Analytical Data Package Prepared For

CH2M Hill Plateau Remediation

Radiochemical Analysis By

TestAmerica TARL

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

Data Package Contains _____ Pages

Report Nbr: 56076

SDG Nbr	ORDER Nbr	CLIENT ID NUMBER	LOT Nbr	WORK ORDER	RPT DB ID	BATCH
W06566	F11-002	B2PD87	J3E160432-1	M0V123AA	9M0V1230	3182013
		B2PD89	J3E160432-2	M0V133AA	9M0V1330	3182013
		B2PD91	J3E160432-3	M0V143AA	9M0V1430	3182013
		B2PD93	J3E160432-4	M0V153AA	9M0V1530	3182013

Comments:

JULY 10, 2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

TestAmerica Laboratories, Inc.

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

July 10, 2013

Attention: Scot Fitzgerald

SAF Number	:	F11-002
Date SDG Closed	:	May 14, 2013
Number of Samples	:	Four (4)
Sample Type	:	Water
SDG Number	:	W06566
Data Deliverable	:	30 Day / 30 Day Summary

CASE NARRATIVE

I. Introduction

On May 14, 2013, four water samples were received at TestAmerica (TARL). Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the CH2M specific ID:

CH2M ID#	TARL ID#	MATRIX	DATE OF RECEIPT
B2PD87	M0V12	WATER	5/14/13
B2PD89	M0V13	WATER	5/14/13
B2PD91	M0V14	WATER	5/14/13
B2PD93	M0V15	WATER	5/14/13

II. Sample Receipt

The samples were 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
Carbon-14 by method RL-LSC-008

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

Carbon-14 by method RL-LSC-008:

The original batch failed due to a low LCS recovery. The entire batch was re-analyzed. The negative result for sample B2PD91 is greater than three times the TPU. Except as noted, the LCS, batch blank, samples and sample duplicate (B2PD87) 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 = 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/? 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

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 TestAmerica.
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 TestAmerica "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 TestAmerica 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.

JULY 10, 2013

7/10/2013 9:43:55 AM

TestAmerica Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **Version:** 05 **Rpt Nbr:** 56076 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06566.Edd, h:\Reportdb\edd\FeadIV\Rad\56076.Ed

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9M0V1230	B2PD87	F11-002	MW6-SBB-A1	F11-002	W06566					05/14/2013 10:01

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
3182013	C-14	14762-75-5	2.38E+01	pCi/L	7.0E+00	9.1E+00		1.46E+01	100.0	C14_LSC	7.50E-02	L	07/03/2013 21:48	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9M0V1330	B2PD89	F11-002	MW6-SBB-A1	F11-002	W06566					05/14/2013 07:00

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
3182013	C-14	14762-75-5	1.96E+01	pCi/L	6.8E+00	8.8E+00		1.45E+01	100.0	C14_LSC	7.58E-02	L	07/03/2013 23:50	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9M0V1430	B2PD91	F11-002	MW6-SBB-A1	F11-002	W06566					05/14/2013 10:12

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
3182013	C-14	14762-75-5	-1.51E+01	pCi/L	5.5E+00	7.6E+00	U	1.46E+01	100.0	C14_LSC	7.50E-02	L	07/04/2013 00:52	I

Lab Sample Id:	Client Id:	Test User	Contract Nbr	SAF Nbr	Sdg Nbr:	QC Type:	Moisture/ Solids%*:	Distilled Volume	Sample On Date:	Collection Date:
9M0V1530	B2PD93	F11-002	MW6-SBB-A1	F11-002	W06566					05/14/2013 10:12

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
3182013	C-14	14762-75-5	-7.83E+00	pCi/L	5.8E+00	7.8E+00	U	1.47E+01	100.0	C14_LSC	7.50E-02	L	07/04/2013 01:53	I

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.

Wednesday, July 10, 2013

TestAmerica QC Blank Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06566.Edd, h:\Reportdb\edd\FeadIV\Rad\56076.Ed

Lab Sample Id:	M08WM1AB	**Sdg/Rept Nbr:**	W06566 56076	**Collection Date:**	05/14/2013 10:01
Client Id:	NA	**Matrix:**	WATER WATER	**Sample On Date:**	
Moisture/Solids%*:		**QC Type:**	BLK	**Received Date:**	05/14/2013

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AE	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
3182013	C-14	-3.46E+00	pCi/L	7.9E+00	U	1.46E+01	100.0		C14_LSC	7.53E-02	07/04/2013				D
BLK	14762-75-5			6.0E+00						L	02:54				

JULY 10, 2013

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.

Wednesday, July 10, 2013

TestAmerica QC Control Sample Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06566.Edd, h:\Reportdb\edd\FeadIV\Rad\56076.Ed

Lab Sample Id:	M08WM1CS	**Sdg/Rept Nbr:**	W06566 56076	**Collection Date:**	05/14/2013 10:01
Client Id:	NA	**Matrix:**	WATER WATER	**Sample On Date:**	
Moisture/Solids%*:		**QC Type:**	BS	**Received Date:**	05/14/2013

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
	MW6-SBB-A19981								AF	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
3182013	C-14	4.77E+02	pCi/L	4.2E+01		1.46E+01	100.0	4.78E+02	C14_LSC	7.50E-02	07/04/2013			70	D
BS	14762-75-5			1.6E+01				99.8		L	03:55			130	

JULY 10, 2013

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.

Wednesday, July 10, 2013

TestAmerica QC Duplicate Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06566.Edd, h:\Reportdb\edd\FeadIV\Rad\56076.Ed

Lab Sample Id:	M0V123CR	**Sdg/Rept Nbr:**	W06566 56076	**Collection Date:**	05/14/2013 10:01
Client Id:	B2PD87	**Matrix:**	WATER WATER	**Sample On Date:**	
Moisture/Solids%*:		**QC Type:**	DUP	**Received Date:**	05/14/2013

SAF Nbr	Contract Nbr	Test User	Case Nbr	SAS Nbr	Suffix	Decant	Distilled Volume	File Id	FSuffix	RTyp
F11-002	MW6-SBB-A19981								AG	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
3182013	C-14	8.36E+00	pCi/L	8.4E+00	U	1.47E+01	100.0		C14_LSC	7.52E-02	07/03/2013	96.0	2.6		D
DUP	14762-75-5	2.38E+01		6.4E+00						L	22:49	20.0	3		

JULY 10, 2013

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.

JULY 10, 2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist
RADIOCHEMISTRY, First Level Review

7/9/2013 9:23:33 AM

Lot No., Due Date: J3E160432; 06/14/2013
Client, Site: 108302; FLH HANFORD
QC Batch No., Method Test: 3182013; RC14 C-14 by LSC
SDG, Matrix: W06566; WATER

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

6.0 Comments on any No response:
NCM 10-23824

Thomas D McE Jr

First Level _____ **Date** 7/9/13

TestAmerica Richland
QAS_RADCALCv4.8.44

Page 1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

Batch Number: 3182013

Review Item	Yes (√)	No (√)	NA (√)
A. Sample Analysis 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. QC Samples 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?	✓		
C. Other 1. Are all Non-conformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: See NCM 10-23824

Second Level Review: Sandra Segee Date: 7-10-13

LS-038B, Rev. 10, 9/07

Clouseau Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: **10-23824**
NCM Initiated By: Tom Mcginnis
Date Opened: 07/09/2013
Date Closed:

Classification: **Deficiency**
Status: **PMREVIEW**
Production Area: Environmental - Sep
Tests: C-14 by LSC
Lot #'s (Sample #'s): J3E160432 (1,2,3,4), J3G010000 (13),
QC Batches: 3182013,

Nonconformance: Batch Result Out of Limits
Subcategory: LCS result outside acceptance limits

Problem Description / Root Cause

Name	Date	Description
Tom Mcginnis	07/09/2013	Batch 3182013 is the reanalysis of sample batch 3136051 due to low LCS recovery. The negative result for sample J3E160432-3 is greater than 3 times the TPU. All other batch results meet acceptance criteria.

Corrective Action

Name	Date	Corrective Action
Tom Mcginnis	07/09/2013	The PM was notified of the batch deficiencies.

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note	Response	Response Note

Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

Approval History

Date Approved	Approved By	Position

Date Printed: 7/9/2013

Page 1 of 1

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-002-052	PAGE 1 OF 1
COLLECTOR: Kauer McIntyre	COMPANY CONTACT: EVANS, RT	TELEPHONE NO.: 373-7924	PROJECT COORDINATOR: EVANS, RT	PRICE CODE: 7H	DATA TURNAROUND
SAMPLING LOCATION: Influent Valve, KP-16	PROJECT DESIGNATION: 100-KR-4 Pump and Treat Influent & Effluent Tanks - Water		SAF NO.: F11-002	AIR QUALITY: ☐	30 Days / 30 Days
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-481-5/28	ACTUAL SAMPLE DEPTH: N/A	COA: 302891ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR		

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.

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	2
VOLUME	1L
SAMPLE ANALYSIS	Carbon-14 (Carbon-14);

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2PD87	WATER	5-14-13	1001	✓

J3E160432
W065566
Due 6/14/13
MON12

J3E160432

CHAIN OF POSSESSION	DATE/TIME	SIGN/ PRINT NAMES: RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM: Ed Kauer	5-14-13 1100	SSUH	5-14-13 1100
RELINQUISHED BY/REMOVED FROM: SSUH	5-14-13 1200	RECEIVED BY/STORED IN: Ed Kauer	5-14-13 1200
RELINQUISHED BY/REMOVED FROM: Ed Kauer	5-14-13 1235	RECEIVED BY/STORED IN: J. Jack TALK	5-14-13 1235
RELINQUISHED BY/REMOVED FROM		RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM		RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM		RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM		RECEIVED BY/STORED IN	

SPECIAL INSTRUCTIONS
** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-13-056

TRVL-13-056

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

PRINTED ON 5/2/2013

A-6003-618 (REV 2)

JULY 10, 2013

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-002-054	PAGE 1 OF 1
COLLECTOR: Kaver McIntyre	COMPANY CONTACT: EVANS, RT	TELEPHONE NO.: 373-7924	PROJECT COORDINATOR: EVANS, RT	PRICE CODE: 7H	DATA TURNAROUND
SAMPLING LOCATION: Influent Valve, KP-16 -- FTB	PROJECT DESIGNATION: 100-KR-4 Pump and Treat Influent & Effluent Tanks - Water		SAF NO.: F11-002	AIR QUALITY: ☐	30 Days / 30 Days
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N-491-9/78	ACTUAL SAMPLE DEPTH: N/A	COA: 302891ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR		

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	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	2
VOLUME	1L
SAMPLE ANALYSIS	Carbon-14 {Carbon-14};

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2PD89	WATER	5-14-13	0700	✓

J3E160432
W06566
Due 6/14/13
MOV 13

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: Ed Kaver [signature] 5-14-13	DATE/TIME: 1100	RECEIVED BY/STORED IN: SSU #1 5-14-13	DATE/TIME: 1100
RELINQUISHED BY/REMOVED FROM: SSU #1 5-14-13	DATE/TIME: 1200	RECEIVED BY/STORED IN: Ed Kaver [signature] 5-14-13	DATE/TIME: 1200
RELINQUISHED BY/REMOVED FROM: Ed Kaver [signature] 5-14-13	DATE/TIME: 1235	RECEIVED BY/STORED IN: J. Bock [signature] TALK 5-14-13	DATE/TIME: 1235
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
** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-13-056

TRVL-13-056

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

PRINTED ON 5/2/2013

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-002-056	PAGE 1 OF 1
COLLECTOR: Kaur McIntyre	COMPANY CONTACT: EVANS, RT	TELEPHONE NO.: 373-7924	PROJECT COORDINATOR: EVANS, RT	PRICE CODE: 7H	DATA TURNAROUND
SAMPLING LOCATION: Effluent Valve, KI-31	PROJECT DESIGNATION: 100-KR-4 Pump and Treat Influent & Effluent Tanks - Water		SAF NO.: F11-002	AIR QUALITY ☐	30 Days / 30 Days
ICE CHEST NO.	FIELD LOGBOOK NO.: HNF-N- 491-5/78	ACTUAL SAMPLE DEPTH: N/A	COA: 302891ES10	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO: TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.: SEE PTR		BILL OF LADING/AIR BILL NO.: SEE PTR		

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	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	2
VOLUME	1L
SAMPLE ANALYSIS	Carbon-14 {Carbon-14};

SPECIAL HANDLING AND/OR STORAGE

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2PD91	WATER	5-14-13	1012	✓

J3E160432
W06566
Due 6/14/13
MOV14

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: Ed Kaur Ed Kaur 5-14-13	DATE/TIME: 1100	RECEIVED BY/STORED IN: SSU #1 5-14-13	DATE/TIME: 1100
RELINQUISHED BY/REMOVED FROM: SSU #1 5-14-13	DATE/TIME: 1200	RECEIVED BY/STORED IN: Ed Kaur Ed Kaur 5-14-13	DATE/TIME: 1200
RELINQUISHED BY/REMOVED FROM: Ed Kaur Ed Kaur 5-14-13	DATE/TIME: 1235	RECEIVED BY/STORED IN: J. Bock J Bock THLR 5-14-13	DATE/TIME: 1235
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
** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-13-056

TRVL-13-056

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

PRINTED ON 5/2/2013

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F11-002-058	PAGE 1 OF 1
COLLECTOR Kaver McIntyre	COMPANY CONTACT EVANS, RT	TELEPHONE NO. 373-7924	PROJECT COORDINATOR EVANS, RT	PRICE CODE 7H AIR QUALITY ☐	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION Effluent Valve, KI-31 -- DUP	PROJECT DESIGNATION 100-KR-4 Pump and Treat Influent & Effluent Tanks - Water		SAF NO. F11-002		
ICE CHEST NO.	FIELD LOGBOOK NO. HNF-N-481-5/78	ACTUAL SAMPLE DEPTH N/A	COA 302891ES10	METHOD OF SHIPMENT GOVERNMENT VEHICLE	ORIGINAL
SHIPPED TO TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO. SEE PTR		BILL OF LADING/AIR BILL NO. SEE PTR		

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.

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool~4C
HOLDING TIME	6 Months
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	2
VOLUME	1L
SAMPLE ANALYSIS	Carbon-14 {Carbon-14};

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B2PD93	WATER	5-14-13	1012	✓

J3E160432
WOLoSlelp
Due 6/14/13
MDN15

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM — DATE/TIME	RECEIVED BY/STORED IN — DATE/TIME	
Kaver McIntyre 5-14-13 1100	SSU #1 5-14-13 1100	
SSU #1 5-14-13 1200	Kaver McIntyre 5-14-13 1200	
Kaver McIntyre 5-14-13 1235	J. Bock / Bock TALK 5-14-13 1235	
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
** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-13-056

TRVL-13-056

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

PRINTED ON 5/2/2013

A-6003-618 (REV 2)

JULY 10, 2013

JULY 10, 2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 5-14-13 / 1235 Container GM Screen Result: (Airlock) .6 Initials [ ]
Sample GM Screen Result (Sample Receiving) .4 Initials [ ]

Client: PGW (FLH) SDG #: W0165606 SAF #: F11-002 NA [ ]

Lot Number: J3E160432

Chain of Custody # F11-002-052; 054; 056; 058

Shipping Container ID or Air Bill Number : hand delivered NA [SKS]

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: ON ICE °C ~~NA [ ]~~ SKS 5-16-13
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): 4
7. Containers received: 8 x LP
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) ____1 (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 17, then document sample ID, initial pH, amount of HNO_3 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: Susie Beck Date: 5-14-13

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

SKS No action necessary, process as is

Project Manager Sandra Logan Date 5-16-13

LS-023 Rev. 16, 02/13

Page 1 of 1

*** RE-ANALYSIS REQUEST ***

DUE DATE 6/14/13 ASAP

CUSTOMER CH2MHill

ANALYSIS C14

MATRIX WATER

LOT NUMBER

SAMPLE DELIVERY GROUP

OLD BATCH NUMBER 3136051

NEW BATCH NUMBER 3182013

LAB SAMPLE ID	CLIENT ID	REASON FOR REQUEST & ANALYSIS COMMENTS
1)		
2)		
3)		
4) All		Low LCS
5)		
6)		Recovery
7)		
8)		
9)		
10)		
11)		
12)		
13)		
14)		
15)		
16)		
17)		
18)		
19)		
20)		
LAB QC ID		Assigned with new batch.

RC-048 Rev 9, 9/10

7/3/2013 10:37:30 AM

Sample Preparation/Analysis

108302, CH2M Hill Plateau Remediation DOE RL
, Waste Management Federal Servi

5S C-14 Prp/Sep LSC008
S3 Carbon-14 by Liquid Scint
5I CLIENT: HANFORD

AnalyDueDate: 06/14/2013

Batch: 3182013 WATER pCi/L PM, Quote: SS , 29754

SEQ Batch, Test: None All Tests: 3136051 5SS3, 3179024 5SS3, 3182013 5SS3,

Balance Id:

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: ,AshworthA

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 M0V12-3-AA			75.00g,in 75.00g										
J3E160432-1-SAMP													
05/14/2013 10:01			AmtRec: 2XLP		#Containers: 2					Scr:	Alpha: -3.29E-05 uCi/Sa		Beta: 1.33E-04 uCi/Sa
2 M0V12-3-AC-X			75.20g,in 75.20g										
J3E160432-1-DUP													
05/14/2013 10:01			AmtRec: 2XLP		#Containers: 2					Scr:	Alpha: -3.29E-05 uCi/Sa		Beta: 1.33E-04 uCi/Sa
3 M0V13-3-AA			75.80g,in 75.80g										
J3E160432-2-SAMP													
05/14/2013 07:00			AmtRec: 2XLP		#Containers: 2					Scr:	Alpha: 2.50E-04 uCi/Sa		Beta: -6.67E-05 uCi/Sa
4 M0V14-3-AA			75.00g,in 75.00g										
J3E160432-3-SAMP													
05/14/2013 10:12			AmtRec: 2XLP		#Containers: 2					Scr:	Alpha: 3.23E-04 uCi/Sa		Beta: -4.42E-05 uCi/Sa
5 M0V15-3-AA			75.00g,in 75.00g										
J3E160432-4-SAMP													
05/14/2013 10:12			AmtRec: 2XLP		#Containers: 2					Scr:	Alpha: -4.37E-04 uCi/Sa		Beta: 5.55E-04 uCi/Sa
6 M08WM-1-AA-B			75.30g,in 75.30g										
J3G010000-13-BLK													
07/01/2013 11:53 pd			AmtRec:		#Containers: 1					Scr:	Alpha:		Beta:
7 M08WM-1-AC-C			75.00g,in 75.00g		CSB1270								
J3G010000-13-LCS					7/01/13,pd 11/08/12,r								
07/01/2013 11:53 pd			AmtRec:		#Containers: 1					Scr:	Alpha:		Beta:

23824

JULY 10, 2013

7/3/2013 10:37:33 AM

Sample Preparation/Analysis

5S C-14 Prp/Sep LSC008
S3 Carbon-14 by Liquid Scint
5I CLIENT: HANFORD

Balance Id:

Pipet #: _____

AnalyDueDate: 06/14/2013

Sep1 DT/Tm Tech:

Batch: 3182013 **pCi/L**
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech:

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:
8 M08WM-1-AD-BI													
J3G010000-13-IBLK													
07/01/2013 11:53 pd			AmtRec:		#Containers: 1					Scr:	Alpha:		Beta:

JULY 10, 2013

7/3/2013 10:37:34 AM

Sample Preparation/Analysis

5S C-14 Prp/Sep LSC008
S3 Carbon-14 by Liquid Scint
5I CLIENT: HANFORD

Balance Id:

Pipet #:

AnalyDueDate: 06/14/2013

Sep1 DT/Tm Tech:

Batch: 3182013 pCi/L
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech:

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:

Comments:

All Clients for Batch:
108302, CH2M Hill Plateau Remediation DOE RL Waste Management Federal Servi, SS , 29754

M0V123AA-SAMP Constituent List:

C-14	RDL:200	pCi/L	LCL:70	UCL:130	RPD:20
M08WM1AA-BLK:					
C-14	RDL:200	pCi/L	LCL:	UCL:	RPD:
M08WM1AC-LCS:					
C-14	RDL:200	pCi/L	LCL:70	UCL:130	RPD:20
M08WM1AD-IBLK:					
C-14	RDL:200	pCi/L	LCL:	UCL:	RPD:

M0V123AA-SAMP Calc Info:

Uncert Level (#s).: 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
M08WM1AA-BLK:				
Uncert Level (#s).: 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
M08WM1AC-LCS:				
Uncert Level (#s).: 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B
M08WM1AD-IBLK:				
Uncert Level (#s).: 2	Decay to SaDt: Y	Blk Subt.: N	Sci.Not.: Y	ODRs: B

JULY 10, 2013

JULY 10, 2013

7/9/2013 9:15:34 AM

ICOC Fraction Transfer/Status Report

ByDate: 7/9/2012, 7/14/2013, Batch: '3182013', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3182013						
AC		**Rev1C**	**NortonJ**	7/3/2013 2:51:41 PM		
SC			WindischT	IsBatched	7/2/2013 9:07:09 AM	ICOC_RADCALC v4.8.49
SC			NortonJ	InCnt1	7/3/2013 2:51:41 PM	RL-CI-005 REVISION 3
SC			DawkinsO	CalcC	7/9/2013 1:56:17 AM	RL-CI-005 REVISION 3
SC			mcginnist	Rev1C	7/9/2013 9:15:26 AM	RL-DR-001 Rev 2
AC			**DawkinsO**	7/9/2013 1:56:17 AM		
AC			**mcginnist**	7/9/2013 9:15:26 AM		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Page 1

Grp Rec Cnt: 3

ICOCFractions v4.8.44