

Analytical Data Package Prepared For

# CH2M Hill Plateau Remediation

Radiochemical Analysis By

TestAmerica Inc TARL

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Data Package Contains \_\_\_\_\_ Pages

Report Nbr: 62666

SDG Nbr	ORDER Nbr	CLIENT ID NUMBER	LOT Nbr	WORK ORDER	RPT DB ID	BATCH
W06829A	114-036	B2X6K5	J41160427-1	M41TA1AA	9M41TA10	4260042

Comments:

October 6, 2014



## Certificate of Analysis

CH2M Hill Plateau Remediation Company  
P.O. Box 1600  
Mail Stop – R3-60  
Richland, WA 99352

October 6, 2014

Attention: Scot Fitzgerald

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SAF Number	:	I14-036
Date SDG Closed	:	September 15, 2014
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W06829A
Data Deliverable	:	15 Day / Summary

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### CASE NARRATIVE

On September 15, 2014 a request for reanalysis (Order Number: 140915TARL-R8307) of one water sample was received at TestAmerica. Upon receipt, the sample was assigned the following laboratory ID numbers to correspond with the CH2M specific IDs:

<u>CH2M ID#</u>	<u>TARL ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B2X6K5	M41TA (M4H78)	WATER	9/15/14

#### II. Sample Receipt

The sample was received in good condition and no anomalies were noted during check-in.

#### III. 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 analyses were:

**Liquid Scintillation Counting**  
Technetium-99 by TEVA method RL-LSC-014

CH2M Hill Plateau Remediation Company  
October 6, 2014

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**IV. Quality Control**

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

**V. Comments**

**Liquid Scintillation Counting**

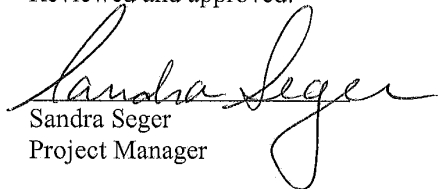
Technetium-99 by TEVA method RL-LSC-014:

The reanalysis results are not within RER acceptance criteria.

The MS had a recovery of 236%. The activity of the sample exceeds five times the expected value of the spike. Except as noted, the LCS, batch blank, samples, sample duplicate (B2X6K5) and sample matrix spike (B2X6K5) 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:

  
Sandra Seger  
Project Manager

**Drinking Water Method Cross References**

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	TestAmerica Richland's SOP No.
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

**Results in this report relate only to the sample(s) analyzed.**

**Uncertainty Estimation**

TestAmerica 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,  $R = \text{constants} * f(x,y,z,...)$ . 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 ( $S/\sqrt{n}$ ), 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**

<b>Action Lev</b>	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.
<b>Batch</b>	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
<b>Bias</b>	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
<b>COC No</b>	Chain of Custody Number assigned by the Client or TestAmerica.
<b>Count Error (#s)</b>	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.
<b>Total Uncert (#s) <i>u<sub>c</sub> - Combined Uncertainty.</i></b>	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, <i>u<sub>c</sub> the combined uncertainty</i> . The uncertainty is absolute and in the same units as the result.
<b>(#s), Coverage Factor</b>	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
<b>CRDL (RL)</b>	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
<b>Lc</b>	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%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$ . 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.
<b>Lot-Sample No</b>	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.
<b>MDC MDA</b>	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%. $MDC = (4.65 * \text{Sqrt}((\text{BkgndCnt}/\text{BkgndCntMin})/\text{SCntMin}) + 2.71/\text{SCntMin}) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$ . For LSC methods the batch blank is used as a measure of the background variability.
<b>Primary Detector</b>	The instrument identifier associated with the analysis of the sample aliquot.
<b>Ratio U-234/U-238</b>	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.
<b>Rst/MDC</b>	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.
<b>Rst/TotUcert</b>	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.
<b>Report DB No</b>	Sample Identifier used by the report system. The number is based upon the first five digits of the <b>Work Order</b> Number.
<b>RER</b>	The equation Replicate Error Ratio = $(S-D)/[\text{sqrt}(\text{TPUs}^2 + \text{TPUd}^2)]$ 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.
<b>SDG</b>	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
<b>Sum Rpt Alpha Spec Rst(s)</b>	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.
<b>Work Order</b>	The LIMS software assign test specific identifier.
<b>Yield</b>	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

10/6/2014 1:06:17 PM

**TestAmerica Inc Report**

Lab Code: TARL

FormNbr: R    FormatType: FEAD    Version: 08    Rpt Nbr: 62666    File Name: h:\Reportdb\ledd\FeadVIII\Rad\W06829A.Edd, h:\Reportdb\ledd\FeadVIII\Rad\62666

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/Solids%*:	Distilled Volume	Sample On Date:	Collection Date:			
9M41TA10	B2X8K5	114-036	MW6-SBB-A1	114-036	W06829A					08/04/2014 09:26			
Batch 4260042	Analyte TC-99	CAS# 14133-76-7	Result 8.14E+04	Unit pCi/L	CntU 2S 1.5E+02	TotU 2S 4.5E+03	MDA 9.58E+00	TrcYield 100.0	Method TC99_ETVDSK_LS	Alq Size 1.263E-01	Unit L	Analy Date/Time 09/25/2014 10:32	Act I

TestAmerica Inc

rptFeadRadSummaryEdd v3.48

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.  
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).  
 B Qual- Analyte was found in the associated laboratory blank above the MDC.

Monday, October 06, 2014

**TestAmerica Inc QC Blank Report**

Lab Code: TARL

FormNbr: R

FormatType: FEAD

VersionNbr: 08

File Name: h:\Reportdb\ledd\FeadVIIIIRad\W06829A.Edd, h:\Reportdb\ledd\FeadVIIIIRad\62666

Lab Sample Id: M42A11AB  
 Client Id: NA  
 Moisture/Solids%\*:  
 Sdg/Rept Nbr: W06829A  
 Matrix: WATER  
 QC Type: BLK  
 Collection Date: 08/04/2014 09:26  
 Sample On Date:  
 Received Date: 09/15/2014

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	F Suffix	R T y p e					
	MW6-SBB-A19981								AD	H					
Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCU/UCL	R T y p e
4260042 BLK	Tc-99 14133-76-7	-3.57E-01	pCi/L	5.4E+00 3.9E+00	U	9.55E+00	100.0		TC99_ETVDSK	1.258E-01	09/25/2014 13:41				D

TestAmerica Inc  
 rpt\FeadRadEdd v3.68

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.  
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).  
 B Qual- Analyte was found in the associated laboratory blank above the MDC.

Monday, October 06, 2014  
 FormNbr: R      FormatType: FEAD      VersionNbr: 08      File Name: h:\Reportdb\edd\FeadVIII\Rad\W06829A.Edd, h:\Reportdb\edd\FeadVIII\Rad\62666  
 Lab Code: TARL

**TestAmerica Inc QC Control Sample Report**

Lab Sample Id: M42A11CS      Sdg/Rept Nbr: W06829A      62666      Collection Date: 08/04/2014 09:26  
 Client Id: NA      Matrix: WATER      WATER      Sample On Date:  
 Moisture/Solids%\*:      QC Type: BS      Received Date: 09/15/2014

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RType
	MW6-SBB-A19981								AE	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
4260042 BS	Tc-99 14133-76-7	4.98E+02	3.3E+01 1.3E+01	9.72E+00	100.0	100.0	5.63E+02 88.6	TC99_ETVDSK	1.244E-01 L	09/25/2014 14:43			70 130	D

TestAmerica Inc  
 rptFeadRadEdd v3.68

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.  
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).  
 B Qual- Analyte was found in the associated laboratory blank above the MDC.



Monday, October 06, 2014  
 FormNbr: R      FormatType: FEAD      VersionNbr: 08      File Name: h:\Reportdb\edd1\FeadVIII\Rad\W06829A.Edd, h:\Reportdb\edd1\FeadVIII\Rad\62666  
 Lab Code: TARL

**TestAmerica Inc QC Duplicate Report**

Lab Sample Id: M41TA1DR      Sdg/Rept Nbr: W06829A      62666      Collection Date: 08/04/2014 09:26  
 Client Id: B2X6K5      Matrix: WATER      WATER      Sample On Date:  
 Moisture/Solids%\*:      QC Type: DUP      Received Date: 09/15/2014

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RType					
I14-036	MW6-SBB-A19981								AC	H					
Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Type
4260042 DUP	Tc-99 14133-76-7	8.40E+04 8.14E+04	pCi/L	4.6E+03 1.6E+02		9.86E+00	100.0		TC99_ETVDSK	1.232E-01	09/25/2014 12:38	3.1	0.8		D
										L		20.0	3		

TestAmerica Inc  
 rpt\FeadRadEdd v3.68

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.  
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).  
 B Qual- Analyte was found in the associated laboratory blank above the MDC.

Monday, October 06, 2014

**TestAmerica Inc Qc Matrix Spike Report**

Lab Code: TARL

FormNbr: R    FormatType: FEAD    VersionNbr: 08    File Name: h:\Reportdb\edd\FeadVIII\RadW06829A\_Edd, h:\Reportdb\edd\FeadVIII\Rad62666

Lab Sample Id: M41TA1CW    Sdg/Rept Nbr: W06829A    62666    Collection Date: 08/04/2014 09:26  
 Client Id: B2X6K5    Matrix: WATER    WATER    Sample On Date:  
 Moisture/Solids%\*:    QC Type: MS    Received Date: 09/15/2014

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RType
I14-036	MW6-SBB-A19981								AB	H

Batch # / Qc Type	Analyt/ CAS#	Result/ Orig Rst	Unit	Tot/Cnt Uncert 2S	Qu- al	MDC	Tracer Yield	Spk Conc/ %Rec	Analy Method	Aliq Size/	Date/Time Analyzed	RPD/ UCL	RER/ UCL	LCS LCL/UCL	R Typ
4260042	Tc-99	8.59E+03	pCi/L	6.6E+03		9.65E+00	100.0	3.64E+03	TC99_ETVDSK	1.252E-01	09/25/2014			60	D
MS	14133-76-7			1.6E+02				235.8		L	11:35			140	

TestAmerica Inc  
 rptfEadRadEdd v3.68

U Qual - Analyzed for, but the result is less than the Mdc or gamma scan did not identify the nuclide.  
 J Qual - No U qualifier has been assigned and the result is below the Reporting Limit (CRDL).  
 B Qual- Analyte was found in the associated laboratory blank above the MDC.

**Lot No., Due Date:** J41160427; 09/30/2014  
**Client, Site:** 384868; A210440HANFORD HANFORD  
**QC Batch No., Method Test:** 4260042; RTC99 Tc-99 by LSC  
**SDG, Matrix:** W06829A; WATER

<b>1.0 COC</b>		
1.1	Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	Yes No N/A ✓
<b>2.0 QC Batch</b>		
2.1	Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	Yes No N/A ✓
2.2	Are the QC appropriate for the analysis included in the batch?	Yes No N/A ✓
2.3	Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	Yes No N/A ✓
2.4	Does the Worksheets include a Tracer Vial label for each sample?	Yes No N/A ✓
<b>3.0 QC &amp; Samples</b>		
3.1	Is the blank results, yield, and MDA within contract limits?	Yes No N/A ✓
3.2	Is the LCS result, yield, and MDA within contract limits?	Yes No N/A ✓
3.3	Are the MS/MSD results, yields, and MDA within contract limits?	Yes No N/A ✓
3.4	Are the duplicate result, yields, and MDAs within contract limits?	Yes No N/A ✓
3.5	Are the sample yields and MDAs within contract limits?	Yes No N/A ✓
<b>4.0 Raw Data</b>		
4.1	Were results calculated in the correct units?	Yes No N/A ✓
4.2	Were analysis volumes entered correctly?	Yes No N/A ✓
4.3	Were Yields entered correctly?	Yes No N/A ✓
4.4	Were spectra reviewed/meet contractual requirements?	Yes No N/A ✓
4.5	Were raw counts reviewed for anomalies?	Yes No N/A ✓
<b>5.0 Other</b>		
5.1	Are all nonconformances included and noted?	Yes No N/A ✓
5.2	Are all required forms filled out?	Yes No N/A ✓
5.3	Was the correct methodology used?	Yes No N/A ✓
5.4	Was transcription checked?	Yes No N/A ✓
5.5	Were all calculations checked at a minimum frequency?	Yes No N/A ✓
5.6	Are worksheet entries complete and correct?	Yes No N/A ✓
6.0	Comments on any No response: NCM 10-28875	

First Level Mia Antonson Date 9/29/14

October 6, 2014

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist  
RADIOCHEMISTRY  
Second Level Review

Batch Number: 4260042

Review Item	Yes (√)	No (√)	NA (√)
<b>A. Sample Analysis</b>			
1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
<b>B. QC Samples</b>			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?	✓	✓	
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
<b>C. Other</b>			
1. Are all Nonconformances (NCM) included and noted?	✓		
2. Was the correct methodology used?	✓		
3. Were units checked?	✓		

Comments on any "No" response:

10-28875 MS recovered high  
MS MDA < CRDL

TC99 15pci/L

Second Level Review: [Signature]

Date: 9/29/14

DR-001, Rev. 01, 10/30/2013

# Clouseau Nonconformance Memo



NCM #: <b>10-28875</b> NCM Initiated By: Lisa Antonson Date Opened: 09/29/2014 Date Closed:	Classification: <b>Anomaly</b> Status: <b>PMREVIEW</b> Production Area: Counting Tests: Tc-99 by LSC Lot #'s (Sample #'s): J4I160427 (1), J4I170000 (42), QC Batches: 4260042,
Nonconformance: QC data exceeded criteria Subcategory: MS/MSD accuracy and/or precision out of control	

*W06829A*

**Problem Description / Root Cause**

<u>Name</u>	<u>Date</u>	<u>Description</u>
Lisa Antonson	09/29/2014	The MS in this batch has a recovery of 236%. The activity of the sample exceeds 5 X's the expected value of the spike, data accepted

**Corrective Action**

<u>Name</u>	<u>Date</u>	<u>Corrective Action</u>
Lisa Antonson	09/29/2014	None

**Client Notification Summary**

<u>Client</u>	<u>Project Manager</u>	<u>Notified</u>	<u>Response</u>	<u>How Notified</u>	<u>Note</u>

**Quality Assurance Verification**

<u>Verified By</u>	<u>Due Date</u>	<u>Status</u>	<u>Notes</u>
			This section not yet completed by QA.

**Approval History**

<u>Date Approved</u>	<u>Approved By</u>	<u>Position</u>

October 6, 2014

RECHECK, RECOUNT, OR REANALYSIS ORDER

09/15/2014

Order Number: 140915TARL-R8307  
TestAmerica Incorporated, Richland  
2800 George Washington Way  
Richland, WA 99354

W06829A  
Rec'd 9/15/14  
Due 9/30/14  
J4I160427  
M41TA

Sample Delivery Group:W06829

Sample(s):

Method Name:TC99\_ETVDSK\_LSC

Sample#: B2X6K5

Sample Date:8/4/2014 9:26:00 AM

SAF #:114-036

Lab Sample ID	RDR Action Start Date	Constituent	Action	TAT (Hardcopy/EDD)
9M4H7810	9/15/2014 3:42:38 PM	Technetium-99	REANALYZE	15 Days / 15 Days
Special Instructions: Data point significantly out of expected trend. SLF 09/15/2014				



Deliver Report Results to:CHPRC

P.O. Box 1600  
Richland, WA 99352  
C/O Mr.Scot Fitzgerald

**Seger, Sandra**

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**From:** Fitzgerald, Scot L [Scot\_L\_Fitzgerald@rl.gov]  
**Sent:** Monday, September 15, 2014 3:43 PM  
**To:** Seger, Sandra  
**Cc:** Ayres, Doris E; Douglas, James G (Jim); Evans, Robert T; Faught, William R; Fitzgerald, Scot L; Todak, David; Trent, Stephen J; Waters-husted, Karen S  
**Subject:** Request for Recheck, or Reanalysis Order / R8307 SAF I14-036  
**Attachments:** RDR8307\_LabOrder.rtf


See Attachment

<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>		C.O.C. # <b>I14-036-026</b>
		Page 1 of 1
<b>CE2MHI Plaque Remediation Company</b> Collector: <b>E.L. Kauer CHPRC</b> SAF No.: <b>I14-036</b> Project Title: <b>2UPL AUGUST 2014</b> Shipped To (Lab): <b>TestAmerica Incorporated, Richland</b> Protocol: <b>CERCLA</b>		Telephone No.: <b>509-376-4650</b> Purchase Order/Charge Code: <b>300071ES20</b> Ice Chest No.: <b>N/A</b> Bill of Lading/Air Bill No.: <b>N/A</b> Offsite Property No.: <b>N/A</b>
Contact/Requester: <b>Karen Waters-Husted</b> Sampling Origin: <b>Hanford Site</b> Logbook No.: <b>HNF-N-506 65/85</b> Method of Shipment: <b>GOVERNMENT VEHICLE</b> Priority: <b>30 Days PRIORITY</b>		Hold Time: <input type="checkbox"/> No Total Acitivity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
SPECIAL INSTRUCTIONS: <b>Hold Time</b> POSSIBLE SAMPLE HAZARDS/REMARKS: <b>PERCELA</b> ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 438.1		
Sample No.    Filter    *    Date    Time    No/Type Container    Sample Analysis    Holding Time    Preservative	B2X6K5    N    W    8-4-14    0920    2x4-L G/P    I129LL_SEP_LEPS_GS_LL: COMMON    6 Months    None	
B2X6K5    N    W    ↓    ↓    1x500-ML G/P    KPA_UTOT: COMMON    6 Months    HNO3 to pH <2		
B2X6K5    N    W    ↓    ↓    1x500-ML P    TC99_ETVDSK_LSC: COMMON    6 Months    HCl to pH <2		

*J440101029*    *SYS 9-11-14*    *J44160427*

*W06829A*    *W06829A*    *M H I T A*

*8-4-14*    *8-4-14*    *8-4-14*



J41160427

Relinquished By: <b>E.L. Kauer CHPRC</b> Relinquished By: <b>CHPRC</b> Relinquished By:	Date/Time: <b>8-4-14</b> Date/Time: <b>1100</b> Date/Time: <b>1105</b> Date/Time: <b>AUG 14 2014</b>	Sign: <i>[Signature]</i> Sign: <i>[Signature]</i> Sign: <i>[Signature]</i>	Date/Time: <b>1100</b> Date/Time: <b>1145</b> Date/Time: <b>AUG 04 2014</b>	Matrix * S = Soil    DS = Drum Solids SE = Sediment    DL = Drum Liquids SO = Solid    T = Tissue SL = Sludge    WI = Waste W = Water    L = Liquid O = Oil    V = Vegetation A = Air    X = Other
Received By: <b>F.W. Hall CHPRC</b> Received By: <b>J. Beck</b> Received By:	Date/Time: <b>8-4-14</b> Date/Time: <b>AUG 04 2014</b>	Sign: <i>[Signature]</i> Sign: <i>[Signature]</i>	Date/Time: <b>1100</b> Date/Time: <b>1145</b> Date/Time: <b>AUG 04 2014</b>	
Relinquished By:	Date/Time:	Sign:	Date/Time:	
Relinquished By:	Date/Time:	Sign:	Date/Time:	
Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By:	Date/Time:	Date/Time:	



October 6, 2014

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 8-4-14 / 1435 Container GM Screen Result: (Airlock) 40 cpm Initials [ ]  
Sample GM Screen Result (Sample Receiving) 40 cpm Initials [ ]

Client: P6W SDG #: 6502829 SAF #: I14-036 NA [ ]

Lot Number: J4H040429

Chain of Custody # I14-036-025; 026; 027; 028; 029

Shipping Container ID or Air Bill Number : Hand deliv NA 689

Samples received inside shipping container/cooler/box Yes [ ] Continue with 1 through 4. Initial appropriate response.  
No [ ] Go to 5, add comment to #16.

- 1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [ ]
- 2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [ ]
- 3. Cooler temperature: 5.4 °C Ice NA [ ]
- 4. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [ ]

- Item 5 through 16 for samples. Initial appropriate response.
- 5. Chain of Custody record present? Yes [ ] No [ ]
- 6. Number of samples received (Each sample may contain multiple bottles): 5
- 7. Containers received: 6 x 500 mL; 10 x 4L

- 8. Sample holding times exceeded? NA [ ] Yes [ ] No [ ]
- 9. Samples have: \_\_\_\_\_ tape \_\_\_\_\_ hazard labels [ ] custody seals [ ] appropriate sample labels
- 10. Matrix: \_\_\_\_\_ A (FLT, Wipe, Solid, Soil) [ ] I (Water) \_\_\_\_\_ S (Air, Niosh 7400) \_\_\_\_\_ T (Biological, Ni-63)

11. Samples: [ ] are in good condition \_\_\_\_\_ are leaking \_\_\_\_\_ are broken  
\_\_\_\_\_ have air bubbles (Only for samples requiring no head space) Other \_\_\_\_\_

12. Sample pH appropriate for analysis requested Yes [ ] No [ ] NA [ ]  
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO<sub>3</sub> added and pH after addition on table)

13. Were any anomalies identified in sample receipt? Yes [ ] No [ ]

14. Description of anomalies (include sample numbers): NA [ ]

15. Sample Location, Sample Collector Listed on COC? \* Yes [ ] No [ ]  
\*For documentation only. No corrective action needed.

16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:  
Signature: [ ] Date: 8-4-14

Client Notification needed? Yes [ ] No [ ] Date: \_\_\_\_\_  
By: \_\_\_\_\_  
Person contacted: \_\_\_\_\_

[ ] No action necessary; process as is  
Project Manager: Whitney M. Pitari Date: 8.6.14

9/24/2014 9:09:15 AM

Sample Preparation/Analysis

Balance Id:1120482733,,

384868, CH2M Hill Plateau Remediation Company  
Pacific Northwest National Lab

FP Tc-99 Prp/Sep LSC014  
S5 Technetium-99 by Liquid Scint  
5I CLIENT: HANFORD

Pipet #:

AnalytDueDate: 09/30/2014

Sep1 DT/Tm Tech:

Batch: 4260042 WATER pCi/L  
SEQ Batch, Test: None All Tests: 4260042 FPS5,

PM, Quote: SS , 57671

Sep2 DT/Tm Tech:

Prep Tech: Bourned

Work Ord. Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On   Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 M41TA-1-AA	126.30g.in	126.30g	126.30g.in	126.30g									
J41160427-1-SAMP 08/04/2014 09:26													
2 M41TA-1-AC-S	125.20g.in	125.20g	125.20g.in	125.20g									
J41160427-1-MS 08/04/2014 09:26													
3 M41TA-1-AD-X	123.20g.in	123.20g	123.20g.in	123.20g									
J41160427-1-DUP 08/04/2014 09:26													
4 M42A1-1-AA-B	125.80g.in	125.80g	125.80g.in	125.80g									
J41170000-42-BLK 09/24/2014 09:06 pd													
5 M42A1-1-AC-C	124.40g.in	124.40g	124.40g.in	124.40g									
J41170000-42-LCS 09/24/2014 09:07 pd													
6 M42A1-1-AD-BN	125.80g.in	125.80g	125.80g.in	125.80g									
J41170000-42-IBLK 09/17/2014 12:12 pd													

60

<b>Sample Preparation/Analysis</b>		Balance Id:,,	
FP Tc-99 Prp/Sep LSC014 S5 Technetium-99 by Liquid Scint 51 CLIENT: HANFORD		Pipet #:	
Analyze Date: 09/30/2014 Batch: 4260042 SEQ Batch, Test: None		Sep1 DT/Tm Tech: Sep2 DT/Tm Tech: Prep Tech:	
pCi/L Total Amt/Unit Total Acidified/Unit Initial Aliquot Amt/Unit Adj Aliq Amt (Un-Acidified) QC Tracer Prep Date Tracer Yield Dish Size Ppt or Geometry Count Time Min Detector Id Count On   Off (24hr) Circle CR Analyst, Init/Date Comments:			
<b>Comments:</b>			
All Clients for Batch: 384868, CH2M Hill Plateau Remediation Company Pacific Northwest National Lab, SS, 57671			
M41TALAA-SAMP Constituent List: TC-99 RDL:15 pCi/L LCL:70 UCL:130 RPD:20 M41TALAC-MS Constituent List: M42A11AA-BLK: TC-99 RDL:15 pCi/L LCL: UCL: RPD: M42A11AC-LCS: TC-99 RDL:15 pCi/L LCL:70 UCL:130 RPD:20 M42A11AD-IBLK: TC-99 RDL:15 pCi/L LCL: UCL: RPD: M41TALAA-SAMP Calc Info: Uncert Level (#s): 2 Decay to Sadt: Y Blk Subt.: N Sci.Not.: Y ODRs: B M41TALAC-MS Calc Info: Uncert Level (#s): 2 Decay to Sadt: Y Blk Subt.: N Sci.Not.: Y ODRs: B M42A11AA-BLK: Uncert Level (#s): 2 Decay to Sadt: Y Blk Subt.: N Sci.Not.: Y ODRs: B M42A11AC-LCS: Uncert Level (#s): 2 Decay to Sadt: Y Blk Subt.: N Sci.Not.: Y ODRs: B M42A11AD-IBLK: Uncert Level (#s): 2 Decay to Sadt: Y Blk Subt.: N Sci.Not.: Y ODRs: B			
TestAmerica Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 2 Richland Wa. pd - Prep Dt, dc - Date Chg, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailled Added		ISV - Insufficient Volume for Analysis WO Cnt: 6 Prep_SamplePrep v4.8.69	

October 6, 2014

9/29/2014 10:17:50 AM

# ICOC Fraction Transfer/Status Report

ByDate: 9/29/2013, 10/4/2014, Batch: '4260042', User: \*ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	SOPs,Reagents,Comments	
4260042					
AC	Rev1C	BourneD	9/24/2014 8:55:00		
SC		campbellsc	IsBatched	9/17/2014 12:14:53 PM	ICOC_RADCALC v4.9.0
SC		BourneD	InPrep	9/24/2014 8:55:00 AM	RL-PRP-004 REVISION 2
SC		CarneyA	InSep2	9/24/2014 10:21:46 AM	RL-LSC-014 REVISION 3
SC		CarneyA	Sep2C	9/24/2014 12:18:05 PM	RL-LSC-014 REVISION 3
SC		BullJ	InCnt1	9/24/2014 12:33:56 PM	RL-CI-005 REVISION 3
SC		BullJ	CalcC	9/26/2014 8:38:34 AM	RL-CI-005 REVISION 3
SC		AntonsonL	Rev1C	9/29/2014 10:17:43 AM	RL-DR-001 Rev 5
AC		CarneyA	9/24/2014 10:21:46		
AC		CarneyA	9/24/2014 12:18:05		
AC		BullJ	9/24/2014 12:33:56		
AC		BullJ	9/26/2014 8:38:34		
AC		AntonsonL	9/29/2014 10:17:43		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland  
Richland Wa.

Page 1

Grp Rec Cnt: 6  
ICOCFractions