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: 55784

SDG Nbr	ORDER Nbr	CLIENT ID NUMBER	LOT Nbr	WORK ORDER	RPT DB ID	BATCH
W06564	P13-004	B2P565	J3E150424-1	M0VKN1AA	9M0VKN10	3136050

Comments:

JUNE 14, 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

June 14, 2013

Attention: Scot Fitzgerald

SAF Number	:	P13-004
Date SDG Closed	:	May 14, 2013
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W06564
Data Deliverable	:	30-Day / Summary

CASE NARRATIVE

I. Introduction

One May 14, 2013, one water sample was received at TestAmerica (TARL). Upon receipt, the sample was assigned the following laboratory ID numbers to correspond with the CH2M specific IDs:

CH2M ID#	TARL ID#	DATE OF RECEIPT	MATRIX
B2P565	M0VKN	5/14/13	WATER

II. Sample Receipt

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

During the bi-weekly phone call on January 9, 2013 TARL was notified that all groundwater samples received after January 1, 2013 will have a 30 day turnaround time regardless if the chain of custodies have a turn around time that is greater than 30 days.

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
Mid Level Tritium by method RL-LSC-005

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 Countiug
Mid Level Tritium by method RL-LSC-005:
The blank result is slightly above the CRDL. For more details refer to the SIR (CHPRC Tracking Number: SDR13-183) that is included in this report. Except as noted, the LCS, batch blank, samples and sample duplicate (B2P565) 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

SAMPLE ISSUE RESOLUTION

SIR NUM	SDR13-183
REV NUM	0
DATE INITIATED	6/13/2013

SAMPLE EVENT INFORMATION

SAF NUM(S)	P13-004
OPERABLE UNIT(S)	NONE
PROJECT(S)	TEDF/SALDS
SAMPLE EVENT TITLE(S)	TEDF/SALDS
LABORATORY	TestAmerica Incorporated, Richland

SAMPLING INFORMATION

NUMBER OF SAMPLES	1
SAMPLE NUMBERS	B2P565
SAMPLE MATRIX	WATER
COLLECTION DATE	5/13/2013 - 5/13/2013
SDG NUM	W06564

ISSUE BACKGROUND

CLASS	Laboratory Issue
TYPE	Quality Control Failure
DESCRIPTION	The mid level tritium method blank is slightly above the CRDL. The CRDL is 30 pCi/L and the method blank result is 32.80 pCi/L. The result for B2P565 and its duplicate is well below the CRDL (-4.69 and 3.46 pCi/L respectively). The LCS has a 90% recovery.

DISPOSITION

DESCRIPTION	PROPOSED DISPOSITION: TARL would like to report the results since the sample result is well below the CRDL and mid level tritium's have a 1500 minute count time per sample. Initiate SIR and note in case narrative.
JUSTIFICATION	ACCEPTED DISPOSITION: Accept the proposed resolution.

SUBMITTED BY: Sandra Seger/TARL Date: 6/13/13
ACCEPTED BY: Karen Waters-Husted/CHPRC and Mark Bowman Date: 6/13/13

A-6003-640 (03/30)

PAGE 1 of 1

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.

6/14/2013 10:28:06 AM

TestAmerica Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **Version:** 05 **Rpt Nbr:** 55784 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06564.Edd, h:\Reportdb\edd\FeadIV\Rad\55784.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:
9M0VKN10	B2P565		MW6-SBB-A1	P13-004	W06564					05/13/2013 13:17

Batch	Analyte	CAS#	Result	Unit	CntU 2S	TotU 2S	Qual	MDA	TrcYield	Method	Alq Size	Unit	Analy Date/Time	Act
3136050	H-3	10028-17-8	-4.69E+00	pCi/L	1.1E+01	2.1E+01	U	2.28E+01	100.0	906.0ML_H3_LSC	1.0026E-02	L	06/07/2013 09:18	I

JUNE 14, 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.

I

Friday, June 14, 2013

TestAmerica QC Blank Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06564.Edd, h:\Reportdb\edd\FeadIV\Rad\55784.Ed

Lab Sample Id:	M0V371AB	**Sdg/Rept Nbr:**	W06564 55784	**Collection Date:**	05/13/2013 13:17
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								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
3136050	H-3	3.28E+01	pCi/L	2.4E+01		2.65E+01	100.0		906.0ML_H3_L	1.0005E-02	06/07/2013				D
BLK	10028-17-8			1.3E+01						L	09:18				

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.

I

JUNE 14, 2013

Friday, June 14, 2013

TestAmerica QC Control Sample Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06564.Edd, h:\Reportdb\edd\FeadIV\Rad\55784.Ed

Lab Sample Id:	M0V371CS	**Sdg/Rept Nbr:**	W06564 55784	**Collection Date:**	05/13/2013 13:17
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								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 Typ
3136050	H-3	8.20E+03	pCi/L	9.4E+02		2.66E+01	100.0	9.11E+03	906.0ML_H3_L	1.0014E-02	06/07/2013			70	D
BS	10028-17-8			6.6E+01				90.1		L	09:18			130	

JUNE 14, 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.

Friday, June 14, 2013

TestAmerica QC Duplicate Report

Lab Code: TARL

FormNbr: R **FormatType:** FEAD **VersionNbr:** 05 **File Name:** h:\Reportdb\edd\FeadIV\Rad\W06564.Edd, h:\Reportdb\edd\FeadIV\Rad\55784.Ed

Lab Sample Id:	M0VKN1CR	**Sdg/Rept Nbr:**	W06564 55784	**Collection Date:**	05/13/2013 13:17
Client Id:	B2P565	**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
P13-004	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 LCL/UCL	R Typ
3136050	H-3	3.46E+00	pCi/L	2.1E+01	U	2.29E+01	100.0		906.0ML_H3_L	1.0023E-02	06/07/2013	0.0	0.5		D
DUP	10028-17-8	-4.69E+00		1.1E+01						L	09:18	20.0	3		

JUNE 14, 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.

JUNE 14, 2013

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Data Review/Verification Checklist
RADIOCHEMISTRY, First Level Review

6/14/2013 8:21:29 AM

Lot No., Due Date: J3E150424; 06/14/2013
Client, Site: 384868; A210440HANFORD HANFORD
QC Batch No., Method Test: 3136050; RTRITIUM Midlevel Tritium
SDG, Matrix: W06564; WATER

1.0 COC	
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	Yes ✓ No N/A
2.0 QC Batch	
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 ✓
3.0 QC & Samples	
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
4.0 Raw Data	
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
5.0 Other	
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 10-23600	

Thomas DM[illegible]

First Level _____ **Date** 6/14/13

TestAmerica Richland
QAS_RADCALCv4.8.44

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist

RADIOCHEMISTRY

Second Level Review

Batch Number: 3136050

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 10-23600

Second Level Review: Sandra Legge Date: 6-14-14

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

JUNE 14, 2013

Clouseau Nonconformance Memo

TestAmerica
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NCM #: **10-23600**
NCM Initiated By: Tom Mcginnis
Date Opened: 06/14/2013
Date Closed:

Classification: **Deficiency**
Status: **PMREVIEW**
Production Area: Environmental - Sep
Tests: Midlevel Tritium
Lot #'s (Sample #'s): J3E150424 (1), J3E160000 (50),
QC Batches: 3136050,

Nonconformance: Batch Result Out of Limits
Subcategory: Blank activity exceeds RDL

Problem Description / Root Cause

Name	Date	Description
Tom Mcginnis	06/14/2013	The Blank activity for sample batch 3136050 exceeds the CRDL. All other batch results meet acceptance criteria and there is no indication of method contamination in the sample results. The method blanks will continue to be monitored.

Corrective Action

Name	Date	Corrective Action
Tom Mcginnis	06/14/2013	The PM was made aware of the batch deficiency and has accepted the results.

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: 6/14/2013

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CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # P13-004-004 Page 1 of 1

Collector	SCOTT KING	Contact/Requester	WATERS-HUSTED, K	Telephone No.	376-4650
SAF No.	P13-004	Sampling Origin	699-51-75	Purchase Order/Charge Code	300025CA40
Project Title	SALDS, MAY 2013	Logbook No.	HNF-N-506 ~~50~~ / 37	Ice Chest No.	N/A
Shipped To (Lab)	TestAmerica Incorporated, Richland	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Protocol	Permit Monitoring	Priority: 30 Days	PRIORITY	Offsite Property No.	N/A

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 INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2P565	N	W	MAY 13 2013	1317	1x1-L P	906.0ML_H3_LSC: Mid-level Tritium (1)	6 Months	None
B2P565	N	W	↓	↓	1x20-mL P	Activity Scan MONKN	6 Months	None

J3E150424
WO 6564
Due 6/14/13

J3E150424

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
SCOTT KING			MAY 13 2013 1445	SSU-1			MAY 13 2013 1445
SSU-1			MAY 14 2013 0730	DW Brotherton			MAY 14 2013 0730
DW Brotherton			MAY 14 2013 1115	J. Beck TALK			MAY 14 2013 1115

Matrix *

S = Soil		DS = Drum Solids	
SE = Sediment		DL = Drum Liquids	
SO = Solid		T = Tissue	
SL = Sludge		WI = Wipe	
W = Water		L = Liquid	
O = Oil		V = Vegetation	
A = Air		X = Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED O 4/15/2013

A-6004-842 (REV 2)

JUNE 14, 2013

JUNE 14, 2013

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Sample Check-in List

Date/Time Received: 5-14-13/1115 Container GM Screen Result: (Airlock) .6 Initials [B]
Sample GM Screen Result (Sample Receiving) .4 Initials [B]

Client: PBW SDG #: WO6564 SAF #: P13-004 NA [ ]

Lot Number: J3E150424

Chain of Custody # P13-004-004

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

Samples received inside shipping container/cooler/box Yes [B]] 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 [B]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [B]
3. Cooler temperature: _____ °C NA [B]
4. Vermiculite/packing materials is NA [B] Wet [ ] Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [B] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 1
7. Containers received: 1 x vial 20; 1 x LP
8. Sample holding times exceeded? NA [ ] Yes [ ] No [B]
9. Samples have: ____tape ____hazard labels [B] custody seals [B] appropriate sample labels
10. Matrix: ____A (FLT, Wipe, Solid, Soil) [B] I (Water) ____S (Air, Niosh 7400) ____T (Biological, Ni-63)
11. Samples:
    [B] 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 [B] 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 [B]
14. Description of anomalies (include sample numbers): NA [B]
15. Sample Location, Sample Collector Listed on COC? * Yes [B] No [ ]
    *For documentation only. No corrective action needed.
16. Additional Information: N/A

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

Sample Check-in List completed by Sample Custodian:
Signature: [signature] Date: 5-14-13

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

[SKS] No action necessary; process as is

Project Manager [signature] Date 5-15-13

LS-023 Rev. 16, 02/13

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11

5/16/2013 3:58:20 PM

Sample Preparation/Analysis

384868, CH2M Hill Plateau Remediation Company
, Pacific Northwest National Lab

AR H-3 Prp/Sep LSC005
T0 Tritium - Midlevel, by Liquid Scint
5I CLIENT: HANFORD

Balance Id:
Pipet #:

AnalyDueDate: 06/14/2013

Sep1 DT/Tm Tech:

Batch: 3136050 WATER pCi/L
SEQ Batch, Test: None All Tests: 3136050 ART0,

PM, Quote: SS , 57671

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:
1 M0VKN-1-AA													
J3E150424-1-SAMP													
05/13/2013 13:17			AmtRec: 1XVIAL20;1XLP		#Containers: 2				Scr:		Alpha:		Beta:
2 M0VKN-1-AC-X													
J3E150424-1-DUP													
05/13/2013 13:17			AmtRec: 1XVIAL20;1XLP		#Containers: 2				Scr:		Alpha:		Beta:
3 M0V37-1-AA-B													
J3E160000-50-BLK													
05/16/2013 15:58 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:
4 M0V37-1-AC-C													
J3E160000-50-LCS													
05/16/2013 15:58 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:
5 M0V37-1-AD-BN													
J3E160000-50-IBLK													
05/16/2013 15:58 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:

Comments:

All Clients for Batch:
384868, CH2M Hill Plateau Remediation Company Pacific Northwest National Lab, SS , 57671

M0VKN1AA-SAMP Constituent List:
H-3 RDL:3.00E+01 pCi/L LCL: UCL: RPD:

TestAmerica Richland Wa. Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, dc - Date Chg, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Page 1 ISV - Insufficient Volume for Analysis WO Cnt: 5 ICOC v4.8.49

JUNE 14, 2013

5/16/2013 3:58:20 PM

Sample Preparation/Analysis

AR H-3 Prp/Sep LSC005
T0 Tritium - Midlevel, by Liquid Scint
5I CLIENT: HANFORD

AnalyDueDate: 06/14/2013

Batch: 3136050 pCi/L
SEQ Batch, Test: None

Balance Id:
Pipet #: _____
Sep1 DT/Tm Tech:
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:

```
M0V371AA-BLK:

M0V371AC-LCS:

M0V371AD-IBLK:

M0VKN1AA-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M0V371AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M0V371AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M0V371AD-IBLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```


JUNE 14, 2013

6/13/2013 12:02:06 PM

ICOC Fraction Transfer/Status Report

ByDate: 6/13/2012, 6/18/2013, Batch: '3136050', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3136050						
AC		**Rev1C**	**NortonP**	6/7/2013 1:49:56 PM		
SC			DavilaN	IsBatched	5/16/2013 3:59:45 PM	ICOC_RADCALC v4.8.49
SC			NortonP	Sep1C	6/7/2013 1:49:56 PM	RL-LSC-005 REVISION 2
SC			DawkinsO	InCnt1	6/7/2013 4:01:06 PM	RL-CI-005 REVISION 3
SC			antonsonl	Rev1C	6/13/2013 12:01:57 PM	RL-DR-001 Rev 2
AC			**DawkinsO**	6/7/2013 4:01:06 PM		
AC			**antonsonl**	6/13/2013 12:01:57		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Page 1

Grp Rec Cnt: 3

ICOCFractions v4.8.44