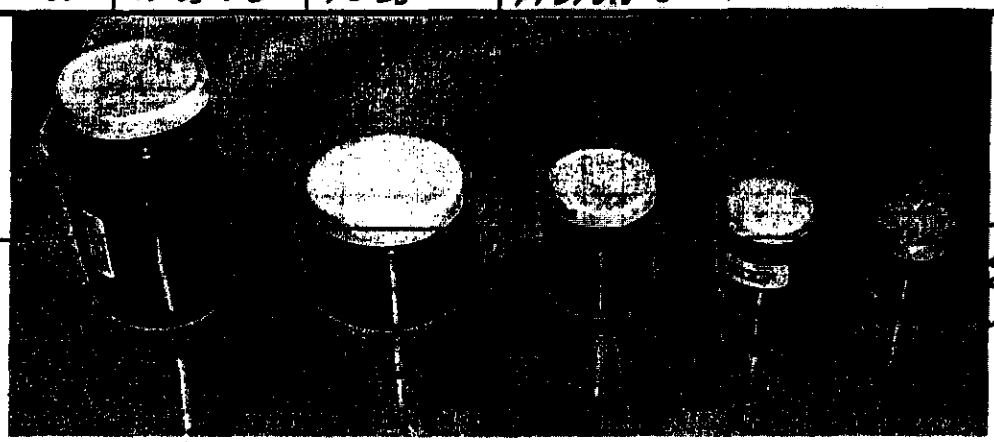
BHI-EE-011 (03/01/2002)

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 - FF2-02-0021

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010 REV 00	10-03-02	1620	FF2/618-5



SURVEY OF SAMPLE CONTAINERS

USED TA-97-SR-31 to release/ship.
USED TA-01-SR-16 to remove from CA.
USED Site-Specific Instruction NO #300RA-03
to find pCi/gm content.

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

Technical Assessment # TA-97-SR-31 TA-02-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
L2224-2	0046	SH	N/A	7-11-03	RO-20	1275	SH	1	6-12-03
DP6BD	0101	SH	885.6 ± 7.8	7-11-03	N/A				→

RCT Name/Signature/Date:
SJ Huddleston/SJ Huddleston 10/3/02

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
N/A	ALL LAWS / DIAPERS	400	7.8	<1000	5.6	<100	7.8	<5000	5.6

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	~~[illegible]~~ 03-02 N/A	<0.5	N/A	<0.5

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

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FF2-02-0021

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.88
MO-905 / Rm #8	βγ	45.6	27	65	41.38

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	{60 ml Sample Bottle} - 1	α	1	0	<DL	{<20
		βγ		38		<1000}
2	- 1s	α		0		
		βγ		39		
3	- 2	α		0		
		βγ		40		
4	- 2s	α		0		
		βγ		55		
5	- 3	α		0		
		βγ		48		
6	- 3s	α		0		
		βγ		51		
7	- 4	α		0		
		βγ		33		
8	{60 ml - Sample bottle} - 4s	α		0		{<20
		βγ	1	34	<DL	<1000}
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				

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 # J005N6 , J00596	(483 - 269) / 4	= 53.5 pCi/gm
Sample # J005N7 , J00597	(398 - 269) / 4	= 32.3 pCi/gm
Sample # J005N8 , J00598	(1072 - 269) / 4	= 200.8 pCi/gm
Sample # J005N9 , J00599	(343 - 269) / 4	= 18.5 pCi/gm
Sample # _____ , _____	- / 4	= _____ pCi/gm
Sample # _____ , _____	- / 4	= _____ pCi/gm
Sample # _____ , _____	- / 4	= _____ pCi/gm
Sample # _____ , _____	- / 4	= _____ pCi/gm
Sample # _____ , _____	- / 4	= _____ pCi/gm
Sample # _____ , _____	- / 4	= _____ pCi/gm

N/A

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 10-4 0935

Client: BHI SDG #: W03872 NA [ ] SAF #: B02-066 NA [ ]

Work Order Number: J2J040164 Chain of Custody # B02-066-01

Shipping Container ID: ERC96-079 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: 4
7. Sample holding times exceeded? NA [ ] Yes [ ] No [X]
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 [X]
    *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: Heidelberg Date: 10-4-02

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-066-01	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: RG61852600	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	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	60mL	120ml									
See item (1) in Special Instructions.		See item 1 in Special Inst.									

SDG W03872

SAMPLE ANALYSIS Due 11-14-02 J2J070139

Sample No.	Matrix *	Sample Date	Sample Time									
J005P0	SOIL	10-4-02	0912	X	E9HQH							
J005P1	SOIL	10-4-02	1228	X	E9HQJ							
J005P2	SOIL	10-4-02	1231	X	E9HQK							
J005P3	SOIL	10-4-02	1237	X	~~X~~ RIN 10/7/02 E9HQM							
J005P4	SOIL	10-4-02	1430		X		E9HQN					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers / Doug Bowers	10-4-02 / 1620	Ref # 1A 3728	10-4-02 / 1620
Ref # 1A 3728	10/7/02 0820	R Nielson / R Nielson	10/7/02 0820
R Nielson / R Nielson	10/7/02 0910	T. Heidelberg / Heidelberg	10/7/02 0910

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 10/7/02

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	B02-066-01	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. BRC 96-079	Field Logbook No. EL 1395-6	COA RG61852600	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	None									
Type of Container	aG	aG									
No. of Container(s)	1	1									
Volume	60mL	120 ml									
SAMPLE ANALYSIS	See item (1) in Special Instructions	See item (1) in Special Inst.									

Sample No.	Matrix *	Sample Date	Sample Time	[redacted]									
J005P5	SOIL	10-4-02	1442	X	X	E9H	QP						
J005P6	SOIL	10-4-02	1444	X		E9H	QQ						
J005P7	SOIL	10-4-02	1446	X		E9H	QV						
	SOIL												
	SOIL												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	10-4-02/1620	REF 1A 3728	10-4-02/1620
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
REF #1A 3728	10/7/02 0820	R. Nielson	10/7/02 0820
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson R. Nielson	10/7/02 0910	T. Heidelberg	10-7-02
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 10-7-02

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 - FF2-02-0029

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010 REV 00	10-01-02	1545	FF2/618-5

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SURVEY OF SAMPLE CONTAINERS from 618-5 Burial Pit.

TA-97-SR-71

All radiation readings are γ dose rates in units of mR/hr unless otherwise indicated. Technical Assessment # ~~FA-97-SR-3~~ ~~SJH 10-4-02~~

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
Ludlum 2224-2	0046	SH	1/4	7-11-03	RO-20	1275	SH	1	6-12-03
DP6BD	0101	SH	385.6 ± 7.8	7-11-03	Ludlum 2929	0041 0053	SH	1/4	12-7-02

RCT Name/Signature/Date:
SJ Huddleston
10-04-02
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
N/A	ALL LAWS / DIRECTS	<100	7.8	<1000	5.6	<100	7.8	<5000	5.6
			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
ALL DOSERATES	N/A	<0.5	N/A	<0.5
	N			
		A		

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FF2-02-0029

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
MO-905 / Rm #8	α	.19	2.0	6.1	32.8%
	βγ	45.6	27	65	41.3%

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	60 ml Sample Bottle - #1	α	1	0	<DL	<20
		βγ		46		<100
2	#15	α		0		
		βγ		44		
3	-2	α		0		
		βγ		35		
4	-25	α		1		
		βγ		49		
5	-3	α		0		
		βγ		50		
6	-35	α		0		
		βγ		35		
7	-4	α		0		
		βγ		47		
8	-45	α		0		
		βγ		48		
9	-5	α		0		
		βγ		40		
10	-55	α		0		
		βγ		49		
11	-6	α		1		
		βγ		36		
12	-65	α		0		
		βγ		46		
13	-7	α		0		
		βγ		45		
14	60 ml Sample Bottle -75	α	1	0	<DL	<20
		βγ		45		<100

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

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FF2-02-0029

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.8%
MW-905/Rm #8	βγ	45.6	27	65	41.3%

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 Bottle - 8	α	1	0	<DL	<20
		βγ	↓	43	↓	<1000
16	60 ml Sample Bottle - 85	α	↓	0	↓	<20
		βγ	1	45	<DL	<1000
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α	✓			
		βγ				
		α		A		
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				

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 # J005B0, J005P0 — (238 - 234) / 4 = 1 pCi/gm

Sample # J005B1, J005P1 — (1334 - 234) / 4 = 275 pCi/gm

Sample # J005B2, J005P2 — (710 - 234) / 4 = 119 pCi/gm

Sample # J005B3, J005P3 — (1121 - 234) / 4 = 222 pCi/gm

Sample # J005B4, J005P4 — (1370 - 234) / 4 = 284 pCi/gm

Sample # J005B5, J005P5 — (1220 - 234) / 4 = 247 pCi/gm

Sample # J005B6, J005P6 — (238 - 234) / 4 = 1 pCi/gm

Sample # J005B7, J005P7 — (311 -) / 4 = 19 pCi/gm

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

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

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 10-7 0905

Client: BHI SDG #: W03872 NA [ ] SAF #: B02-006 NA [ ]

Work Order Number: J2J070139 Chain of Custody # B02-006-01

Shipping Container ID: ERC 96-079 Air Bill # na

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: 8
7. Sample holding times exceeded? NA [ ] Yes [ ] No [X]
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: 10-7-02

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-01	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. EAC 96-082	Field Logbook No. EL 1395-6	COA RG61852600	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 W03872 Due 11-14-02 J2J090153

Sample No.	Matrix *	Sample Date	Sample Time										
J005P8J	SOIL	10-8-02	1405	X	E9M	AM							
J005P9J	SOIL	10-8-02	1407	X	E9M	AP							
J005R0J	SOIL	10-8-02	~~1408~~ 1409	X	E9M	AR							
J005R1J	SOIL	10-8-02	1411	X	E9M	AV							
J005R2J	SOIL	10-8-02	1413	X	E9M	AW							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers Doug Bowers	Date/Time 10-8-02/1630	Received By/Stored In RAF 1A 3728	Date/Time 10-8-02/1630
Relinquished By/Removed From RAF 1A 3728	Date/Time 10-9-02/0815	Received By/Stored In Doug Bowers Doug Bowers	Date/Time 10-9-02/0815
Relinquished By/Removed From Doug Bowers Doug Bowers	Date/Time EAC 10-9-02/0830	Received By/Stored In T. Heidelberg	Date/Time STF 10-9-02 0830
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

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	B02-066-01	Page 1 of 1

Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH
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. EAC 96-082	Field Logbook No. EL 1395-6	COA RG61852600	Method of Shipment Government Vehicle
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A

Price Code

Air Quality ☐

Data Turnaround

24 Hours

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

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

SDG W03872

J2J090153

Sample No.	Matrix *	Sample Date	Sample Time									
J005R3 ✓	SOIL	10-8-02	1417	X	EQM	AD						
J005R4 ✓	SOIL	10-8-02	1417	X	EQM	A9						
J005R5 ✓	SOIL	10-8-02	1419	X	EQM	CA						
J005R6 ✓	SOIL	10-8-02	1425	X	EQM	CC						
J005R7 ✓	SOIL	10-8-02	1440	X	EQM	CE						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers Bowers	Date/Time 10-8-02/1630	Received By/Stored In Bof/A 3728	Date/Time 10-8-02/1630
Relinquished By/Removed From Bof/A 3728	Date/Time 10-9-02/0815	Received By/Stored In Doug Bowers	Date/Time 10-9-02/0815
Relinquished By/Removed From Doug Bowers Bowers	Date/Time ERC 10-9-02/0830	Received By/Stored In T. Heidelberg	Date/Time STC 10-9-02 0830
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

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=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	B02-066-01	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. EAC 96-082	Field Logbook No. EL 1395-6	COA RG61852600	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 W03872

J2J090153

Sample No.	Matrix *	Sample Date	Sample Time										
J005R8 ✓	SOIL	10-8-02	1442	X	E9M	CG							
J005R9 ✓	SOIL	10-8-02	1444	X	E9M	CH							
J005T0 ✓	SOIL	10-8-02	1446	X	E9M	CK							
	SOIL												
	SOIL												

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CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	10-8-02/1630	Not IA 3728	10-8-02/1630
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Not IA 3728	10-9-02/0815	Doug Bowers Doug Bowers	10-9-02/0815
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	10-9-02/0930	STL T. Heidelberg T. Heidelberg	10-9-02 0830
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

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

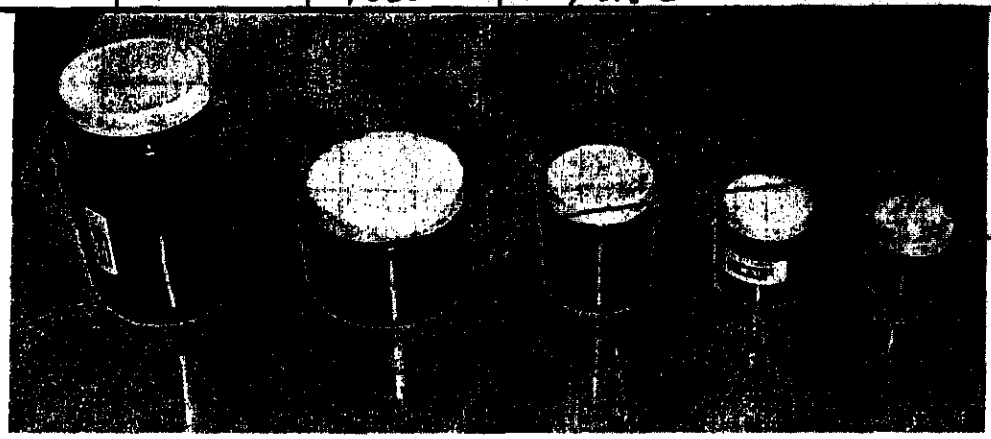
BHI-EE-011 (03/01/2002)

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 - FF2-02-0045

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010 REV. 06	10/08/02	1630	FF2/618-5



<40.5X
<40.5X
26

SURVEY OF SAMPLE CONTAINERS, taken from the 618-5 Burial pit.

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

Technical Assessment # TA-97-SR-31

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
E-600	1124	SH	N/A	7-12-03	RO-20	1329	SH	1	11-20-02
SHP-380AB	0003	SH	BF 5.6 X 8.3	4-17-03	Ludlum 2929	0041 0053	SH	N/A	12-7-02

RCT Name/Signature/Date:
JT Huddleston/JT Huddleston 10/08/02

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
N/A	ALL LANS / DIRECTS	<100	8.3	<1000	5.6	<100	8.3	<5000	5.6
		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
ALL DOSERATES	N/A	<0.5	N/A	<0.5
	N			
		A		

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FF2-02-0045

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.8%
MU-905/Rm #8	βγ	45.6	27	65	41.3%

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	60 ml Sample Bottle - 1	α	1	0	<DL	<20
		βγ		57		<1000
2	- 1S	α		0		
		βγ		49		
3	- 2	α		0		
		βγ		50		
4	- 2S	α		0		
		βγ		60		
5	- 3	α		0		
		βγ		53		
6	- 3S	α		0		
		βγ		52		
7	- 4	α		0		
		βγ		52		
8	- 4S	α		0		
		βγ		37		
9	- 5	α		0		
		βγ		42		
10	- 5S	α		0		
		βγ		47		
11	- 6	α		0		
		βγ		42		
12	- 6S	α		0		
		βγ		41		
13	- 7	α		0		
		βγ		51		
14	60 ml Sample Bottle - 7S	α		1		<20
		βγ	1	44	<DL	<1000

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

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FF2-02-0045

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.8%
NU-905 / Lab #8	βγ	45.6	27	65	41.3%

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 Bottle} - 8	α	1	0	<DL	<20
		βγ		42		<1000
16	- 8S	α		0		
		βγ		57		
17	- 9	α		0		
		βγ		45		
18	- 9S	α		0		
		βγ		33		
19	- 10	α		0		
		βγ		44		
20	- 10S	α		0		
		βγ		37		
21	- 11	α		0		
		βγ		40		
22	- 11S	α		0		
		βγ		37		
23	- 12	α		0		
		βγ		52		
24	- 12S	α		0		
		βγ		53		
25	- 13	α		0		
		βγ		53		
26	{60 ml Sample Bottle} - 13S	α		0		<20
		βγ	1	47	<DL	<1000
	N	α				
		βγ		N		
	A	α			A	
		βγ				

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 # J005P8, J005B8 — (3400 - 186) / 4 = 804 pCi/gm

Sample # J005P9, J005B9 — (2400 - 186) / 4 = 554 pCi/gm

Sample # J005R0, J005C0 — (1300 - 186) / 4 = 279 pCi/gm

Sample # J005R1, J005C1 — (1800 - 186) / 4 = 404 pCi/gm

Sample # J005R2, J005C2 — (2000 - 186) / 4 = 454 pCi/gm

Sample # J005R3, J005C3 — (1600 - 186) / 4 = 354 pCi/gm

Sample # J005R4, J005C4 — (1600 - 186) / 4 = 354 pCi/gm

Sample # J005R5, J005C5 — (4000 - 186) / 4 = 954 pCi/gm

Sample # J005R6, J005C6 — (280 - 186) / 4 = 24 pCi/gm

Sample # J005R7, J005C7 — (2800 - 186) / 4 = 654 pCi/gm

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 # J005R8, J005C8 — (660 - 186) / 4 = 119 pCi/gm

Sample # J005R9, J005C9 — (1300 - 186) / 4 = 279 pCi/gm

Sample # J005T0, J005D0 — (1200 - 186) / 4 = 254 pCi/gm

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

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

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

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

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

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

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

N/A

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 10-9 0830

Client: BHI SDG #: W03872 NA [ ] SAF #: B02-000 NA [ ]

Work Order Number: J2J090153 Chain of Custody # B02-000-01

Shipping Container ID: ERC96-082 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: 13
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: J Heidelberg Date: 10-9-02

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	B02-066-01	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. ERL 96-082	Field Logbook No. EL 1395-6	COA RG61852600	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 W03872 Due 11-14

J2J100120

Sample No.	Matrix *	Sample Date	Sample Time										
J005T1	SOIL	10-9-02	1300	X	E9P	H6							
J005T2	SOIL	10-9-02	1302	X	E9P	HB							
J005T3	SOIL	10-9-02	1304	X	E9P	JA							
	SOIL												
	SOIL												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time 10-9-02/1455	Received By/Stored In STL Kelso Josh Hughes	Date/Time 10/9/02 14:55
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
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

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=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

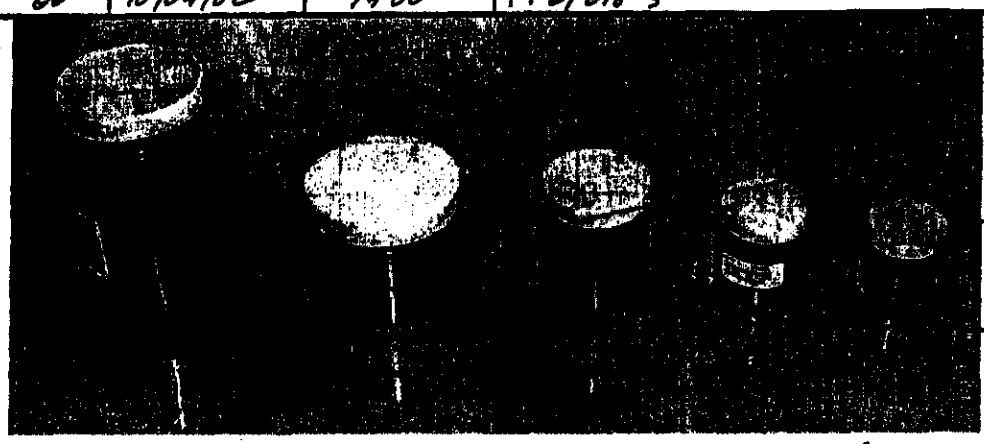
BHI-EE-011 (03/01/2002)

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 - FF2-02-0053

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010 REV 00	10/09/02	1400	FF2/618-5



SURVEY OF SAMPLE CONTAINERS taken from 618-5 Burial Pit.

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

Technical Assessment # TA-97-SR-31

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
E-600	1073	SH	N/A	9-12-03	Ludlum 2929	0041 0053	SH	N/A	12-7-02
SHP-380AB	1352	SH	BF 5.9 α 8.3	7-17-03					

RCT Name/Signature/Date:
SJ Huddleston / SJ Huddleston 10/09/03

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
N/A	ALL LAWS / DIRECTS	<100	8.3	<1000	5.9	<100	8.3	<5000	5.9
			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
	N			
		A		

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Page: 3 of 4

Survey # RSR- FF2-02-0053

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.8%
MU-905 / Lm#8	βγ	45.6	27	65	41.3%

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	60 ml Sample Bottle - 14	α	1	0	<DL	<20
		βγ		34		<1000
2	-14S	α		0		
		βγ		51		
3	-15	α		0		
		βγ		41		
4	-15S	α		0		
		βγ		54		
5	-16	α		0		
		βγ		50		
6	60 ml Sample Bottle -16S	α		1		<20
		βγ	1	44	<DL	<1000
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				

ERG RADIOLOGICAL SURVEY RECORD (continuation)	Page: 4 of 4 Survey # RSR- FF2-02 - 0053

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 # J00502, J00511	(1898 - 203) / 4 = 424 pCi/gm
Sample # J00502, J00512	(4300 - 203) / 4 = 1024 pCi/gm
Sample # J00503, J00513	(7140 - 203) / 4 = 1734 pCi/gm
Sample # _____, _____	(_____ - _____) / 4 = _____ pCi/gm
Sample # _____, _____	(_____ - _____) / 4 = _____ 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: 10/9/02 @ 1455 ak

Client: BHI SDG #: W03872 NA [ ] SAF #: B02-066 NA [ ]

Work Order Number: J2010012O Chain of Custody # B02-066-01

Shipping Container ID: ERC-96-082 Air Bill # N/A

1. Custody Seals on shipping container intact? NA [ ] Yes [ ] No [X]
2. Custody Seals dated and signed? NA [ ] Yes [ ] No [X]
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: 3
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: _____ Date: 10/9/02

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	B02-066-01	Page 1 of 1

Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH
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. EAC 96-082	Field Logbook No. EL 1395-6	COA RG61852600	Method of Shipment Government Vehicle
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. N/A		Bill of Lading/Air Bill No. N/A

Price Code: Air Quality ☐

Data Turnaround: 24 Hours

POSSIBLE SAMPLE HAZARDS/REMARKS

Special Handling and/or Storage

SDG W03872

SAMPLE ANALYSIS: Due 11-14 J2J150154

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										
J005T4	SOIL	10-15-02	0800	X	E92	EA							
J005T5	SOIL	10-15-02	0805	X	E92	ED							
J005T6	SOIL	10-15-02	0807	X	E92	EG							
J005T7	SOIL	10-15-02	0809	X	E92	EJ							
J005T8	SOIL	10-15-02	0811	X	E92	EL							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	EAC 10-15-02/1000	L100CPM A. Rhinehart	10/15/02 10:00

SPECIAL INSTRUCTIONS

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

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=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	B02-066-01	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 96-082	Field Logbook No. EL 1395-6 COA RG61852600	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										
J005T9	SOIL	10-15-02	0813	X	E92	EN							
J005V0	SOIL	10-15-02	0815	X	E92	EQ							
J005V1	SOIL	10-15-02	0817	X	E92	EV							
	SOIL												
	SOIL												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time ERC 10-15-02/1000	Received By/Stored In Doug Bowers A. Rhinehart	Date/Time 10:00 10/15/02
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
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

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

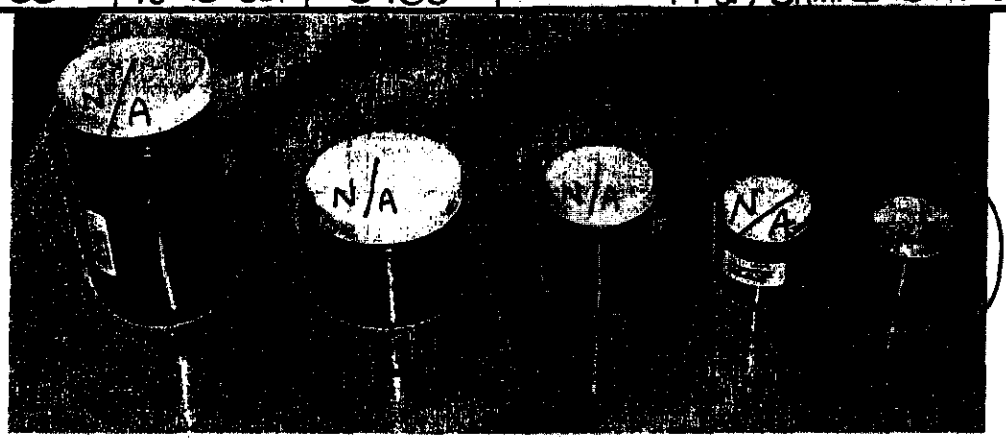
BHI-EE-011 (03/01/2002)

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 - FF2-02-0073

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010/00	10-15-02	0900	FF2/SAMPLE BOTTLES



SURVEY OF SAMPLE CONTAINERS

SHIPMENT SURVEY FOR SHIPMENT TO LAB FOR ANALYSIS
16 TOTAL 60mL SAMPLE BOTTLES FILLED WITH SOIL

All radiation readings are γ dose rates in units of mR/hr unless otherwise indicated. Technical Assessment # TA-97-SR-31

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
2929	0030	MK	N/A	8-12-03	RO-20	13316	MK	1	12-5-03
43-10-1	0049	MK	8.04 ex 2.31 BG	8-12-03	N/A	N/A	N/A	N/A	N/A

RCT Name/Signature/Date:
M. KNAPEK / M. Knapek / 10-15-02

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 cm^2)				Total (dpm/100 cm^2)			
		α	α C-F	β-γ	β-γ C-F	α	α C-F	β-γ	β-γ C-F

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

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

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR- FF2-02-0073

Counter Location: 2929/0030/8-12-03		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.18	2	6.1	.329
	βγ	46.6	27	62	.433

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	J005T4	α	1	1	< DL	< 20
		βγ	1	51	< DL	< 1000
2	J005D4	α		0		
		βγ		45		
3	J005T5	α		1		
		βγ		53		
4	J005D5	α		0		
		βγ		50		
5	J005T6	α		0		
		βγ		48		
6	J005D6	α		0		
		βγ		41		
7	J005T7	α		1		
		βγ		51		
8	J005D7	α		0		
		βγ		50		
9	J005T8	α		0		
		βγ		52		
10	J005D8	α		0		
		βγ		45		
11	J005T9	α		1		
		βγ		53		
12	J005D9	α		0		
		βγ		39		
13	J005V0 ~~J005T~~ JK 10-15-02	α		1		
		βγ		48		
14	J005F0	α	1	0	< DL	< 20
		βγ	1	47	< DL	< 1000

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

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FF2-02-0073

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
2929/0030/8-12-03	α	.18	2	6.1	.329
	βγ	46.6	27	62	.433

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	J005V1	α	1	0	< DL	< 20
		βγ	1	46	< DL	< 1000
16	J005F1	α	1	1	< DL	< 20
		βγ	1	41	< DL	< 1000
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				

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

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 # J005T4, J005D4 — (2031 - 216) / 4 = 454 pCi/gm

Sample # J005T5, J005D5 — (336 - 216) / 4 = 30 pCi/gm

Sample # J005T6, J005D6 — (357 - 216) / 4 = 35 pCi/gm

Sample # J005T7, J005D7 — (374 - 216) / 4 = 40 pCi/gm

Sample # J005T8, J005D8 — (353 - 216) / 4 = 34 pCi/gm

Sample # J005T9, J005D9 — (372 - 216) / 4 = 39 pCi/gm

Sample # J005V0, J005F0 — (343 - 216) / 4 = 32 pCi/gm

Sample # J005V1, J005F1 — (351 - 216) / 4 = 34 pCi/gm

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

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

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 10/15/02 @ 10:00 AM

Client: BHT SDG #: W03872 NA [ ] SAF #: B02-006 NA [ ]

Work Order Number: J2J150154 Chain of Custody # B02-066-01

Shipping Container ID: ERC-96-082 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: Arieo Rodd/Richard Date: 10/15/02

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on_____ by_____ Person contacted_____

[ ] No action necessary; process as is.

Project Manager_____ Date_____

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-01	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 96-092	Field Logbook No. EL 1395-6	COA RG61852600	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 Due 11-14-02

W03872 J2J170280

Sample No.	Matrix *	Sample Date	Sample Time										
J005V7	SOIL	10-17-02	0840	X	E98	FA							
J005V8	SOIL	10-17-02	0842	X	E98	FF							
J005V9	SOIL	10-17-02	0844	X	E98	FJ							
J005W0	SOIL	10-17-02	0846	X	E98	FK							
J005W1	SOIL	10-17-02	0848	X	E98	FN							

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From Doug Bowers Date/Time ERC 10-17-02/1155	Received By/Stored In SL Lerch Date/Time 1155	
Relinquished By/Removed From Date/Time	Received By/Stored In April A. Rhinehart Date/Time 10/17/02	
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	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	

SPECIAL INSTRUCTIONS

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

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	B02-066-01	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 96-082	Field Logbook No. EL 1395-6	COA RG61852600	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										
J005V2	SOIL	10-17-02	0830	X	E98	FR							
J005V3	SOIL	10-17-02	0832	X	E98	FT							
J005V4	SOIL	10-17-02	0834	X	E98	FV							
J005V5	SOIL	10-17-02	0836	X	E98	FO							
J005V6	SOIL	10-17-02	0838	X	E98	F1							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time ERC 10-17-02/1113	Received By/Stored In STL A. Rhineheart	Date/Time 11:55 10/17/02
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
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

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

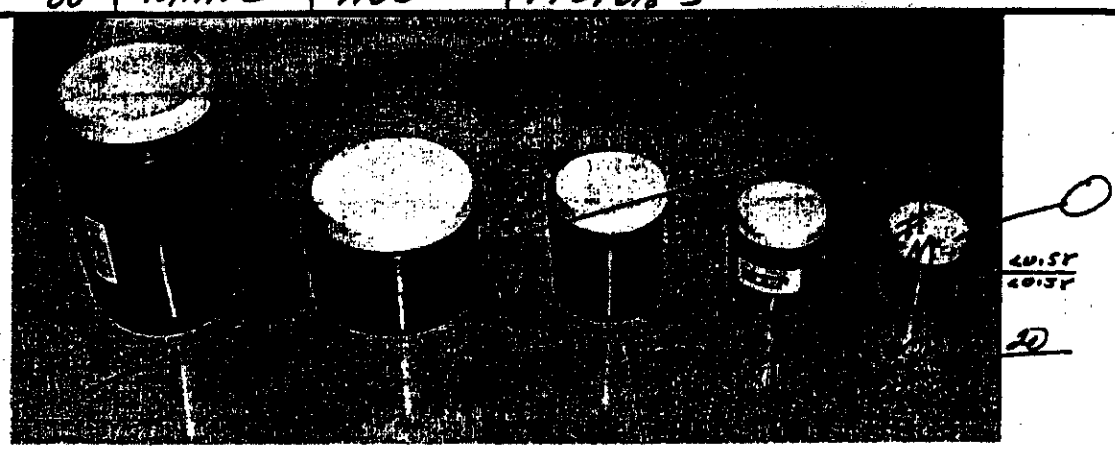
BHI-EE-011 (03/01/2002)

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 - FF2-02-0087

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010 REV 00	10/17/02	1100	FF2/618-5



40.5r
40.5r
20

SURVEY OF SAMPLE CONTAINERS containing soil gathered from 618-5 Burial Pit.

COPY

All radiation readings are γ dose rates in units of mR/hr unless otherwise indicated. Technical Assessment # TA-97-SR-31

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
L2224-2	0072	SJH	N/A	10/10/03	Ludlum 2929	0041 0053	SJH	N/A	12/02/02
DP6BD	0071	SJH	Air-3.7 α-5.9	10/10/03	RO-20	1329	SJH	1	11/20/02

RCT Name/Signature/Date:
SJ Huddleston
10-17-02
SJ Huddleston

RCT Supervisor Name/Signature/Date:
Ron Cavens
R. Cavens 10-17-02

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
M/#	ALL LANE / DIRECTS	<100	5.9	<1000	3.7	<100	5.9	<5000	3.7
			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
ALL DOSE RATES	N/A	<0.5	N/A	<0.5
	N			
		A		

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

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FF2-02-0087

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
MU-905/Rm #8	α	.19	2.0	6.1	32.8%
	βγ	45.6	27	65	41.3%

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 Bottle - 1	α	1	1	<DL	<20
		βγ		53		<1000
2	-1s	α		0		
		βγ		36		
3	-2	α		0		
		βγ		39		
4	-2s	α		0		
		βγ		35		
5	-3	α		0		
		βγ		53		
6	-3s	α		0		
		βγ		50		
7	-4	α		0		
		βγ		33		
8	-4s	α		0		
		βγ		50		
9	-5	α		0		
		βγ		46		
10	-5s	α		0		
		βγ		42		
11	-6	α		0		
		βγ		53		
12	-6s	α		1		
		βγ		52		
13	-7	α		0		
		βγ		54		
14	60 ml Sample Bottle - 7s	α		0		<20
		βγ	1	52	<DL	<1000

COPY

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR- FP2-02-0087

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
MO-905 / Rm #8	α	.19	2.0	6.1	32.8 ?
	βγ	45.6	27	65	41.3 ?

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 Bottle} - 8	α	1	0	<DL	{<20
		βγ		36		<1000}
16	-8S	α		0		
		βγ		43		
17	-9	α		2		
		βγ		46		
18	-9S	α		0		
		βγ		64		
19	-10	α		0		
		βγ		48		
20	{60 ml Sample Bottle} -10S	α		0		
		βγ		37		
21	Count Table	α		0		{<20
		βγ	1	51	<DL	<1000}
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				

COPY

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 # J005F2, J005V2 — (433 - 300) / 4 = 33 pCi/gm

Sample # J005F3, J005V3 — (396 - 300) / 4 = 24 pCi/gm

Sample # J005F4, J005V4 — (370 - 300) / 4 = 18 pCi/gm

Sample # J005F5, J005V5 — (379 - 300) / 4 = 20 pCi/gm

Sample # J005F6, J005V6 — (374 - 300) / 4 = 19 pCi/gm

Sample # J005F7, J005V7 — (430 - 300) / 4 = 33 pCi/gm

Sample # J005F8, J005V8 — (362 - 300) / 4 = 16 pCi/gm

Sample # J005F9, J005V9 — (344 - 300) / 4 = 11 pCi/gm

Sample # J005H0, J005W0 — (353 - 300) / 4 = 13 pCi/gm

Sample # J005H1, J005W1 — (358 - 300) / 4 = 15 pCi/gm

COPY

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 10/17/02@11:55AR

Client: BHI SDG #: W03872 NA [ ] SAF #: B02-066 NA [ ]

Work Order Number: U2W170280 Chain of Custody # B02-066-01

Shipping Container ID: ERC-96-082 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: 10
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 Stanford / Richard Date: 10/17/02

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on_____ by_____ Person contacted_____

[ ] No action necessary; process as is.

Project Manager_____ Date_____

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Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-066-01	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-01-020	Field Logbook No. EL 1395-6	COA RG61852600	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 W03872 Due 11-14-02 J2022013 1

Sample No.	Matrix *	Sample Date	Sample Time									
J005W2	SOIL	10-21-02	1000	X	FAG11							
J005W3	SOIL	10-21-02	1002	X	FAG15							
J005W4	SOIL	10-21-02	1004	X	FAG17							
J005W5	SOIL	10-21-02	1008	X	FAG19							
J005W6	SOIL	10-21-02	1010	X	FAG2D							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers	10-21-02/1615	Ref 1A 3728	10-21-02/1615
Ref# 1A 3728	10/22/02 0835	R Nielson	10/22/02 0835
ERC R Nielson	10/22/02 0900	T. Heidelberg	10-22-02 0900

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 10/22/02

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=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	B02-066-01	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-01-020	Field Logbook No. EL 1395-6	COA RG61852600	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	sG										
No. of Container(s)	1										
Volume	60mL										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time									
J005W7	SOIL	10-21-02	1012	X	FAG2E							
J005W8	SOIL	10-21-02	1014	X	FAG2F							
J005W9	SOIL	10-21-02	1018	X	FAG2G							
J005X0	SOIL	10-21-02	1020	X	FAG2H							
J005X1	SOIL	10-21-02	1022	X	FAG2K							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers	10-21-02/1615	Ref #1A 3728	10-21-02/1615
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Ref #1A 3728	10/22/02 0835	J. Nelson	10/22/02 0835
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
J. Nelson / R. Nelson	ERC 10/22/02 0900	T. Heidelberg	10/22/02 0900
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 10/22/02

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	B02-066-01	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-01-020	Field Logbook No. EL 1395-6	COA RG61852600	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									
J005X2	SOIL	10-21-02	1024	X	FAG2	L						
J005X3	SOIL	10-21-02	1410	X	FAG2	N						
J005X4	SOIL	10-21-02	1412	X	FAG2	Q						
J005X5	SOIL	10-21-02	1414	X	FAG2	R						
J005X6	SOIL	10-21-02	1416	X	FAG2	T						

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From: Doug Bowers (Doug Bowers) 10-21-02/1615	Received By/Stored In: Ref 1A 3728 10-21-02/1615	Date/Time
Relinquished By/Removed From: Ref # 1A 3728 10/22/02 0835	Received By/Stored In: Denise Nielsen / R. Nielsen 10/22/02 0835	Date/Time
Relinquished By/Removed From: ERC Denise Nielsen / R. Nielsen 10/22/02 0900	Received By/Stored In: T. Heidelberg 10-22-02 0900	Date/Time
Relinquished By/Removed From	Received By/Stored In	Date/Time
Relinquished By/Removed From	Received By/Stored In	Date/Time
Relinquished By/Removed From	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 10-22-02 DN

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wt=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	B02-066-01	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-01-020	Field Logbook No. EL 1395-6	COA RG61852600	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										
J005X7	SOIL	10-21-02	1420	X	FAG2V								
J005X8	SOIL	10-21-02	1422	X	FAG2W								
J005X9	SOIL	10-21-02	1424	X	FAG2X								
	SOIL												
	SOIL												

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CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers	10-21-02 1615	A.F. IA 3728	10-21-02 1615
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
REF #IA 3728	10-22-02 0835	Denis Nichols / R. Nielson	10-22-02 0835
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Denis Nichols / R. Nielson	10/22/02 0900	T. Heidelberg	10/22/02 0900
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 # IA on 10/22/02 RN

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=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

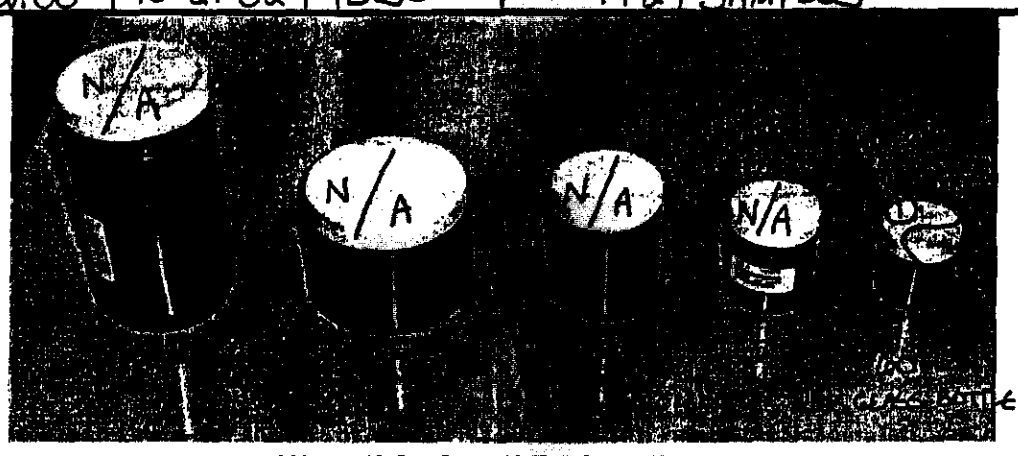
BHI-EE-011 (03/01/2002)

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 - FF2-02-0109

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010/Rev. 00	10-21-02	1530	FF2 / SAMPLES



SURVEY OF SAMPLE CONTAINERS

(360) TOTAL SAMPLES TO BE SHIPPED FOR ANALYSIS

EXTERNAL CONTAMINATION & DOSE RATE SURVEY:
REFER TO SSI # 300RA-03

ALL CONTACT DOSE RATES: < .5 mRem/hr

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

Technical Assessment # TA-01-SR-16 TA-97-SR-31

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
2929	0030	MK	N/A	8-12-02	RO-20	1329	MK	1	11-20-02
43-10-1	0049	MK	3 α 2.3 β	8-12-02	2224-2 / DP6BD	0072 / 0071	MK	5.3 β	10-10-03

RCT Name/Signature/Date:
M. KNAPAK / M. Knapak / 10-21-02

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
M	ALL L.A.W.'S	N/A	N/A	<1K	5.3	N/A	N/A	N/A	N/A
		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
SEE PAGE 1				
	N			
		A		

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FFA-02-0109

Counter Location: 2929/0030/8-12-03		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.18	2.0	6.1	.329
	βγ	46.6	27	62	.433

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	J005W2	α	1	0	< DL	< 20
		βγ	1	50	< DL	< 1000
2	J005W3	α		0		
		βγ		37		
3	J005W4	α		0		
		βγ		46		
4	J005W5	α		0		
		βγ		42		
5	J005W6	α		0		
		βγ		53		
6	J005W7	α		1		
		βγ		40		
7	J005W8	α		0		
		βγ		43		
8	J005W9	α		0		
		βγ		36		
9	J005X0	α		0		
		βγ		41		
10	J005X1	α		1		
		βγ		36		
11	J005X2	α		1		
		βγ		37		
12	J005X3	α		0		
		βγ		40		
13	J005X4	α		0		
		βγ		62		
14	J005X5	α	1	0	< DL	< 20
		βγ	1	36	< DL	< 1000

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR- FF2- 02-0109

Counter Location: 2929/0030/8-12-03		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.18	2.0	6.1	.329
	βγ	46.6	27	62	.433

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	J005X6	α	1	0	< DL	<20
		βγ	1	59	< DL	<1000
16	J005X7	α		0		
		βγ		37		
17	J005X8	α		0		
		βγ		46		
18	J005X9	α		0		
		βγ		32		
19	J005H2	α		0		
		βγ		41		
20	J005H3	α		0		
		βγ		49		
21	J005H4	α		0		
		βγ		36		
22	J005H5	α		0		
		βγ		44		
23	J005H6	α		0		
		βγ		44		
24	J005H7	α		0		
		βγ		46		
25	J005H8	α		0		
		βγ		41		
26	J005H9	α		0		
		βγ		42		
27	J005J0	α		1		
		βγ		56		
28	J005J1	α	1	0	< DL	<20
		βγ	1	58	< DL	<1000

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR- FF2-02-0109

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
2929/0030/8-12-03	α	.18	2.0	6.1	.329
	βγ	46.6	27	62	.433

Sample		Counting Results				Final Analysis
No	Description of Smear Location	Con. Type	Sample Count Duration (min.)	Gross CPM	Net CPM	Removable (dpm 100 cm²)
29	J005J2	α	1	0	<DL	<20
		βγ	1	42	<DL	<1000
30	J005J3	α		0		
		βγ		43		
31	J005J4	α		0		
		βγ		37		
32	J005J5	α		0		
		βγ		24		
33	J005J6	α		0		
		βγ		56		
34	J005J7	α		0		
		βγ		33		
35	J005J8	α		0		
		βγ		65		
36	J005J9	α	1	1	<DL	<20
		βγ	1	52	<DL	<1000
		α				
		βγ				
		α	N			
		βγ				
		α				
		βγ				
		α			A	
		βγ				
		α				
		βγ				
		α				
		βγ				

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 # J005W2, J005H2 — (333 - 259) / 4 = 19 pCi/gm

Sample # J005W3, J005H3 — (382 - 259) / 4 = 31 pCi/gm

Sample # J005W4, J005H4 — (350 - 259) / 4 = 23 pCi/gm

Sample # J005W5, J005H5 — (430 - 259) / 4 = 43 pCi/gm

Sample # J005W6, J005H6 — (434 - 259) / 4 = 44 pCi/gm

Sample # J005W7, J005H7 — (372 - 259) / 4 = 28 pCi/gm

Sample # J005W8, J005H8 — (435 - 259) / 4 = 44 pCi/gm

Sample # J005W9, J005H9 — (458 - 259) / 4 = 50 pCi/gm

Sample # J005X0, J005J0 — (397 - 259) / 4 = 35 pCi/gm

Sample # J005X1, J005J1 — (344 - 259) / 4 = 21 pCi/gm

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 # J005X2, J005J2 — (435 - 259) / 4 = 44 pCi/gm

Sample # J005X3, J005J3 — (340 - 259) / 4 = 20 pCi/gm

Sample # J005X4, J005J4 — (320 - 259) / 4 = 15 pCi/gm

Sample # J005X5, J005J5 — (322 - 259) / 4 = 16 pCi/gm

Sample # J005X6, J005J6 — (316 - 259) / 4 = 14 pCi/gm

Sample # J005X7, J005J7 — (336 - 259) / 4 = 19 pCi/gm

Sample # J005X8, J005J8 — (337 - 259) / 4 = 20 pCi/gm

Sample # J005X9, J005J9 — (374 - 259) / 4 = 29 pCi/gm

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

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

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 10-22 0900

Client: BHI SDG #: W03872 NA [ ] SAF #: B02-066 NA [ ]

Work Order Number: U2U220131 Chain of Custody # B02-066-01

Shipping Container ID: ERC01-020 Air Bill # na

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:_____
7. Sample holding times exceeded? NA [ ] Yes [ ] No [X]
8. Samples have:
   ____tape
   _X_custody seals
   ____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 [ ] No [X]
    *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: Heidelberg Date: 10-22-02

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	B02-066-01	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 RG61852600	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
Possible Radioactive
See attached Report

Special Handling and/or Storage
None

SDG
W03872

Due 11-14-02

SAMPLE ANALYSIS
U2U240120

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										
J00595	SOIL	10-23-02	0919	X	FAM	4K							
J00596	SOIL	10-23-02	0930	X	FAM	4P							
J00597	SOIL	10-23-02	1332	X	FAM	4R							
J00598	SOIL	10-23-02	1334	X	FAM	40							
J00599	SOIL	10-23-02	1336	X	FAM	41							

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Doug Bowers	10-23-02 1630	Ref 1A 3728	10-23-02 1630
Ref 1A 3728	10-24-02 0700	R. Fell R. Fell	10-24-02 0700
R. Fell R. Fell	10-24-02 0725	T. Heidelberg T. Heidelberg	10/24/02 0725

Sign/Print Names

SPECIAL INSTRUCTIONS

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

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	B02-066-01	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 RG61852600	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
Possible 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.										

10-23-02

Sample No.	Matrix *	Sample Date	Sample Time									
J005V8	SOIL	10-23-02	~~0919~~ 0810	X	FAM	42						
J005V1	SOIL	10-23-02	~~0930~~ 0812	X	FAM	43						
J005V2	SOIL	10-23-02	0834	X	FAM	44						
J005V3	SOIL	10-23-02	0915	X	FAM	45						
J005V4	SOIL	10-23-02	0917	X	FAM	46						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time 10-23-02/1630	Received By/Stored In R.F. 1A 3728	Date/Time 10-23-02/1630
Relinquished By/Removed From Ref 1A 3728	Date/Time 0700 10-24-02	Received By/Stored In R. Fellows R. Fellows	Date/Time 0700 10-24-02
Relinquished By/Removed From R. Fellows R. Fellows	Date/Time 0725 10-24-02	Received By/Stored In T. Heidelberg	Date/Time 10/24/02 0725
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

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=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	B02-066-01	Page 1 of 1

Collector Doug Bowers	Company Contact Jeff Lerch	Telephone No. 373-5904	Project Coordinator KESSNER, JH
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 RG61852600	Method of Shipment Government Vehicle
Shipped To Severn Trent Incorporated, Richland	Offsite Property No. NA		Bill of Lading/Air Bill No. NA

Price Code: Air Quality ☐

Data Turnaround: 24 Hours

POSSIBLE SAMPLE HAZARDS/REMARKS
Possibly 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									
J00600	SOIL	10-23-02	1338	X	FAM	4B						
J00601	SOIL	10-23-02	1342	X	FAM	5A						
J00602	SOIL	10-23-02	1344	X	FAM	5D						
J00603	SOIL	10-23-02	1348	X	FAM	5E						
J00604	SOIL	10-23-02	1352	X	FAM	5G						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers Doug Bowers	Date/Time 10-23-02 1630	Received By/Stored In Ref 1A 3728	Date/Time 10-23-02 1630
Relinquished By/Removed From Ref 1-A 3728	Date/Time 10-24-02 0700	Received By/Stored In R. Fell F. Fahlberg	Date/Time 10-24-02 0700
Relinquished By/Removed From ERC R. Fell R. Fahlberg	Date/Time 10-24-02 0725	Received By/Stored In T. Heidelberg	Date/Time 10240725
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

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)

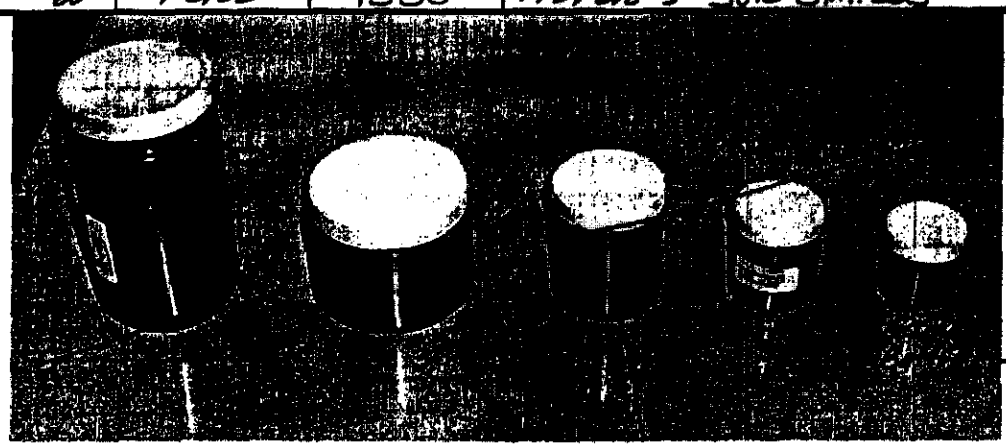
COPY

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 - FF2-02-0134

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010 REV 00	10/23/02	1530	FF2/618-5 SOIL SAMPLES



30

SURVEY OF SAMPLE CONTAINERS

30 TOTAL 60 mL GLASS SAMPLE BOTTLES TO BE SHIPPED FOR ANALYSIS.

ALL CONTACT DOSE RATES: < .5 mRem/hr

All radiation readings are γ dose rates in units of mR/hr unless otherwise indicated. Technical Assessment # TA-97-SR-91

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
	N				Ro20	1336	MK	1	12-5-02
		A			Ludlum 2929	0041 0053	SPA	N/A	12-07-02

RCT Name/Signature/Date: M. KNAPPEK / M. Knappek / 10-23-02

RCT Supervisor Name/Signature/Date:

COPY

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
	SEE PAGES 3 & 4 & 5								
		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
SEE PAGE 1				
	N			
		A		

COPY

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR- FFL-02-0134

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.8%
MO-905/Lm#8	βγ	45.6	27	65	41.3%

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	{60 ml Sample bottle} -1	α	1	1	< DL	(< 20
		βγ	1	44		< 1K)
2	-1S	α	1	Ø		
		βγ	1	40		
3	-2	α	1	Ø		
		βγ	1	46		
4	-2S	α	1	Ø		
		βγ	1	26		
5	-3	α	1	Ø		
		βγ	1	34		
6	-3S	α	1	Ø		
		βγ	1	36		
7	-4	α	1	Ø		
		βγ	1	47		
8	-4S	α	1	1		
		βγ	1	51		
9	-5	α	1	Ø		
		βγ	1	41		
10	-5S	α	1	Ø		
		βγ	1	27		
11	-6	α	1	Ø		
		βγ	1	44		
12	-6S	α	1	Ø		
		βγ	1	49		
13	-7	α	1	Ø		
		βγ	1	44		
14	{60 ml Sample bottle} -7S	α	1	1		(< 20
		βγ	1	57	< DL	< 1K)

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

COPY

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FF2-02-0134

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.8%
MO-905/Rm #8	βγ	45.6	27	65	41.3%

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 Bottle - 8	α	1	0	<DL		<20
		βγ		30			<1000
16	-8S	α		0			
		βγ		42			
17	-9	α		0			
		βγ		46			
18	-9S	α		0			
		βγ		42			
19	-10	α		0			
		βγ		40			
20	-10S	α		0			
		βγ		55			
21	-11	α		1			
		βγ		45			
22	-11S	α		1			
		βγ		48			
23	-12	α		0			
		βγ		30			
24	-12S	α		0			
		βγ		35			
25	-13	α		1			
		βγ		46			
26	-13S	α		0			
		βγ		52			
27	-14	α		1			
		βγ		46			
28	60 ml Sample Bottle -14S	α	1	0	<DL		<20
		βγ		54			<1000

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

COPY

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FF2-02-0134

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.82
MO-905/Rm 8	βγ	45.6	27	65	41.32

Sample		Counting Results				Final Analysis
No	Description of Smear Location	Con. Type	Sample Count Duration (min.)	Gross CPM	Net CPM	Removable (dpm 100 cm²)
29	60 ml Sample Bottle -15	α	1	1	<DL	<20
		βγ	1	49		<1000
30	-15S	α	1	0		<20
		βγ	1	34	<DL	<1K
31	COUNTER TOP	α	.1	0	<DL	<20
		βγ	.1	42	<DL	<1K
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				

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

COPY

ERC RADIOLOGICAL SURVEY RECORD (continuation)	Page: 6 of 7 Survey # RSR-FF2-02-0134

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 # J00540, J005K0 $\frac{350 - 289}{4}$ = 15 pCi/gm

Sample # J00541, J005K1 $\frac{350 - 289}{4}$ = 15 pCi/gm

Sample # J00542, J005K2 $\frac{330 - 289}{4}$ = 10 pCi/gm

Sample # J00543, J005K3 $\frac{300 - 289}{4}$ = 3 pCi/gm

Sample # J00544, J005K4 $\frac{400 - 289}{4}$ = 28 pCi/gm

Sample # J00545, J005K5 $\frac{280 - 289}{4}$ = 0 pCi/gm

Sample # J00546, J005K6 $\frac{350 - 289}{4}$ = 15 pCi/gm

Sample # J00547, J005K7 $\frac{340 - 289}{4}$ = 13 pCi/gm

Sample # J00548, J005K8 $\frac{370 - 289}{4}$ = 20 pCi/gm

Sample # J00549, J005K9 $\frac{320 - 289}{4}$ = 8 pCi/gm

COPY

ERC RADIOLOGICAL SURVEY RECORD (continuation)	Page: 7 of 7 Survey # RSR-FF2-02-034

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 # J00600, J005L0	(400 - 289) / 4	= 28 pCi/gm
Sample # J00601, J005L1	(380 - 289) / 4	= 23 pCi/gm
Sample # J00602, J005L2	(320 - 289) / 4	= 8 pCi/gm
Sample # J00603, J005L3	(330 - 289) / 4	= 10 pCi/gm
Sample # J00604, J005L4	(340 - 289) / 4	= 13 pCi/gm
Sample # _____, N	- / 4	= _____ pCi/gm
Sample # _____, _____	- / 4	= _____ pCi/gm
Sample # _____, _____	- / 4	= _____ pCi/gm
Sample # _____, _____	- / 4	= _____ pCi/gm
Sample # _____, _____	- / 4	= A pCi/gm

BHI-TM-R006c (10/97)

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 10-24 0725

Client: BHI SDG #: W03872 NA [ ] SAF #: B02-006 NA [ ]

Work Order Number: J2J240120 Chain of Custody # B02-006-01

Shipping Container ID: FEC 97-079 Air Bill # none

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: 18
7. Sample holding times exceeded? NA [ ] Yes [ ] No [X]
8. Samples have:
   - ____ tape
   - X custody seals
   - ____ 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 [ ] No [X]
    *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: Heidelberg Date: 10-24-02

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. EAC 96-082	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 Due 11-14

W03872 J2W280148

Sample No.	Matrix *	Sample Date	Sample Time										
J00793	SOIL	10-25-02	1400	X	FAW	5T							
J00794	SOIL	10-25-02	1402	X	FAW	5W							
J00795	SOIL	10-25-02	1404	X	FAW	51							
J00796	SOIL	10-25-02	1408	X	FAW	54							
J00797	SOIL	10-25-02	1410	X	FAW	56							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Doug Bowers	Date/Time Bowers 10-25-02/1520	Received By/Stored In 300FF-1 source locker	Date/Time 10-25-02 1520
Relinquished By/Removed From 300FF-1 source locker	Date/Time 10-28-02/0900	Received By/Stored In Doug Bowers Bowers	Date/Time 10-28-02/0900
Relinquished By/Removed From Doug Bowers Bowers	Date/Time 10-28-02/0940	Received By/Stored In T. Heidelberg	Date/Time 10-28-02 0940
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

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 96-082	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									
J00798	SOIL	10-25-02	1412	X	FAW	57						
J00799	SOIL	10-25-02	1416	X	FAW	58						
J00780	SOIL	10-25-02	1420	X	FAW	59						
J00781	SOIL	10-25-02	1422	X	FAW	6A						
J00782	SOIL	10-25-02	1424	X	FAW	6D						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From D049	Date/Time	Received By/Stored In	Date/Time
Doug Bowers Bowers	10-25-02/1720	300 FF-1 source locker	10-25-02/1520
Relinquished By/Removed From	Date/Time	Received By/Stored In D049	Date/Time
300FF-1 source locker	10-28-02/0900	Doug Bowers Bowers	10-28-02/0900
Relinquished By/Removed From D049	Date/Time ERC	Received By/Stored In T. Heidelberg	Date/Time
Doug Bowers Bowers	10-28-02/0940	Heidelberg	10-28-02 0940
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

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)

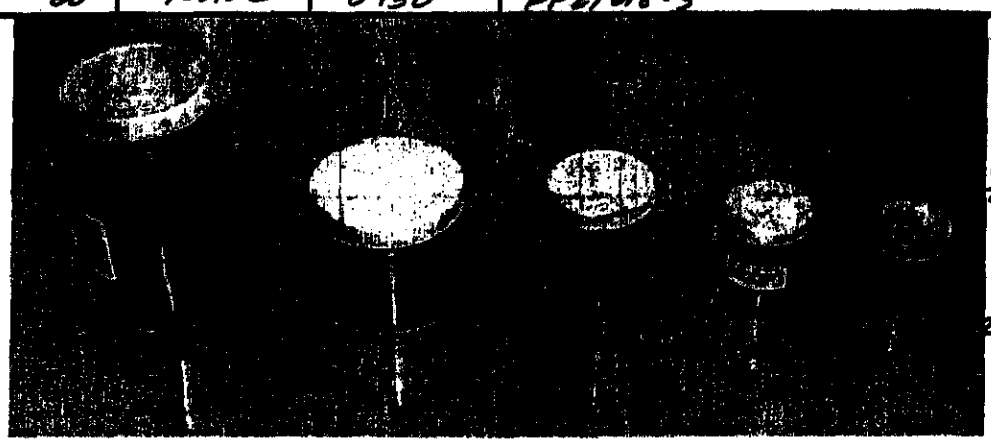
123

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 - FF2-02-0154

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010 REV. 00	10/28/02	0930	FF2/618-5



0.58
0.58
20

SURVEY OF SAMPLE CONTAINERS of soil from 618-5 burial pit.

All radiation readings are γ dose rates in units of mR/hr unless otherwise indicated. Technical Assessment # TA-97-SR-31

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 w/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
SH 10/28/02 # 22224-2	0055	SH	N/A	10-21-03	RO-20	1275	SH	1	6-12-03
DP6BD	0063	SH	≈ 6.8 BK 5.2	10-21-03	Ludlum 2929	0041 0053	SH	N/A	12-07-02

RCT Name/Signature/Date:
SJ Huddleston
SJ Huddleston 10/28/02

RCT Supervisor Name/Signature/Date:
Ron Cuevas
[signature] 10-28-02

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
N/A	ALL LAWS / DIRECTS	<100		<1000		<100		<5000	
			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
ALL DOSE RATES	N/A	<0.5	N/A	<0.5
	N			
		A		

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR- FFZ-02-0154

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.8%
MO-905 / Lab 8	βγ	45.6	27	65	41.3%

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	60 ml Sample Bottle -1	α	1	0	<DL	<20
		βγ		44		<1000
2	-1s	α		0		
		βγ		37		
3	-2	α		1		
		βγ		43		
4	-2s	α		1		
		βγ		33		
5	-3	α		2		
		βγ		42		
6	-3s	α		0		
		βγ		47		
7	-4	α		0		
		βγ		53		
8	-4s	α		0		
		βγ		50		
9	-5	α		1		
		βγ		51		
10	-5s	α		1		
		βγ		50		
11	-6	α		0		
		βγ		50		
12	-6s	α		0		
		βγ		41		
13	-7	α		0		
		βγ		54		
14	60 ml Sample Bottle -7s	α	1	0	<DL	<20
		βγ		38		<1000

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

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR- FFZ-02-0154

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.8%
NU-905/Em*8	βγ	45.6	27	65	41.3%

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 Bottle	-8	α	1	0	<DL	<20
			βγ		42		<1000
16		-8S	α		1		
			βγ		49		
17		-9	α		0		
			βγ		57		
18		-9S	α		0		
			βγ		52		
19		-10	α		1		
			βγ		44		
20	60 ml Sample Bottle	-10S	α		0		
			βγ		47		
21	Count Table		α		0		<20
			βγ	1	49	<DL	<1000
			α				
			βγ				
			α				
			βγ				
			α				
			βγ				
			α				
			βγ				
			α				
			βγ				
			α				
			βγ				
			α				
			βγ				

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

ERC RADIOLOGICAL SURVEY RECORD (continuation)	Page 6 of 5 Survey # RSR-EP2-02-0157

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 # J00793, J006K3 — (1770 - 250) / 4 = 380 pCi/gm

Sample # J00794, J006K4 — (862 - 250) / 4 = 153 pCi/gm

Sample # J00795, J006K5 — (3100 - 250) / 4 = 713 pCi/gm

Sample # J00796, J006K6 — (545 - 250) / 4 = 74 pCi/gm

Sample # J00797, J006K7 — (430 - 250) / 4 = 45 pCi/gm

Sample # J00798, J006K8 — (500 - 250) / 4 = 63 pCi/gm

Sample # J00799, J006K9 — (880 - 250) / 4 = 158 pCi/gm

Sample # J00780, J006L0 — (660 - 250) / 4 = 103 pCi/gm

Sample # J00781, J006L1 — (871 - 250) / 4 = 155 pCi/gm

Sample # J00782, J006L2 — (1208 - 250) / 4 = 240 pCi/gm

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 10-28 0940

Client: BHI SDG #: W03872 NA [ ] SAF #: B02-006 NA [ ]

Work Order Number: J2J280148 Chain of Custody # B02-006-01

Shipping Container ID: ERC96-082 Air Bill # na

1. Custody Seals on shipping container intact? NA [ ] Yes [ ] No [X]
2. Custody Seals dated and signed? NA [ ] Yes [ ] No [X]
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 [ ] No [X]
8. Samples have:
   - ___ tape
   - X custody seals
   - ___ 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 [ ] No [X]
    *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: 10-28-02

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on_____ by_____ Person contacted_____

[ ] No action necessary; process as is.

Project Manager_____ Date_____

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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 96-092	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 W03872 Due 11-14-02 J2J290224

Sample No.	Matrix *	Sample Date	Sample Time										
J007B3	SOIL	10-28-02	1340	X	FALLE								
J007B4	SOIL	10-28-02	1342	X	FALL J								
J007B5	SOIL	10-28-02	1344	X	FALL M								
	SOIL												
	SOIL												

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From Doug Doug Bowers Bowers	10-28-02/1500	300 FF-1 Source Locker	10-28-02/1500
Relinquished By/Removed From 300 FF-1 Source Locker	10-28-02/0800	Received By/Stored In Doug Bowers Doug Bowers	10-28-02 0800
Relinquished By/Removed From Doug Doug Bowers Bowers	Date/Time ERC 10-28-02/1400	Received By/Stored In 2109 UPR	Date/Time 11:49
Relinquished By/Removed From	Date/Time	Received By/Stored In A. Rhinehart	Date/Time 10/29/02
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

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

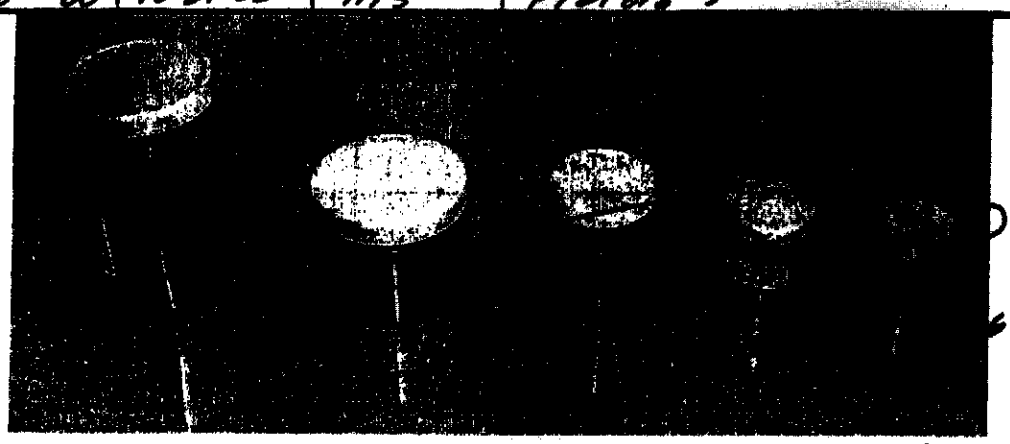
BHI-EE-011 (03/01/2002)

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 - FF2-02 — 0166

RWP # / Rev. #	Date	Time	Location Code/Description
FF2-02-010 Rev 00	10-29-02	1115	FF2/618-5



SURVEY OF SAMPLE CONTAINERS of soil for analysis taken from 618-5 Burial Pit.

COPY

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

Technical Assessment # TA-97-SR-31

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
L2224-2	0072	SH	N/A	10.10.03	Ludlum 2929	0041 0053	SH	N/A	12.7.02
DP6BD	0071	SH	4.5.9 4.5.3	10.10.03	N/A				

RCT Name/Signature/Date:
SJ Hudleston
10-29-02
SJ Hudleston

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
M/A	ALL LAWS / DIRECTS	<100	5.9 ~~5.8~~	<4000	5.2	<100	5.9	<5000	5.2
			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
	N			
		A		

ERC RADIOLOGICAL SURVEY RECORD (continuation)
Smear Counting Results

Survey # RSR-FP2-02-0166

Counter Location:		Background (cpm)	DL (cpm)	$DL_{activity}$ (dpm)	Counter Eff.
	α	.19	2.0	6.1	32.82
MO-905 / Rm #8	βγ	45.6	27	65	41.32

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	60 ml Sample Bottle	α	1	0	<DL	<20
		βγ		43		<1000
2		α		0		
		βγ		44		
3		α		0		
		βγ		52		
4		α		0		
		βγ		29		
5		α		0		
		βγ		45		
6	60 ml sample bottle	α		0		
		βγ		50		
7	Count Table	α		0		<20
		βγ	1	48	<DL	<1000
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				
		α				
		βγ				

COPY

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

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 # J00613 , J00783	(397 - 232) / 4 = 41 pCi/gm
Sample # J00614 , J00784	(389 - 232) / 4 = 39 pCi/gm
Sample # J00615 , J00785	(384 - 232) / 4 = 38 pCi/gm
Sample # _____ , _____	(-) / 4 = _____ pCi/gm
Sample # _____ , _____	(-) / 4 = _____ pCi/gm
Sample # _____ , _____	(-) / 4 = _____ pCi/gm
Sample # _____ , _____	(-) / 4 = _____ pCi/gm
Sample # _____ , _____	(-) / 4 = _____ pCi/gm
Sample # _____ , _____	(-) / 4 = _____ pCi/gm
Sample # _____ , _____	(-) / 4 = _____ pCi/gm

COPY

N/A

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 10/29/02 @ 11:49 aR

Client: BHI SDG #: W03872 NA [ ] SAF #: B02-066- NA [ ]

Work Order Number: J2J290224 Chain of Custody # B02-066-02

Shipping Container ID: ERC-96-082 Air Bill # N/A

1. Custody Seals on shipping container intact? NA [ ] Yes [ ] No [X]
2. Custody Seals dated and signed? NA [ ] Yes [ ] No [X]
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: 3
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] Date: 10/29/02

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

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