

Analytical Data Package Prepared For  
**CH2M Hill Plateau Remediation**

Radiochemical Analysis By  
**TestAmerica Inc**

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

Assigned Laboratory Code: TARL

Data Package Contains 14 Pages

Report No.: 68869

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

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W07489	F16-042	B35VF0	J6E310410-1	M8PH81AC	9M8PH810	6153041
		B35VF0	J6E310410-1	M8PH81AD	9M8PH810	6153042
		B35VF0	J6E310410-1	M8PH81AE	9M8PH810	6153046
		B35VF0	J6E310410-1	M8PH81AA	9M8PH810	6153048



## Certificate of Analysis

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

June 30, 2016

Attention: Scot Fitzgerald

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SAF Number	:	F16-024
Date SDG Closed	:	May 26, 2016
Number of Samples	:	One (1)
Sample Type	:	Water
SDG Number	:	W07489
Data Deliverable	:	30-Day / Summary

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### CASE NARRATIVE

#### **I. Introduction**

On May 26, 2016, one sample was received at TestAmerica (TARL). Upon receipt, the samples were assigned laboratory ID numbers to correspond with the CH2M specific IDs.

#### **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:

##### **Gas Proportional Counting**

Gross Alpha by method RL-GPC-001

Gross Beta by method RL-GPC-001

Strontium-90 by method RL-GPC-010

##### **Liquid Scintillation Counting**

Tritium by method RL-LSC-005

CH2M Hill Plateau Remediation Company  
June 30, 2016

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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

##### **Gas Proportional Counting**

###### Gross Alpha by method RL-GPC-001:

The MDA for sample B35VF0 exceeds the CRDL due to reduced aliquots based on weight screening results. No other analytical or quality issues were noted. Except as noted, the sample results and associated batch QC results are within contractual requirements.

###### Gross Beta by method RL-GPC-001:

No analytical or quality issues were noted. The sample results and associated batch QC results are within contractual requirements.

###### Strontium-90 by method RL-GPC-010:

No analytical or quality issues were noted. The sample results and associated batch QC results are within contractual requirements.

##### **Liquid Scintillation Counting**

###### Tritium by method RL-LSC-005:

No analytical or quality issues were noted. The sample results and associated batch QC results are within contractual requirements.

We certify that this data package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

Reviewed and approved:

  
Digitally signed by  
Steven Campbell  
Date: 2016.06.30  
11:14:42 -07'00'

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Steven Campbell  
Project Manager Assistant

### 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,  $R = \text{constants} * f(x,y,z,\dots)$ . 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>CSU (#s) <i>u<sub>c</sub> Combined Standard Uncert.</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 standard 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%. $Lc = (1.645 * \sqrt{2 * (BkgrndCnt / BkgrndCntMin) / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . 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.
<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 MDL</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%. $MDC = (4.65 * \sqrt{((BkgrndCnt / BkgrndCntMin) / SCntMin) + 2.71 / SCntMin}) * (ConvFct / (Eff * Yld * Abn * Vol) * IngrFct)$ . For LSC methods the batch blank is used as a measure of the background variability.
<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 = $(S-D) / [\sqrt{TPUs^2 + TPUd^2}]$ 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.
<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.

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-042-004	PAGE 1 OF 1
COLLECTOR	Frank Hill CHPRC	COMPANY CONTACT	TODAK, D	PROJECT COORDINATOR	TODAK, D
SAMPLING LOCATION	C9400, I-005	PROJECT DESIGNATION	100-NR-2 Drilling - Water	SAF NO.	F16-042
ICE CHEST NO.	N/A	FIELD LOGBOOK NO.	HNF-N-645 7-11	COA	304070
SHIPPED TO	TestAmerica Incorporated, Richland	OFFSITE PROPERTY NO.		BILL OF LADING/AIR BILL NO.	

MATRIX*	A=Air DL=Drum L=Liquid DS=Drum S=Soil O=Oil S=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRECIPITATION	None
POSSIBLE SAMPLE HAZARDS/REMARKS	*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 458.1. NA	HOLDING TIME	6 Months
SPECIAL HANDLING AND/OR STORAGE		TYPE OF CONTAINER	P
		NO. OF CONTAINER(S)	1
		VOLUME	1L
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
			SEE ITEM (2) IN SPECIAL INSTRUCTIONS
			TRITIUM_DIST IN SPECIAL INSTRUCTIONS; COMMON;

J6E310410  
W0N489  
MSPHS

CHAIN OF POSSESSION	SIGN/PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	(1) ALPHA_GPC: COMMON {Gross alpha}; BETA_GPC: COMMON {Gross beta};
Frank Hill	C.M. Aguilar/CHPRC	(2) SRTOT_SEP_PRECIP_GPC: COMMON {Total beta radiostromtrium};
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
C.M. Aguilar/CHPRC	L. Anderson, PARL	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
LABORATORY SECTION	RECEIVED BY	TITLE
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY
PRINTED ON 5/23/2016	FSR ID = FSR32404	TRVL NUM = TRVL-16-151
		DATE/TIME

All samples filtered



Sample Check-in List

THE LEADER IN ENVIRONMENTAL TESTING

Date/Time Received: 5/26/16 1015 Container GM Screen Result: (Airlock) 0 cpm Initials: AA Sample GM Screen Result (Sample Receiving) 0 cpm Initials: AA

Client: FLH SDG #: W07489 SAF #: F16-042 NA [ ]

Lot Number: J6E310410

Chain of Custody # F16-042-004

Shipping Container ID or Air Bill Number : NA AA

Samples received inside shipping container/cooler/box Yes [AA] 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 [AA]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [AA]
3. Cooler temperature: 5.4 °C ICE NA [ ]
4. Vermiculite/packing materials is NA [ ] Wet [AA] Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

- 5. Chain of Custody record present? Yes [AA] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 1
7. Containers received: 5 x 4

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

11. Samples: AA 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 [AA] No [ ] NA [ ] (If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO3 added and pH after addition on table)

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

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

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

16. Additional Information: N/A

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

Sample Check-in List completed by Sample Custodian: Signature: J. Anderson Date: 5/26/16

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

AA No action necessary; process as is Project Manager: Stan Cuprum Date: 6/1/16

Sample Results Summary

Date: 30-Jun-16

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 68869

SDG No: W07489

Batch	Client Id Work Order	Parameter	Result +- CSU ( 2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
6153046	SRTOT_SEP_PRECIP_GPC								
	<b>B35VF0</b>								
	M8PH81AE	STRONTIUM	3.78E-01 +- 5.0E-01	U	pCi/L	78%	8.16E-01	2.00E+00	
	<b>B35VF0 DUP</b>								
	M8PH81AH	STRONTIUM	1.32E-01 +- 4.6E-01	U	pCi/L	82%	7.91E-01	2.00E+00	96.5
6153041	9310_ALPHABETA_GPC								
	<b>B35VF0</b>								
	M8PH81AC	Alpha	2.16E-01 +- 1.8E+00	U	pCi/L	100%	3.15E+00	3.00E+00	
	<b>B35VF0 DUP</b>								
	M8PH81AF	Alpha	8.44E-02 +- 1.6E+00	U	pCi/L	100%	2.89E+00	3.00E+00	87.6
6153042	9310_ALPHABETA_GPC								
	<b>B35VF0</b>								
	M8PH81AD	Beta	7.96E+00 +- 1.8E+00		pCi/L	100%	1.95E+00	4.00E+00	
	<b>B35VF0 DUP</b>								
	M8PH81AG	Beta	8.44E+00 +- 1.8E+00		pCi/L	100%	1.78E+00	4.00E+00	5.9
6153048	TRITIUM_DIST_LSC								
	<b>B35VF0</b>								
	M8PH81AA	H-3	3.28E+03 +- 2.7E+02		pCi/L	100%	3.27E+02	7.00E+02	
	<b>B35VF0 DUP</b>								
	M8PH81AJ	H-3	3.22E+03 +- 2.7E+02		pCi/L	100%	3.31E+02	7.00E+02	2.0
	No. of Results: 8								

**QC Results Summary**  
**TestAmerica Inc TARL**  
 Ordered by Method, Batch No, QC Type,.

**Date:** 30-Jun-16

**Report No. :** 68869

**SDG No.:** W07489

Batch	Work Order	Parameter	Result +- CSU ( 2 s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
<b>SRTOT_SEP_PRECIP_GPC</b>									
6153046	BLANK QC,								
	M8PRJ1AA	STRONTIUM	2.11E-01 +- 5.4E-01	U	pCi/L	74%			9.14E-01
6153046	LCS,								
	M8PRJ1AC	STRONTIUM	1.42E+01 +- 3.6E+00		pCi/L	82%	105%	0.1	9.07E-01
<b>9310_ALPHABETA_GPC</b>									
6153041	BLANK QC,								
	M8PRD1AA	Alpha	-7.54E-02 +- 4.7E-01	U	pCi/L	100%			8.64E-01
6153041	LCS,								
	M8PRD1AC	Alpha	2.25E+01 +- 5.9E+00		pCi/L	100%	101%	0.0	7.34E-01
<b>9310_ALPHABETA_GPC</b>									
6153042	BLANK QC,								
	M8PRE1AA	Beta	1.43E+00 +- 1.0E+00	U	pCi/L	100%			1.65E+00
6153042	LCS,								
	M8PRE1AC	Beta	6.38E+01 +- 8.6E+00		pCi/L	100%	94%	-0.1	1.62E+00
<b>TRITIUM_DIST_LSC</b>									
6153048	MATRIX SPIKE, B35VF0								
	M8PH81AK	H-3	1.47E+03 +- 4.3E+02		pCi/L	100%	98%	0.0	3.83E+02
6153048	BLANK QC,								
	M8PRL1AA	H-3	-1.55E+02 +- 1.5E+02	U	pCi/L	100%			3.28E+02
6153048	LCS,								
	M8PRL1AC	H-3	2.57E+03 +- 2.4E+02		pCi/L	100%	95%	-0.1	3.32E+02
<b>No. of Results: 9</b>									

TestAmerica Inc Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 rptSTLRchQcSummary V5.6 A2002 U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

FORM I  
SAMPLE RESULTS

Date: 30-Jun-16

Lab Name: TestAmerica Inc  
 Lot-Sample No.: J6E310410-1  
 Client Sample ID: B35VF0

SDG: W07489  
 Report No.: 68869  
 COC No.: F16-042-004

Collection Date: 5/26/2016 8:15:00 AM  
 Received Date: 5/26/2016 10:15:00 AM  
 Matrix: WATER

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	CSU (2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6153041 9310_ALPHABETA_GPC Work Order: M8PH81AC Report DB ID: 9M8PH810												
Alpha	2.16E-01	U	1.8E+00	1.8E+00	3.15E+00	pCi/L	100%	0.07	6/29/16 07:07 p		0.1193	GPC24A
							1.43E+00	3.00E+00			L	
Batch: 6153042 9310_ALPHABETA_GPC Work Order: M8PH81AD Report DB ID: 9M8PH810												
Beta	7.96E+00		1.5E+00	1.8E+00	1.95E+00	pCi/L	100%	(4.1)	6/29/16 07:02 p		0.204	GPC26A
							9.34E-01	4.00E+00			L	
Batch: 6153046 SRTOT_SEP_PRECIP_GPC Work Order: M8PH81AE Report DB ID: 9M8PH810												
STRONTIUM	3.78E-01	U	4.9E-01	5.0E-01	8.16E-01	pCi/L	78%	0.46	6/11/16 12:33 a		0.5002	GPC32B
							3.80E-01	2.00E+00			L	
Batch: 6153048 TRITIUM_DIST_LSC Work Order: M8PH81AA Report DB ID: 9M8PH810												
H-3	3.28E+03		2.3E+02	2.7E+02	3.27E+02	pCi/L	100%	(10.)	6/25/16 04:38 p		0.00502	LSC9
							1.56E+02	7.00E+02			L	

No. of Results: 4 Comments:

10 of 14

TestAmerica Inc MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rpt\$TLRchSample U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V16 A2002

FORM II

Date: 30-Jun-16

DUPLICATE RESULTS

Lab Name: TestAmerica Inc  
 Lot-Sample No.: J6E310410-1  
 Client Sample ID: B35VF0 DUP

SDG: W07489  
 Report No.: 68869  
 COC No.: F16-042-004  
 Matrix: WATER

Collection Date: 5/26/2016 8:15:00 AM  
 Received Date: 5/26/2016 10:15:00 AM

Parameter	Result, Orig Rst	Qual	Count Error ( 2 s)	CSU ( 2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 6153041	9310_ALPHABETA_GPC		Work Order: M8PH81AF Report DB ID: M8PH81FR Orig Sa DB ID: 9M8PH810									
Alpha	8.44E-02	U	1.6E+00	1.6E+00	2.89E+00	pCi/L	100%	0.03	6/29/16 07:07 p		0.1167	GPC24B
	2.16E-01	U	RPD 87.6			3.00E+00		0.11			L	
Batch: 6153042	9310_ALPHABETA_GPC		Work Order: M8PH81AG Report DB ID: M8PH81GR Orig Sa DB ID: 9M8PH810									
Beta	8.44E+00		1.4E+00	1.8E+00	1.78E+00	pCi/L	100%	(4.7)	6/29/16 07:02 p		0.2033	GPC26B
	7.96E+00		RPD 5.9			4.00E+00		(9.6)			L	
Batch: 6153046	SRTOT_SEP_PRECIP_GPC		Work Order: M8PH81AH Report DB ID: M8PH81HR Orig Sa DB ID: 9M8PH810									
STRONTIUM	1.32E-01	U	4.6E-01	4.6E-01	7.91E-01	pCi/L	82%	0.17	6/11/16 12:33 a		0.5009	GPC32C
	3.78E-01	U	RPD 96.5			2.00E+00		0.57			L	
Batch: 6153048	TRITIUM_DIST_LSC		Work Order: M8PH81AJ Report DB ID: M8PH81JR Orig Sa DB ID: 9M8PH810									
H-3	3.22E+03		2.3E+02	2.7E+02	3.31E+02	pCi/L	100%	(9.7)	6/25/16 06:00 p		0.00498	LSC9
	3.28E+03		RPD 2.0			7.00E+02		(24.3)			L	

No. of Results: 4      Comments:

11014

TestAmerica Inc RPD - Relative Percent Difference.  
 MDC(MDA)\_Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rps TLRchDupV5.  
 6/22/2002  
 U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

FORM II  
BLANK RESULTS

Date: 30-Jun-16

Lab Name: TestAmerica Inc      SDG: W07489  
 Matrix: WATER      Report No.: 68869

Parameter	Result	Qual	Count Error ( 2 s)	CSU (2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
<b>Batch: 6153048</b>												
TRITIUM_DIST_LSC												
H-3	-1.55E+02	U	1.3E+02	1.5E+02	3.28E+02	pCi/L	100%	-0.47	6/25/16 10:05 p	0.00501	L	LSC9
	1.56E+02				1.56E+02	7.00E+02		-(2.1)				
<b>Batch: 6153041</b>												
9310_ALPHABETA_GPC												
Alpha	-7.54E-02	U	4.7E-01	4.7E-01	8.64E-01	pCi/L	100%	-0.09	6/29/16 07:07 p	0.2023	L	GPC24C
					3.93E-01	3.00E+00		-0.32				
<b>Batch: 6153042</b>												
9310_ALPHABETA_GPC												
Beta	1.43E+00	U	1.0E+00	1.0E+00	1.65E+00	pCi/L	100%	0.87	6/29/16 07:02 p	0.2005	L	GPC26C
					7.88E-01	4.00E+00		(2.7)				
<b>Batch: 6153046</b>												
STRONTIUM												
	2.11E-01	U	5.4E-01	5.4E-01	9.14E-01	pCi/L	74%	0.23	6/11/16 12:33 a	0.502	L	GPC32A
					4.27E-01	2.00E+00		0.78				

No. of Results: 4      Comments:

TestAmerica Inc      MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.  
 rptS TLRchBlank      U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.  
 V6 A2002

FORM II  
LCS RESULTS

Date: 30-Jun-16

Lab Name: TestAmerica Inc      SDG: W07489  
 Matrix: WATER                      Report No.: 68869

Parameter	Result	Qual	Count Error ( 2 s)	CSU ( 2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
<b>Batch: 6153048</b> TRITIUM_DIST_LSC													
H-3	2.57E+03		2.2E+02	2.4E+02	3.32E+02	pCi/L	100%	2.72E+03	8.15E+01	95%	6/25/16 11:27 p	0.00501	LSC9
							Rec Limits:	80	120	-0.1			
<b>Batch: 6153041</b> 9310_ALPHABETA_GPC													
Alpha	2.25E+01		1.6E+00	5.9E+00	7.34E-01	pCi/L	100%	2.24E+01	2.26E-01	101%	6/29/16 07:07 p	0.2015	GPC24D
							Rec Limits:	80	120	0.0			
<b>Batch: 6153042</b> 9310_ALPHABETA_GPC													
Beta	6.38E+01		2.6E+00	8.6E+00	1.62E+00	pCi/L	100%	6.78E+01	4.81E-01	94%	6/29/16 07:02 p	0.2012	GPC26D
							Rec Limits:	80	120	-0.1			
<b>Batch: 6153046</b> SRTOT_SEP_PRECIP_GPC													
STRONTIUM	1.42E+01		1.2E+00	3.6E+00	9.07E-01	pCi/L	82%	1.35E+01	9.60E-02	105%	6/11/16 12:33 a	0.5018	GPC32D
							Rec Limits:	80	120	0.1			

No. of Results: 4      Comments:

13

FORM II

Date: 30-Jun-16

MATRIX SPIKE RESULTS

Lab Name: TestAmerica Inc      SDG: W07489      Matrix: WATER  
 Lot-Sample No.: J6E310410-1, B35VF0      Report No.: 68869

Parameter	SpikeResult, Orig Rst	Count Error (2 s)	CSU (2 s)	MDC MDA	Rpt Unit	Yield	Recovery	Expected, Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 6153048	Work Order: M8PH81AK	Report DB ID: M8PH81KW	Orig Sa DB ID: 9M8PH810								
H-3	1.47E+03	2.9E+02	4.3E+02	3.83E+02	pCi/L	100%	97.67%	1.51E+03	6/25/16 07:22 p	0.00429	TRITIUM_DIST_LSC
	3.28E+03							4.53E+01		L	LSC9

Number of Results: 1

Comments:

TestAmerica Inc      RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.  
 rptS TLRchMs      Bias - (Result/Expected)-1 as defined by ANSI N13.30.  
 V6 A2002