

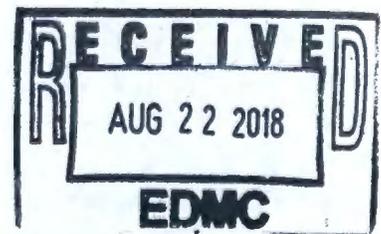
FINAL REPORT FOR HISTORICAL SOIL SAMPLES 299-E27-20 WELL

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Abstract: This final report contains the analytical results for nitrate and Tc-99 supporting the characterization of Vadose samples from the Plateau Remediation Company soil core library.



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APPROVED
By Janis D. Aardal at 10:53 am, Jan 15, 2014

Release Approval

Date



Release Stamp

Approved For Public Release

**FINAL REPORT FOR HISTORICAL SOIL SAMPLES
299-E27-20 WELL**

ATL Document No. 20130401

Carolina S. Menjivar
Advanced Technologies and Laboratories International, Inc.

Date Published
July 15, 2013

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509-372-2525

 07-15-2013
C. S. Menjivar; ATL Project Coordinator

 7-15-2013
J. A. McCluskey, QA Scientist

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222-S LABORATORY

FINAL REPORT FOR HISTORICAL SOIL SAMPLES – 299-E27-20 WELL

1.0 INTRODUCTION

This report presents the analytical results for four historical samples retrieved from the Plateau Remediation Company soil core library on April 10, 2013. The samples were analyzed in accordance with ATL-MP-1011, *ATL Quality Assurance Project Plan for 222-S Laboratory* (QAPP); SW-846, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*; and the additional guidance given by the client's point of contact.

Because the 222-S Laboratory facility was designed to analyze hazardous and complex tank waste samples, most SW-846 test methods performed at the 222-S Laboratory contain deviations that are listed in an appendix to the analytical procedures. All other known deviations or variances from SW-846 are documented in this narrative. The following attachments are included in this report.

Attachment 1	Data Summary Report
Attachment 2	Sample Breakdown Diagrams
Attachment 3	Analysis Date Report
Attachment 4	Correspondence
Attachment 5	Sample Photographs
Attachment 6	Receipt Paperwork

2.0 SAMPLE RECEIPT

Four soil samples were received by the 222-S Laboratory on April 10, 2013. These are historical samples, and they were received without preservation and/or holding time requirements, as stated in the Chain of Custody/Sample Analysis Request (COC/SAR) form.

3.0 ANALYTICAL RESULTS SUMMARY

The Data Summary Report (Attachment 1) presents the final analytical results for those analytes listed in the COC/SAR.

The "Det Limit" column in Attachment 1 contains the method detection limit (MDL).

In Attachment 1, the column labeled "A#" indicates the aliquot class or the method used for sample preparation before analysis. The only aliquot class identified is defined as follows:

"WV" indicates samples were prepared by a vadose water digest

Samples without a letter identifier in the "A#" column were analyzed directly with no separate preparation or with sample preparation performed as a part of the procedure steps.

Additionally, the results for ⁹⁹Tc do not have letter identifiers in the "A#" column. These analyses were performed using the vadose water digest.

The "Qual Flags" column in Attachment 1 contains data qualifier flags from FEAD CP-15383, *Common Requirements of the Format for Electronic Analytical Data*, that are defined as follows:

"B" for inorganic results is used to indicate that the reported result should be considered an estimate because it is below the quantitation limit. The "B" flag is applied to sample concentrations that are greater than the MDL, but less than the quantitation limit.

"U" for all results is used to indicate that the reported result is less than the calculated detection limit.

Manual calculations using rounded results from the Data Summary Report (Attachment 1) or result calculation forms may differ slightly from the actual results derived from the raw data.

3.1 SAMPLE DIGESTIONS

3.1.1 Vadose Water Digestion

An approximately 60-gram sample of soil was leached using a ratio of one part water to one part soil. To maintain a one-to-one ratio, the amount of water added to the sample was adjusted based on the percent moisture of the soil. The slurries were placed on a shaker table for about 1 hour, transferred to a centrifuge tube and centrifuged at 4,000 rpm for 30 minutes, and then filtered using a disposable vacuum filtration system. The filtrates were transferred to clean bottles and then analyzed for ⁹⁹Tc by inductively coupled plasma/mass spectroscopy (ICP/MS) and anions by ion chromatography (IC).

3.2 INORGANIC ANALYSES

3.2.1 Ion Chromatography – Nitrate

Ion chromatography analysis was performed on the vadose water digest of samples. Required and target detection limits were met.

The preparation blank results are not corrected for the digestion factor. Therefore, the correct units for the preparation blank are ug/mL. Since the preparation blank is not corrected by the digestion factor, comparison to the sample results was performed using the raw data. The "Units" column in Attachment 1 is for sample results. As instructed by the customer via mail (see Attachment 4), the detection limit requirements listed in RPP-PLAN-54366, Rev. 0, were used for nitrate. There is no required detection limit; the target detection limit is 2.5 mg/Kg, which was met for all samples.

There were no notable issues, and all quality control (QC) requirements listed in the QAPP were met.

3.2.2 Inductively Coupled Plasma/Mass Spectroscopy

The ICP/MS ⁹⁹Tc analysis was performed on vadose water digested samples. The laboratory received instructions, via e-mail (see correspondence in Attachment 4), to use the detection limits listed in RPP-PLAN-54366, Rev. 0 for ⁹⁹Tc. Required and target detection limits were met, there were no notable issues, and all QC requirements in the QAPP were met.

4.0 PROCEDURES

Table 1 lists the procedures used in analyzing the samples contained in this report.

Table 1. Analytical Procedures

Analysis	Preparation Method	Analysis Procedure
Inorganic Analyses		
Nitrate – IC	LA-504-102, Rev. B-0-A (Vadose Water Digest) Direct	LA-533-166, Rev. B-1-A (SW-846 9056A)
⁹⁹ Tc – ICP/MS	LA-504-102, Rev. B-0-A (Vadose Water Digest)	LA-506-103, Rev. B-0

5.0 REFERENCES

ATL-MP-1011, 2012, *ATL Quality Assurance Project Plan for 222-S Laboratory*, Rev. 11A, Advanced Technologies and Laboratories International, Inc., Richland, Washington.

FEAD CP-15383, 2007, *Common Requirements of the Format for Electronic Analytical Data*, Version 8, CH2M Hill Plateau Remediation Co., Richland, Washington.

RPP-PLAN-54366, *Field Sampling and Analysis Plan for SX Pore Water Extraction Test Project Stages I and II*, Rev. 0, Washington River Protection Solutions, LLC, Richland, Washington.

SW-846, 1986, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, Third Edition, as amended, U.S. Environmental Protection Agency, Washington, D.C.

Attachment 1

DATA SUMMARY REPORT

Well 299-E27-20
Data Summary of All Results

Sample Group: 20130401

Customer Group or SDG Number:

Customer Sample ID: B2NRC4

Sample Portion: Grab Sample (total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
% Water by APD Test Plan															
S13V000085			%WATERAP	%WATER-APD	%	n/a	n/a	0.6600	n/a	n/a	n/a	n/a	0.01000	n/a	

NA = Not Analyzed, ND = Not Detected

B - Estimated

U - Less Than Detection Limit

Well 299-E27-20
Data Summary of All Results

Sample Group: 20130401

Customer Group or SDG Number:

Customer Sample ID: B2NRC4_WE

Sample Portion: Grab Sample (total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Anions and Small Organic Acids															
S13V000086		WV	14797-55-8	Nitrate	ug/g	98.0	<0.0150	1.84	1.95	1.90	6.24	99.5	0.116		n/a
TC-99 by MS															
S13V000086		WV	14133-76-7	Technetium-99	pCi/g	93.4	<0.102	<0.0936	<0.0931	n/a	n/a	95.4	0.0936		n/a U

NA = Not Analyzed, ND = Not Detected

B - Estimated

U - Less Than Detection Limit

10 - Jul - 2013 14:01:08
 DSRHardcopyWOLimits 2.7.31
 DSR.Jar v. 2.7.31

Well 299-E27-20
Data Summary of All Results

Sample Group: 20130401

Customer Group or SDG Number:

Customer Sample ID: B2NRC5

Sample Portion: Grab Sample (total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
% Water by APD Test Plan															
S13V000087			%WATERAP	%WATER-APD	%	n/a	n/a	0.7600	n/a	n/a	n/a	n/a	0.01000	n/a	

NA = Not Analyzed, ND = Not Detected

B - Estimated

U - Less Than Detection Limit

Well 299-E27-20
Data Summary of All Results

Sample Group: 20130401

Customer Group or SDG Number:

Customer Sample ID: B2NRC5_WE

Sample Portion: Grab Sample (total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Anions and Small Organic Acids															
S13V000088		WV	14797-55-8	Nitrate	ug/g	98.0	<0.0150	1.38	n/a	n/a	n/a	n/a	0.114	n/a	
TC-99 by MS															
S13V000088		WV	14133-76-7	Technetium-99	pCi/g	93.4	<0.102	<0.0924	n/a	n/a	n/a	n/a	0.0924	n/a	U

NA = Not Analyzed, ND = Not Detected

B - Estimated

U - Less Than Detection Limit

Well 299-E27-20
Data Summary of All Results

Sample Group: 20130401

Customer Group or SDG Number:

Customer Sample ID: B2NRC6

Sample Portion: Grab Sample (total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
% Water by APD Test Plan															
S13V000089			%WATERAP	%WATER-APD	%	n/a	n/a	0.6700	n/a	n/a	n/a	n/a	0.01000	n/a	

NA = Not Analyzed, ND = Not Detected

B - Estimated

U - Less Than Detection Limit

Well 299-E27-20
Data Summary of All Results

Sample Group: 20130401

Customer Group or SDG Number:

Customer Sample ID: B2NRC6_WE

Sample Portion: Grab Sample (total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Anions and Small Organic Acids															
S13V000090		WV	14797-55-8	Nitrate	ug/g	98.0	<0.0150	0.473	n/a	n/a	n/a	n/a	0.115	n/a	B
TC-99 by MS															
S13V000090		WV	14133-76-7	Technetium-99	pCi/g	93.4	<0.102	<0.0931	n/a	n/a	n/a	n/a	0.0931	n/a	U

NA = Not Analyzed, ND = Not Detected

B - Estimated

U - Less Than Detection Limit

Well 299-E27-20
Data Summary of All Results

Sample Group: 20130401
Customer Group or SDG Number:
Customer Sample ID: B2NRC7
Sample Portion: Grab Sample (total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
% Water by APD Test Plan															
S13V000091			%WATERAP	%WATER-APD	%	n/a	n/a	0.8000	0.9700	0.8850	19.21	n/a	0.01000	n/a	

NA = Not Analyzed, ND = Not Detected

B - Estimated

U - Less Than Detection Limit

Well 299-E27-20
Data Summary of All Results

Sample Group: 20130401

Customer Group or SDG Number:

Customer Sample ID: B2NRC7_WE

Sample Portion: Grab Sample (total)

Sample#	R	A#	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err %	Qual Flags
Anions and Small Organic Acids															
S13V000092		WV	14797-55-8	Nitrate	ug/g	98.0	<0.0150	0.333	n/a	n/a	n/a	n/a	0.114	n/a	B
TC-99 by MS															
S13V000092		WV	14133-76-7	Technetium-99	pCi/g	93.4	<0.102	<0.0924	n/a	n/a	n/a	n/a	0.0924	n/a	U

NA = Not Analyzed, ND = Not Detected

B - Estimated

U - Less Than Detection Limit

Attachment 2

SAMPLE BREAKDOWN DIAGRAMS

Vadose Zone: Well 299-E27-20
Sample Group 20130401

Customer ID: B2NRC4
Depth: 260'

Solid 
S13V000085
% Water - APD

Customer ID:
B2NRC4_WE

Water Digest
Vadose 
S13V000086
ICP/MS- Tc-99
IC-Nitrate

Customer ID: B2NRC5
Depth: 265'

Solid 
S13V000087
% Water - APD

Customer ID:
B2NRC5_WE

Water Digest
Vadose 
S13V000088
ICP/MS- Tc-99
IC-Nitrate

Vadose Zone: Well 299-E27-20
Sample Group 20130401

Customer ID: B2NRC6

Depth: 270'

Solid



S13V000089

% Water - APD

Customer ID:
B2NRC6_WE

Water Digest
Vadose



S13V000090

ICP/MS- Tc-99
IC-Nitrate

Customer ID: B2NRC7

Depth: 275'

Solid



S13V000091

% Water - APD

Customer ID:
B2NRC7_WE

Water Digest
Vadose



S13V000092

ICP/MS- Tc-99
IC-Nitrate

Attachment 3

ANALYSIS DATE REPORT

ANALYSIS DATE REPORT

Laboratory Sample ID	Customer Sample ID	Method	Prep Method	Sample Date Time	Received Date	Preparation Date	Analysis Date
S13V000085	B2NRC4	% Water	N/A	04/10/2013 10:00	04/10/2013 11:00	N/A	04/25/2013 08:30
S13V000087	B2NRC5	% Water	N/A	04/10/2013 10:00	04/10/2013 11:00	N/A	04/25/2013 08:30
S13V000089	B2NRC6	% Water	N/A	04/10/2013 10:00	04/10/2013 11:00	N/A	04/25/2013 08:30
S13V000091	B2NRC7	% Water	N/A	04/10/2013 10:00	04/10/2013 11:00	N/A	04/25/2013 08:30
S13V000086	B2NRC4 WE	SW-846 9056A - IC Anions	Vadose Water Digest	04/10/2013 10:00	04/10/2013 11:00	04/22/2013 09:14	04/22/2013 18:49
S13V000088	B2NRC5 WE	SW-846 9056A - IC Anions	Vadose Water Digest	04/10/2013 10:00	04/10/2013 11:00	04/22/2013 09:14	04/22/2013 20:27
S13V000090	B2NRC6 WE	SW-846 9056A - IC Anions	Vadose Water Digest	04/10/2013 10:00	04/10/2013 11:00	04/22/2013 09:14	04/22/2013 21:00
S13V000092	B2NRC7 WE	SW-846 9056A - IC Anions	Vadose Water Digest	04/10/2013 10:00	04/10/2013 11:00	04/22/2013 09:14	04/22/2013 21:33
S13V000086	B2NRC4 WE	ICP/MS Tc-99	Vadose Water Digest	04/10/2013 10:00	04/10/2013 11:00	04/22/2013 09:14	04/23/2013 12:55
S13V000088	B2NRC5 WE	ICP/MS Tc-99	Vadose Water Digest	04/10/2013 10:00	04/10/2013 11:00	04/22/2013 09:14	04/23/2013 13:04
S13V000090	B2NRC6 WE	ICP/MS Tc-99	Vadose Water Digest	04/10/2013 10:00	04/10/2013 11:00	04/22/2013 09:14	04/23/2013 13:08
S13V000092	B2NRC7 WE	ICP/MS Tc-99	Vadose Water Digest	04/10/2013 10:00	04/10/2013 11:00	04/22/2013 09:14	04/23/2013 13:12

Attachment 4

CORRESPONDENCE

Menjivar, Carolina S

From: McKinney, Steve G
Sent: Friday, April 05, 2013 2:23 PM
To: Ritenour, Gerald P; Menjivar, Carolina S
Subject: FW: 299-E27-20 SAF

-----Original Message-----

From: Tabor, Cynthia L
Sent: Friday, April 05, 2013 1:57 PM
To: McKinney, Steve G; Johnson, Jo M
Cc: Franzen, Rick (Sr); Sydnor, Harold A; Shrum, Ann; Berlin, Penelope (Energy Solutions)
Subject: RE: 299-E27-20 SAF

Answers to Questions:

- 1) pt = pint (the jars being picked up at the Library are supposed to be pint sized)
- 2) Please use the same Detection Limits that you are using for SX right now (RPP-PLAN-54366, Rev. 0)
- 3) Reporting: The laboratory shall issue the data package within 120 calendar days following receipt of the last samples. Preliminary results shall be available within 60 days following receipt of the last sample. (Does this work for you all?)

The plan at this point is to have the samples picked up next Wed - April 10 and have them delivered to you all...If this changes..I will let you know.

Thanks Cindy

CYNTHIA TABOR | SCIENTIST
CLOSURE & CORRECTIVE MEASURES
(509)373-3981

|
CONTRACTOR TO THE UNITED STATES DEPARTMENT OF ENERGY

-----Original Message-----

From: Tabor, Cynthia L
Sent: Wednesday, April 03, 2013 10:39 AM
To: McKinney, Steve G; Johnson, Jo M
Cc: Franzen, Rick (Sr); Sydnor, Harold A; Shrum, Ann; Berlin, Penelope (Energy Solutions)
Subject: FW: 299-E27-20 SAF

Hi Steve and Jo Marie

There are 2 attached files for the Core Analysis effort: The Draft SAF - that shows that we just want Tc-99 and Nitrate (anticipate 3-5 bottles from the core of interest) and the GKI (Steve - I believe the previous GKI from Location C7570 should work).

We will be giving the Chain of Custodies and Sample Labels to Rick Franzen this week and hope to have the bottles picked up and given to you next week. We plan on talking to Rick and see what day he wants to do this.

Please let me know what other info you need. I have requested the Work Package # for my own info.

Thanks Cindy

CYNTHIA TABOR | SCIENTIST
CLOSURE & CORRECTIVE MEASURES
(509)373-3981

|
CONTRACTOR TO THE UNITED STATES DEPARTMENT OF ENERGY

-----Original Message-----

From: Penny Berlin [<mailto:PCBERLIN@energysolutions.com>]
Sent: Tuesday, February 19, 2013 10:44 AM
To: Sydnor, Harold A; Tabor, Cynthia L; Shrum, Ann
Subject: 299-E27-20 SAF

Re: Harold's wish to pick up E299-E27-20 samples next week - I am forwarding the SAF for review. If you have no comments, I will schedule a time with Ann (on Thurs?) to select sample #'s and print paperwork.

Penny Berlin
375-9512

-----Original Message-----

From: Berlin, Penelope C [mailto:Penelope_C_Berlin@rl.gov]
Sent: Thursday, February 07, 2013 3:28 PM
To: Sydnor, Harold A; Tabor, Cynthia L; Shrum, Ann
Cc: Penny Berlin
Subject: Emailing: 299-E27-20 SAF

Attached is my first cut at creating a SAF for 4-5 soil samples from the CHPRC soil library (from 299- E27-20). We will transport them from the library to 222-S for analysis (technetium and nitrate).
Pay special attention to Project titles, codes etc. - may need Doris' help to set these straight.

Penny

Menjivar, Carolina S

From: McKinney, Steve G
Sent: Monday, April 08, 2013 7:40 AM
To: Ritenour, Gerald P; Menjivar, Carolina S
Subject: FW: 299-E27-20 SAF

-----Original Message-----

From: Tabor, Cynthia L
Sent: Monday, April 08, 2013 7:21 AM
To: McKinney, Steve G; Johnson, Jo M
Cc: Sydnor, Harold A; Shrum, Ann; Berlin, Penelope (Energy Solutions)
Subject: RE: 299-E27-20 SAF

Yes

Please run Tc-99..via WE...will ask Penny/Ann to fix the method in SDT.

CYNTHIA TABOR | SCIENTIST
CLOSURE & CORRECTIVE MEASURES
(509)373-3981

|
CONTRACTOR TO THE UNITED STATES DEPARTMENT OF ENERGY

-----Original Message-----

From: Tabor, Cynthia L
Sent: Wednesday, April 03, 2013 10:39 AM
To: McKinney, Steve G; Johnson, Jo M
Cc: Franzen, Rick (Sr); Sydnor, Harold A; Shrum, Ann; Berlin, Penelope (Energy Solutions)
Subject: FW: 299-E27-20 SAF

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Thanks Cindy

CYNTHIA TABOR | SCIENTIST
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-----Original Message-----

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Subject: 299-E27-20 SAF

Re: Harold's wish to pick up E299-E27-20 samples next week - I am forwarding the SAF for review. If you have no comments, I will schedule a time with Ann (on Thurs?) to select sample #'s and print paperwork.

Penny Berlin
375-9512

-----Original Message-----

From: Berlin, Penelope C [mailto:Penelope_C_Berlin@rl.gov]
Sent: Thursday, February 07, 2013 3:28 PM
To: Sydnor, Harold A; Tabor, Cynthia L; Shrum, Ann
Cc: Penny Berlin
Subject: Emailing: 299-E27-20 SAF

Attached is my first cut at creating a SAF for 4-5 soil samples from the CHPRC soil library (from 299- E27-20). We will transport them from the library to 222-S for analysis (technetium and nitrate).
Pay special attention to Project titles, codes etc. - may need Doris' help to set these straight.

Penny

Attachment 5

SAMPLE PHOTOGRAPHS



B2NRC6

B2NRC4

B2NRC7

B2NRC5



B2NRC6

B2NRC4

B2NRC7

B2NRC5



Attachment 6

RECEIPT PAPERWORK

ATL	SAMPLE RECEIPT AND CHAIN OF CUSTODY VERIFICATION CHECKLIST	LO-090-101 Rev <u>F.F.O</u>		
Date Samples Received: <u>4.10.13</u>		Group #: <u>20130401</u>		
Number of Samples: <u>4</u>				
Sample Custodian: <u>R+Chalo</u>				
Sample Custodian to Complete:				
Action	Yes	No	N/A	Comments
RSA <u>COC</u> provided?	✓			
RSR provided?			✓	
Verify GKI is complete	✓			<input checked="" type="checkbox"/> In Project File
Received from an alpha facility?		✓		<input type="checkbox"/> Contact PM for approval to release
Check that outer custody seal is intact, if present			✓	
Record cooler temperature in centigrade, as appropriate			✓	<input checked="" type="checkbox"/> Check if no cooler and/or no ice
Samples are intact and in good condition	✓			If No, provide comments below
Verify that COC or RSA is accurate and complete, containing the following information:				
• Client name and client sample number	✓			
• Date and time of sampling	✓			
• Sampling location or origin	✓			
• Container type, size, and number	✓			
• Preservatives (if used) are noted on the <u>COC</u> /RSA and sample bottle			✓	
• Analysis request is clear	✓			
• Signature of persons relinquishing and receiving samples	✓			
• Date and/or time of sample custody exchange	✓			
Verify that sample numbers on containers match the <u>COC</u> and/or RSA	✓			
Samples stored properly (e.g. <u>refrigeration</u>)	✓			Z A
Notify the PM immediately if any problems are noted.				
Samples acceptable for release? <u>yes</u> Initials <u>R+J</u> Date <u>4.10.13</u>				
If No, comment on communication and resolution:				
Other Comments:				

Washington River Protection Solutions		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			V13-003-001	PAGE 1 OF 1
COLLECTOR <i>Snook</i>	COMPANY CONTACT SYDNOR, HA	TELEPHONE NO. 373-3967	PROJECT COORDINATOR SYDNOR, HA		PRICE CODE C03	DATA TURNAROUND 60 Days / 120 Days
SAMPLING LOCATION 299-E27-20 PRC Soil core library		PROJECT DESIGNATION 299-E27-20 Well in WMA C - Soil		SAF NO. V13-003	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>N/A</i>	FIELD LOGBOOK NO. <i>N/A</i>	ACTUAL SAMPLE DEPTH <i>N/A *</i>	COA <i>N/A</i>		METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO 222-S Lab Operations		OFFSITE PROPERTY NO. <i>N/A</i>		BILL OF LADING/AIR BILL NO. <i>N/A</i>		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS **Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.**	PRESERVATION	None
		HOLDING TIME	None
		TYPE OF CONTAINER	G/P
		NO. OF CONTAINER(S)	1
		VOLUME	1pt
SPECIAL HANDLING AND/OR STORAGE		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2NRC4	SOIL	4-10-13	1000	✓
B2NRC5	SOIL	4-10-13	1000	✓
B2NRC6	SOIL	4-10-13	1000	✓
B2NRC7	SOIL	4-10-13	1000	✓
B2NRC8	SOIL	4-10-13	1000	✓

Group # 20130401
 *sample depth
 - 513V000085 - 260'
 - 513V000087 - 265'
 - 513V000089 - 270'
 - 513V000091 - 275'

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
<i>Scott Snook</i>	4-10-13/1100	<i>RT Steele RT Steele AT</i>	4-10-13 1100
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
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS
 These are historical samples (Aug. 2003) that are being retrieved from the PRC soil core library for analysis/use by WRPS. Sample location is 229-E27-20, 260-275 ft (1) IC Anions - 9056_WE {Nitrate}; RADISO_ICPMS (TF) {Technetium-99};

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

GENERATOR KNOWLEDGE INFORMATION

1. Chain of Custody Number _____ CACN/COA _____ Customer Identification Number _____

2. List generator knowledge or description of process that produced sample. Or list description of sample source:
 241-C Tank Farm UPR 200 E 81 or C5-151 soil samples

MSDS Available? No Yes Hanford MSDS No. _____

3. List all waste codes and constituents associated with the waste or media that was sampled, regardless of CERCLA status.

a) Does the sample contain any of the following listed waste codes?

By checking "unknown" the customer understands that no knowledge is available following a careful search.

List Federal Waste Code(s):

List Constituent(s):

P Codes: _____ Yes No Unknown
 U Codes: _____ Yes No Unknown
 K Codes: _____ Yes No Unknown
 F Codes: F-001 through F-005 Yes No Unknown

b) List applicable characteristic waste codes, flash point, pH, constituents, and concentrations as appropriate.

D001: FP <100°F FP ≥100 <140°F DOT Oxidizer Yes No Unknown
 D002: pH ≤2 pH ≥12.6 Solid Corrosive (WSC2) Yes No Unknown
 D003: Cyanide Sulfide Water Reactive Other _____ Yes No Unknown
 D004-D043 (Identify applicable waste codes and concentrations):
 (i.e., peroxide former, explosive, air reactive) Yes No Unknown

chrommium (D007), Lead (D008)

c) If characteristic, list any known underlying hazardous constituents (UHCs) reasonably expected to be present, and their concentrations that may be present above the LDR treatment standard (40 CFR 268.48):

d) List any known Land Disposal Restrictions (LDR) subcategories, if applicable (40 CFR 268.40):

e) List any applicable Washington State dangerous waste codes: (not required if federally regulated)

(*State mixture rule for ignitability)

WT01: Yes No Unknown
 WT02: Yes No Unknown
 W001: Yes No Unknown
 List constituents and concentrations:
 WP01: Yes No Unknown
 WP02: Yes No Unknown
 WP03: Yes No Unknown
 F003:* Yes No Unknown

4. Is this material TSCA regulated for PCBs? Yes No Unknown Analysis Requested

List concentration if applicable: _____

If yes, what is the source of the PCBs? (see TSCA PCB Hanford Site User Guide, DOE/RL-2001-50)

PCB Liquid Waste PCB Bulk Product Waste PCB Transformer ≥500 ppm Unknown
 PCB Remediation Waste PCB R&D Waste PCB contaminated electrical equipment (capacitor/ballast) <500 ppm
 PCB Spill Material PCB Item Other PCB Waste (list) _____

5. Is this material TRU? Yes No Unknown

6. ACCURACY OF INFORMATION

Based on my inquiry of those individuals immediately responsible for obtaining this information, that to the best of my knowledge, the information entered in this document is true, accurate, and complete.

Print & Sign Steve M Skilling Steve M Skilling Date 5/14/08
for Jim Field per telecon