

ANALYTICAL RESULTS FOR THE 107-N AND 1310-N BASIN
SEDIMENT DISPOSITION, SAMPLE CHARACTERIZATION PROJECT



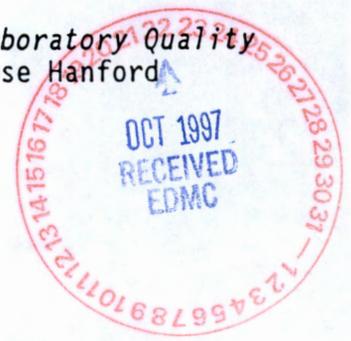
INTRODUCTION

Project Documentation and Direction

The initial report for this project was submitted to the project on May 30, 1997. This revised report contains additional (TCLP/ICP) data and revised (Pu-238/239/240, Am-241, Cm/244) data. It does not address data or issues discussed in the initial report. Am-241 DSA

Analytical direction for this project was provided in the following References.

1. Duncan, G. M., BHI-00973, Rev. 0, *Sampling and Analysis Plan for the 107-N Basin Recirculation Building*, published on February 6, 1997, Bechtel Hanford, Inc., Richland, Washington 99352.
2. Greenidge, M. E., *Letter of Instruction for N Area Deactivation Sediment and Water Task Sample Analysis*, written to C. G. Mattsson, Fluor Daniel Hanford, Inc. on February 13, 1997.
3. Meznarich, H. K., WHC-SD-CP-QAPP-016, Rev. 1A, *222-S Laboratory Quality Assurance Plan*, released on August 31, 1995, Westinghouse Hanford Company, Richland, WA 99352.



DISCUSSION OF ANALYTICAL RESULTS

Alpha Activity Balance

A poor correlation of results between Total Alpha, Am-241 by GEA and by AEA, and Pu-239/240 by AEA was observed in the original data for samples BOJYD7 and BOJYD8. A second evaluation of these data, was not able indicate whether an error had been made. As a consequence, a rerun of both Pu-238/239/240 by AEA and Am-241/Cm-244 by AEA was performed to compare against the original results. These rerun data are provided in this revised report. For sample BOJYD8, the rerun results were comparable to those of the initial run, however for sample BOJYD7 there was 5x drop in Pu and Am activity in the rerun.

Using the rerun data, there were reasonably good correlations between total alpha activities and the summation of activities of Am-241, Pu-238 and Pu-239/240 as shown in Table 1. Comparable values indicate a good probability that the major alpha emitters were accounted for and that for these radionuclides there were not large analytical errors.

Table 1. Comparison of Total Alpha Activity and Summation of Am/Pu Activities

Sample Number	Am-241 $\mu\text{Ci/g}$	Pu-238 $\mu\text{Ci/g}$	Pu-239/240 $\mu\text{Ci/g}$	Sum of Am and Pu Activities	Total Alpha $\mu\text{Ci/g}$
BOJYD7	1.31E-01	2.21E-02	1.15E-01	2.68E-01	1.11E-01
BOJYD8	1.96E-01	3.35E-02	1.94E-01	4.24E-01	2.40E-01

Toxicity Characteristic Leach Procedure (TCLP)/ICP-AES Results

Toxicity Characteristic Leach Procedure (TCLP) results were requested by the program for 13 metals, however the SW-846 has provisions for only eight: As, Ba, Cd, Cr, Pb, Se, Ag and Hg. Data were presented in the initial report for only those eight analytes. In addition, for those metals analyzed by Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES), the analyses were performed on non-acid digested TCLP extracts. For regulatory decision making, all TCLP data must be based on acid digested TCLP extracts.

In this report, analytical results for all program requested ICP metals (including those not provided previously: Sb, Be, Ni, Tl and V) have been reported. All ICP data were generated on acid digested TCLP extracts. The acid digestion and ICP analyses were performed on June 18, 1997 (days 98 to 114), which was within SW-846 holding time limits.

No attempt was made to determine accuracy on Sb, Be, Ni, Tl and V however because spikes for these metals were not prepared for TCLP extraction. Spike recovery results are indicated in the summary table for these five metals as "0.00e+00", however this is an artifact of the Laboratory Information Management System (LABCORE). The actual value that should have been reported for these spike recoveries is "n/a".

Accuracy is determined in SW-846, method 1311, using LCS control limits for the TCLP metals of 50 to 150 percent recovery. This is different than the project's accuracy control limits of 75 to 125 percent recovery for spikes. All ICP analytes met the SW-846 control limits. Silver did not meet the spike recovery limit set by the project.

As stated in the initial report, less than 100 grams were used for the TCLP extraction due to the need to limit radiation exposure to laboratory staff.

Arsenic by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
 Procedural Anomalies/Difficulties: None noted
 Required RCRA Analytical Procedure: SW-846, 6010A
 Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
 TCLP Method 1311 Used: LA-544-134, Rev. B-0
 Required Precision: ±30 RPD
 Met Precision Requirement?: RPD not calculable
 Required Spike Accuracy: 75 to 125% spike recovery, and LCS of 50
 to 150 %Recovery per SW-846.
 Met Accuracy Requirement?: yes (85.5% spike recovery and 100.0% LCS
 recovery)
 Target Practical Quant Limit (PQL): 5 µg/g
 Samples Not Meeting Target PQL: none
 Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
 additional days to analysis.
 Samples Exceeding Max Holding Time: none
 Blank Contaminated?: no

Barium by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
 Procedural Anomalies/Difficulties: None noted
 Required RCRA Analytical Procedure: SW-846, 6010A
 Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
 TCLP Method 1311 Used: LA-544-134, Rev. B-0
 Required Precision: ±30 RPD
 Met Precision Requirement?: no (50.1 RPD)
 Required Spike Accuracy: 75 to 125 spike %Recovery, and LCS of 50
 to 150% recovery per SW-846.
 Met Accuracy Requirement?: yes (81.7% spike recovery and 94.2% LCS
 recovery)
 Target Practical Quant Limit (PQL): 7 µg/g
 Samples Not Meeting Target PQL: none
 Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
 additional days to analysis.
 Samples Exceeding Max Holding Time: none
 Blank Contaminated?: no

Cadmium by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
Procedural Anomalies/Difficulties: None noted
Required RCRA Analytical Procedure: SW-846, 6010A
Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
TCLP Method 1311 Used: LA-544-134, Rev. B-0
Required Precision: ± 30 RPD
Met Precision Requirement?: no (53.4 RPD)
Required Spike Accuracy: 75 to 125 spike %Recovery, and LCS of 50
to 150% recovery per SW-846.
Met Accuracy Requirement?: yes (78.3% spike recovery, and 94.4% LCS
recovery)
Target Practical Quant Limit (PQL): 0.2 $\mu\text{g/g}$
Samples Not Meeting Target PQL: none
Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
additional days to analysis.
Samples Exceeding Max Holding Time: none
Blank Contaminated?: no

Chromium by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
Procedural Anomalies/Difficulties: None noted
Required RCRA Analytical Procedure: SW-846, 6010A
Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
TCLP Method 1311 Used: LA-544-134, Rev. B-0
Required Precision: ± 30 RPD
Met Precision Requirement?: RPD not calculable
Required Spike Accuracy: 75 to 125 spike %Recovery, and LCS of 50
to 150% recovery per SW-846.
Met Accuracy Requirement?: yes (81.7% spike recovery, and 96.8% LCS
recovery)
Target Practical Quant Limit (PQL): 0.8 $\mu\text{g/g}$
Samples Not Meeting Target PQL: none
Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
additional days to analysis.
Samples Exceeding Max Holding Time: none
Blank Contaminated?: contamination was insignificant because
the concentration was very near the detection limit.

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Lead by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
Procedural Anomalies/Difficulties: None noted
Required RCRA Analytical Procedure: SW-846, 6010A
Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
TCLP Method 1311 Used: LA-544-134, Rev. B-0
Required Precision: ± 30 RPD
Met Precision Requirement?: RPD not calculable
Required Spike Accuracy: 75 to 125 spike %Recovery, and LCS of 50
to 150% recovery per SW-846.
Met Accuracy Requirement?: yes (87.6% spike recovery, and 94.0% LCS
recovery)
Target Practical Quant Limit (PQL): 0.4 $\mu\text{g/g}$
Samples Not Meeting Target PQL: all. The detection limit multiplied by 10
(to calculate the analytically derived PQL) was 4.0 $\mu\text{g/g}$ for all
samples.
Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
additional days to analysis.
Samples Exceeding Max Holding Time: none
Blank Contaminated?: no

Selenium by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
Procedural Anomalies/Difficulties: None noted
Required RCRA Analytical Procedure: SW-846, 6010A
Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
TCLP Method 1311 Used: LA-544-134, Rev. B-0
Required Precision: ± 30 RPD
Met Precision Requirement: RPD not calculable
Required Spike Accuracy: 75 to 125 spike %Recovery, and LCS of 50
to 150% recovery per SW-846.
Met Accuracy Requirement?: yes (105.5% spike recovery, and 91.0% LCS
recovery)
Target Practical Quant Limit (PQL): 0.2 $\mu\text{g/g}$
Samples Not Meeting Target PQL: all The detection limit multiplied by 10
(to calculate the analytically derived PQL) was 4.0 $\mu\text{g/g}$.
Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
additional days to analysis.
Samples Exceeding Max Holding Time: none
Blank Contaminated?: no

Silver by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
Procedural Anomalies/Difficulties: None noted
Required RCRA Analytical Procedure: SW-846, 6010A
Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
TCLP Method 1311 Used: LA-544-134, Rev. B-0
Required Precision: ± 30 RPD
Met Precision Requirement: yes (0.0 RPD)
Required Spike Accuracy: 75 to 125 spike %Recovery, and LCS of 50
to 150% recovery per SW-846.
Met Accuracy Requirement?: no (31.9% spike recovery) and yes (95.9%
LCS recovery)
Target Practical Quant Limit (PQL): 0.3 $\mu\text{g/g}$
Samples Not Meeting Target PQL: all The detection limit multiplied by 10
(to calculate the analytically derived PQL) was 0.4 $\mu\text{g/g}$.
Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
additional days to analysis.
Samples Exceeding Max Holding Time: none
Blank Contaminated?: no

Antimony by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
Procedural Anomalies/Difficulties: None noted
Required RCRA Analytical Procedure: SW-846, 6010A
Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
TCLP Method 1311 Used: LA-544-134, Rev. B-0
Required Precision: ± 30 RPD
Met Precision Requirement?: RPD not calculable
Project Required Spike Accuracy: 75 to 125 spike %Recovery
Met Accuracy Requirement?: n/a This analyte is not included in the
SW-846 target set for TCLP, consequently it was not spiked.
Target: Practical Quant Limit (PQL): 2 $\mu\text{g/g}$
Samples Not Meeting Target PQL: all. The detection limit multiplied by 10
(to calculate the analytically derived PQL) was 2.4 $\mu\text{g/g}$ for all
samples.
Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
additional days to analysis.
Samples Exceeding Max Holding Time: none
Blank Contaminated?: no

Beryllium by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
Procedural Anomalies/Difficulties: None noted
Required RCRA Analytical Procedure: SW-846, 6010A
Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
TCLP Method 1311 Used: LA-544-134, Rev. B-0
Required Precision: ± 30 RPD
Met Precision Requirement?: RPD not calculable
Project Required Spike Accuracy: 75 to 125 spike %Recovery.
Met Accuracy Requirement?: n/a This analyte is not included in the
SW-846 target set for TCLP, consequently it was not spiked.
Target Practical Quant Limit (PQL): $0.01 \mu\text{g/g}$
Samples Not Meeting Target PQL: all. The detection limit multiplied by 10
(to calculate the analytically derived PQL) was $0.2 \mu\text{g/g}$ for all
samples.
Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
additional days to analysis.
Samples Exceeding Max Holding Time: none
Blank Contaminated?: no

Nickel by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
Procedural Anomalies/Difficulties: None noted
Required RCRA Analytical Procedure: SW-846, 6010A
Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
TCLP Method 1311 Used: LA-544-134, Rev. B-0
Required Precision: ± 30 RPD
Met Precision Requirement?: yes (2.3 RPD)
Project Required Spike Accuracy: 75 to 125 spike %Recovery
Met Accuracy Requirement?: n/a This analyte is not included in the
SW-846 target set for TCLP, consequently it was not spiked.
Target Practical Quant Limit (PQL): $5 \mu\text{g/g}$
Samples Not Meeting Target PQL: none
Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
additional days to analysis.
Samples Exceeding Max Holding Time: none
Blank Contaminated?: no

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Thallium by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
Procedural Anomalies/Difficulties: None noted
Required RCRA Analytical Procedure: SW-846, 6010A
Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
TCLP Method 1311 Used: LA-544-134, Rev. B-0
Required Precision: ± 30 RPD
Met Precision Requirement?: RPD not calculable
Project Required Spike Accuracy: 75 to 125 spike %Recovery,
Met Accuracy Requirement?: n/a This analyte is not included in the
SW-846 target set for TCLP, consequently it was not spiked.
Target Practical Quant Limit (PQL): $0.08 \mu\text{g/g}$
Samples Not Meeting Target PQL: all. The detection limit multiplied by 10
(to calculate the analytically derived PQL) was $8.0 \mu\text{g/g}$ for all
samples.
Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
additional days to analysis.
Samples Exceeding Max Holding Time: none
Blank Contaminated?: no

Vanadium by TCLP Extraction/Acid Digest/ICP-AES

TCLP Anomalies/Difficulties: None Noted
Procedural Anomalies/Difficulties: None noted
Required RCRA Analytical Procedure: SW-846, 6010A
Analytical Procedure Used: LA-505-161, Rev. C-1, equivalent to 6010
TCLP Method 1311 Used: LA-544-134, Rev. B-0
Required Precision: ± 30 RPD
Met Precision Requirement?: RPD not calculable
Project Required Spike Accuracy: 75 to 125 spike %Recovery
Met Accuracy Requirement?: n/a This analyte is not included in the
SW-846 target set for TCLP, consequently it was not spiked.
Target Practical Quant Limit (PQL): $0.2 \mu\text{g/g}$
Samples Not Meeting Target PQL: all. The detection limit multiplied by 10
(to calculate the analytically derived PQL) was $2.0 \mu\text{g/g}$ for all
samples.
Maximum Sample Holding Time (RCRA): 180 days to TCLP Extraction, and 180
additional days to analysis.
Samples Exceeding Max Holding Time: none
Blank Contaminated?: no

107-N Project Summary Data Tables

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Antimony -ICP-Acid Digest	ug/mL	95.2	<6.00E-02	<2.40E-01	n/a	n/a	n/a	n/a	2.40E-01	n/a
BOJYD6	S97N000067	B	Antimony -ICP-Acid Digest	ug/mL	95.2	<6.00E-02	<2.40E-01	n/a	n/a	n/a	n/a	2.40E-01	n/a
BOJYD7	S97N000068	B	Antimony -ICP-Acid Digest	ug/mL	95.2	<6.00E-02	<2.40E-01	n/a	n/a	n/a	n/a	2.40E-01	n/a
BOJYD5	S97N000070	B	Antimony -ICP-Acid Digest	ug/mL	95.2	<6.00E-02	<2.40E-01	<2.40E-01	n/a	n/a	0.0	2.40E-01	n/a

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Arsenic -ICP-Acid Digest	ug/mL	100.0	<1.00E-01	<4.00E-01	n/a	n/a	n/a	n/a	4.00E-01	n/a
BOJYD6	S97N000067	B	Arsenic -ICP-Acid Digest	ug/mL	100.0	<1.00E-01	<4.00E-01	n/a	n/a	n/a	n/a	4.00E-01	n/a
BOJYD7	S97N000068	B	Arsenic -ICP-Acid Digest	ug/mL	100.0	<1.00E-01	<4.00E-01	n/a	n/a	n/a	n/a	4.00E-01	n/a
BOJYD5	S97N000070	B	Arsenic -ICP-Acid Digest	ug/mL	100.0	<1.00E-01	<4.00E-01	<4.00E-01	n/a	n/a	85.5	4.00E-01	n/a

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Barium -ICP-Acid Digest	ug/mL	94.2	<5.00E-02	3.26E+00	n/a	n/a	n/a	n/a	2.00E-01	n/a
BOJYD6	S97N000067	B	Barium -ICP-Acid Digest	ug/mL	94.2	<5.00E-02	1.77E+00	n/a	n/a	n/a	n/a	2.00E-01	n/a
BOJYD7	S97N000068	B	Barium -ICP-Acid Digest	ug/mL	94.2	<5.00E-02	6.99E+00	n/a	n/a	n/a	n/a	2.00E-01	n/a
BOJYD5	S97N000070	B	Barium -ICP-Acid Digest	ug/mL	94.2	<5.00E-02	7.39E-01	4.43E-01	5.91E-01	50.1	81.7	2.00E-01	n/a

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Beryllium -ICP-Acid Digest	ug/mL	104.6	<5.00E-03	<2.00E-02	n/a	n/a	n/a	n/a	2.00E-02	n/a
BOJYD6	S97N000067	B	Beryllium -ICP-Acid Digest	ug/mL	104.6	<5.00E-03	<2.00E-02	n/a	n/a	n/a	n/a	2.00E-02	n/a
BOJYD7	S97N000068	B	Beryllium -ICP-Acid Digest	ug/mL	104.6	<5.00E-03	<2.00E-02	n/a	n/a	n/a	n/a	2.00E-02	n/a
BOJYD5	S97N000070	B	Beryllium -ICP-Acid Digest	ug/mL	104.6	<5.00E-03	<2.00E-02	<2.00E-02	n/a	n/a	0.0	2.00E-02	n/a

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Cadmium -ICP-Acid Digest	ug/mL	94.4	<5.00E-03	3.05E-01	n/a	n/a	n/a	n/a	2.00E-02	n/a
BOJYD6	S97N000067	B	Cadmium -ICP-Acid Digest	ug/mL	94.4	<5.00E-03	4.78E-02	n/a	n/a	n/a	n/a	2.00E-02	n/a
BOJYD7	S97N000068	B	Cadmium -ICP-Acid Digest	ug/mL	94.4	<5.00E-03	2.91E-01	n/a	n/a	n/a	n/a	2.00E-02	n/a
BOJYD5	S97N000070	B	Cadmium -ICP-Acid Digest	ug/mL	94.4	<5.00E-03	3.87E-02	2.24E-02	3.06E-02	53.4	78.3	2.00E-02	n/a

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Chromium -ICP-Acid Digest	ug/mL	96.8	1.90E-02	<4.00E-02	n/a	n/a	n/a	n/a	4.00E-02	n/a
BOJYD6	S97N000067	B	Chromium -ICP-Acid Digest	ug/mL	96.8	1.90E-02	<4.00E-02	n/a	n/a	n/a	n/a	4.00E-02	n/a
BOJYD7	S97N000068	B	Chromium -ICP-Acid Digest	ug/mL	96.8	1.90E-02	8.82E-02	n/a	n/a	n/a	n/a	4.00E-02	n/a
BOJYD5	S97N000070	B	Chromium -ICP-Acid Digest	ug/mL	96.8	1.90E-02	4.07E-02	<4.00E-02	n/a	n/a	81.7	4.00E-02	n/a

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Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Lead -ICP-Acid Digest	ug/mL	94.0	<1.00E-01	<4.00E-01	n/a	n/a	n/a	n/a	4.00E-01	n/a
BOJYD6	S97N000067	B	Lead -ICP-Acid Digest	ug/mL	94.0	<1.00E-01	<4.00E-01	n/a	n/a	n/a	n/a	4.00E-01	n/a
BOJYD7	S97N000068	B	Lead -ICP-Acid Digest	ug/mL	94.0	<1.00E-01	<4.00E-01	n/a	n/a	n/a	n/a	4.00E-01	n/a
BOJYD5	S97N000070	B	Lead -ICP-Acid Digest	ug/mL	94.0	<1.00E-01	<4.00E-01	<4.00E-01	n/a	n/a	87.6	4.00E-01	n/a

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Nickel -ICP-Acid Digest	ug/mL	97.2	<2.00E-02	5.36E-01	n/a	n/a	n/a	n/a	8.00E-02	n/a
BOJYD6	S97N000067	B	Nickel -ICP-Acid Digest	ug/mL	97.2	<2.00E-02	1.15E+00	n/a	n/a	n/a	n/a	8.00E-02	n/a
BOJYD7	S97N000068	B	Nickel -ICP-Acid Digest	ug/mL	97.2	<2.00E-02	4.19E-01	n/a	n/a	n/a	n/a	8.00E-02	n/a
BOJYD5	S97N000070	B	Nickel -ICP-Acid Digest	ug/mL	97.2	<2.00E-02	1.70E+00	1.74E+00	1.72E+00	2.3	0.0	8.00E-02	n/a

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Selenium -ICP-Acid Digest	ug/mL	91.0	<1.00E-01	<4.00E-01	n/a	n/a	n/a	n/a	4.00E-01	n/a
BOJYD6	S97N000067	B	Selenium -ICP-Acid Digest	ug/mL	91.0	<1.00E-01	<4.00E-01	n/a	n/a	n/a	n/a	4.00E-01	n/a
BOJYD7	S97N000068	B	Selenium -ICP-Acid Digest	ug/mL	91.0	<1.00E-01	<4.00E-01	n/a	n/a	n/a	n/a	4.00E-01	n/a
BOJYD5	S97N000070	B	Selenium -ICP-Acid Digest	ug/mL	91.0	<1.00E-01	<4.00E-01	<4.00E-01	n/a	n/a	105.5	4.00E-01	n/a

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Silver -ICP-Acid Digest	ug/mL	95.9	<1.00E-02	1.07E-01	n/a	n/a	n/a	n/a	4.00E-02	n/a
BOJYD6	S97N000067	B	Silver -ICP-Acid Digest	ug/mL	95.9	<1.00E-02	1.31E-01	n/a	n/a	n/a	n/a	4.00E-02	n/a
BOJYD7	S97N000068	B	Silver -ICP-Acid Digest	ug/mL	95.9	<1.00E-02	1.34E-01	n/a	n/a	n/a	n/a	4.00E-02	n/a
BOJYD5	S97N000070	B	Silver -ICP-Acid Digest	ug/mL	95.9	<1.00E-02	1.44E-01	1.44E-01	1.44E-01	0.0	31.9	4.00E-02	n/a

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Thallium -ICP-Acid Digest	ug/mL	89.2	<2.00E-01	<8.00E-01	n/a	n/a	n/a	n/a	8.00E-01	n/a
BOJYD6	S97N000067	B	Thallium -ICP-Acid Digest	ug/mL	89.2	<2.00E-01	<8.00E-01	n/a	n/a	n/a	n/a	8.00E-01	n/a
BOJYD7	S97N000068	B	Thallium -ICP-Acid Digest	ug/mL	89.2	<2.00E-01	<8.00E-01	n/a	n/a	n/a	n/a	8.00E-01	n/a
BOJYD5	S97N000070	B	Thallium -ICP-Acid Digest	ug/mL	89.2	<2.00E-01	<8.00E-01	<8.00E-01	n/a	n/a	0.0	8.00E-01	n/a

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJDY8	S97N000069	B	Vanadium -ICP-Acid Digest	ug/mL	94.6	<5.00E-02	<2.00E-01	n/a	n/a	n/a	n/a	2.00E-01	n/a
BOJYD6	S97N000067	B	Vanadium -ICP-Acid Digest	ug/mL	94.6	<5.00E-02	<2.00E-01	n/a	n/a	n/a	n/a	2.00E-01	n/a
BOJYD7	S97N000068	B	Vanadium -ICP-Acid Digest	ug/mL	94.6	<5.00E-02	<2.00E-01	n/a	n/a	n/a	n/a	2.00E-01	n/a
BOJYD5	S97N000070	B	Vanadium -ICP-Acid Digest	ug/mL	94.6	<5.00E-02	<2.00E-01	<2.00E-01	n/a	n/a	0.0	2.00E-01	n/a

107-N Project Summary Data Tables

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJYD6	S97N000031	J	Am-241 by Extraction	uCi/g	111.7	<1.15E-03	<1.42E-03	<1.26E-03	n/a	n/a	n/a	1.00E-03	100.0
BOJYD7	S97N000043	J	Am-241 by Extraction	uCi/g	106.8	<6.02E-03	1.31E-01	n/a	n/a	n/a	n/a	1.30E-02	1.6
BOJYD8	S97N000037	J	Am-241 by Extraction	uCi/g	106.8	<6.02E-03	1.96E-01	n/a	n/a	n/a	n/a	1.70E-02	1.5
BOJYD5	S97N000051	J	Am-241 by Extraction	uCi/g	111.7	<1.15E-03	3.40E-03	n/a	n/a	n/a	n/a	1.00E-03	3.4

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJYD6	S97N000031	J	Cm-243/244 by Extraction	uCi/g	n/a	<1.15E-03	<1.42E-03	<1.26E-03	n/a	n/a	n/a	1.00E-03	100.0
BOJYD7	S97N000043	J	Cm-243/244 by Extraction	uCi/g	n/a	<6.02E-03	<1.29E-02	n/a	n/a	n/a	n/a	1.30E-02	100.0
BOJYD8	S97N000037	J	Cm-243/244 by Extraction	uCi/g	n/a	<6.02E-03	<1.65E-02	n/a	n/a	n/a	n/a	1.70E-02	100.0
BOJYD5	S97N000051	J	Cm-243/244 by Extraction	uCi/g	n/a	<1.15E-03	<1.42E-03	n/a	n/a	n/a	n/a	1.00E-03	9.0

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJYD6	S97N000031	J	Pu-238 by Ion Exchange	uCi/g	n/a	1.00E-03	1.11E-03	1.14E-03	1.13E-03	2.7	n/a	1.00E-03	5.5
BOJYD7	S97N000043	J	Pu-238 by Ion Exchange	uCi/g	n/a	<3.15E-03	2.21E-02	n/a	n/a	n/a	n/a	7.00E-03	2.6
BOJYD8	S97N000037	J	Pu-238 by Ion Exchange	uCi/g	n/a	<3.15E-03	3.35E-02	n/a	n/a	n/a	n/a	1.30E-02	2.2
BOJYD5	S97N000051	J	Pu-238 by Ion Exchange	uCi/g	n/a	1.00E-03	1.36E-03	n/a	n/a	n/a	n/a	1.00E-03	4.9

Customer #	Sample#	A#	Analyte	Unit	Standard %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Count Err%
BOJYD6	S97N000031	J	Pu-239/240 by TRU-SPEC Res	uCi/g	100.9	<6.41E-04	1.11E-03	1.12E-03	1.12E-03	0.9	n/a	1.00E-03	5.5
BOJYD7	S97N000043	J	Pu-239/240 by TRU-SPEC Res	uCi/g	99.1	<3.15E-03	1.15E-01	n/a	n/a	n/a	n/a	7.00E-03	1.5
BOJYD8	S97N000037	J	Pu-239/240 by TRU-SPEC Res	uCi/g	99.1	<3.15E-03	1.94E-01	n/a	n/a	n/a	n/a	1.30E-02	1.3
BOJYD5	S97N000051	J	Pu-239/240 by TRU-SPEC Res	uCi/g	100.9	<6.41E-04	2.31E-03	n/a	n/a	n/a	n/a	1.00E-03	3.9

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