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 29 ***Pages***

Report No.: 72589

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.
W08023	I18-005	B3H2W5	J8C010405-1	NANT71AD	9NANT710	8064015
		B3H2W5	J8C010405-1	NANT71AJ	9NANT710	8064018
		B3H2W5	J8C010405-1	NANT71AH	9NANT710	8064020
		B3H2W5	J8C010405-1	NANT71AG	9NANT710	8064022
		B3H2W5	J8C010405-1	NANT71AF	9NANT710	8064023
		B3H2W5	J8C010405-1	NANT72AC	9NANT720	8066034
		B3H2W5	J8C010405-1	NANT74AE	9NANT740	8081016
		B3H2W5	J8C010405-1	NANT74AA	9NANT740	8093011
		B3H2W7	J8C010405-2	NANVE1AA	9NANVE10	8064019

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

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

April 6, 2018
April 9, 2018

Attention: Scot Fitzgerald

SAF Number	:	I18-005
Date SDG Closed	:	March 5, 2018
Number of Samples	:	Two (2)
Sample Type	:	Water
SDG Number	:	W08023
Data Deliverable	:	30-Day / Summary

CASE NARRATIVE

This data package has been amended on April 9, 2018. All amended information in this case narrative will be bold, underlined, and italicized.

I. Introduction

On March 1, 2018, two samples were 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:

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-001
Uranium 234, 235 and 238 by method RL-ALP-004

Gas Proportional Counting
Strontium by method RL-GPC-010
Gamma Spectroscopy
Gamma Spec by method RL-GAM-001
Liquid Scintillation Counting
Carbon-14 by method RL-LSC-008
Plutonium-241 by method RL-ALP-001
Selenium-79 by method RL-LSC-012
Technetium-99 by TEVA method RL-LSC-014
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

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-001:
The LCS is outside acceptance criteria. For more information see the attached SIR. No analytical or quality issues were noted. The sample result and associated batch QC results are within contractual requirements.

Uranium 234, 235 and 238 by method RL-ALP-004:
No analytical or quality issues were noted. The sample result and associated batch QC results are within contractual requirements.

Gas Proportional Counting
Strontium by method RL-GPC-010:
No analytical or quality issues were noted. The sample result and associated batch QC results are within contractual requirements.

Gamma Spectroscopy
Gamma Spec by method RL-GAM-001:
No analytical or quality issues were noted. The sample result and associated batch QC results are within contractual requirements.

Liquid Scintillation Counting
Carbon-14 by method RL-LSC-008:
No analytical or quality issues were noted. The sample result and associated batch QC results are within contractual requirements.

Plutonium-241 by method RL-ALP-001:
No analytical or quality issues were noted. The sample result and associated batch QC results are within contractual requirements.

CH2M Hill Plateau Remediation Company
April 6, 2018
April 9, 2018

Selenium-79 by method RL-LSC-012:
No analytical or quality issues were noted. The sample result and associated batch QC results are within contractual requirements.

Technetium-99 by TEVA method RL-LSC-014:
No analytical or quality issues were noted. The sample result and associated batch QC results are within contractual requirements.

Tritium by method RL-LSC-005:
No analytical or quality issues were noted. The sample result 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:

Ashley L. Worthy
Project Manager

SAMPLE ISSUE RESOLUTION (SIR) REPORT

SIR Number: SIR18-0615
Rev. Number: 0
Date Initiated: 04/04/2018

SAMPLE EVENT INFORMATION

SAF NUM(S): I18-005

LABORATORY: TARL

SAMPLING INFORMATION

NUMBER OF SAMPLES: 1

SAMPLE NUMBERS: B3H2W5

SAMPLE MATRIX: WATER

SDG NUM(S): W08023

ISSUE BACKGROUND

CLASS: Laboratory Issue

TYPE: Quality Control Failure

DESCRIPTION: For the PUISO analysis the LCS recovered low at 144%. The tracer yield is acceptable at 98%. The acceptance criteria for the LCS is 80-120%. The sample result is below the MDA and CRDL.

RESOLUTION

PROPOSED RESOLUTION: Report results and include comment in the case narrative.

FINAL RESOLUTION: report the results and note the issue in the narrative.

SUBMITTED BY:

WORTHY, A 04/04/2018

ACCEPTED BY:

MEDLEY, HA 04/04/2018

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.
CSU (#s) ***u_c Combined Standard Uncert.***	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 standard 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|MDL	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.

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I18-005-041
		Page 1 of 1

Collector: Kevin Patterson CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I18-005	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: GW-IA Monitoring, February 201	**Logbook No.:** HNF-N-~~506~~ 491 19 /14 K1 3-1-18	**Ice Chest No.:** N/A
Shipped To (Lab): TestAmerica Incorporated, Rich	**Method of Shipment** GOVERNMENT VEHICLE	**Bill of Lading/Air Bill No.:** N/A
Protocol SURV	**Priority:** 30 Days	**Offsite Property No.:** N/A

POSSIBLE SAMPLE HAZARDS/REMARK
** ** 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

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H2W5	N	W	MAR 0 1 2018	0901	1x250-mL P	906.0_TRITIUM_LSC: COMMON	6 Months	None
B3H2W5	N	W			1x1-L G/P	PU241_IE_LSC: COMMON; PUISO_IE_PRECIP_AEA: COMMON; UISO_PLATE_AEA: COMMON	6 Months	HNO3 to pH <2
B3H2W5	N	W			1x4-L G/P	GAMMA_GS: COMMON; GAMMA_GS: GW 01	6 Months	HNO3 to pH <2
B3H2W5	N	W			1x500-mL G/P	SE79_SEP_IE_LSC: COMMON	6 Months	HNO3 to pH <2
B3H2W5	N	W			1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B3H2W5	N	W			1x500-mL P	TC99_ETVDSK_LSC: COMMON NANT	6 Months	HCl to pH <2

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04/09/2018

J8C010405
W08023

Relinquished By	Received By
Kevin Patterson CHPRC — MAR 0 1 2018	Dan Woehle CHPRC — MAR 0 1 2018 0940
Print First and Last Name — Signature — Date/Time	*Print First and Last Name — Signature — Date/Time*
Relinquished By: Dan Woehle CHPRC — MAR 0 1 2018 1255	Received By: J. Bock, TARL — MAR 0 1 2018 1255
Print First and Last Name — Signature — Date/Time	*Print First and Last Name — Signature — Date/Time*
Relinquished By:	Received By:
Print First and Last Name — Signature — Date/Time	*Print First and Last Name — Signature — Date/Time*
Relinquished By:	Received By:
Print First and Last Name — Signature — Date/Time	*Print First and Last Name — Signature — Date/Time*

Matrix *

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

AMENDED REV 0

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

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I18-005-043
		Page 1 of 1

Collector: Kevin Patterson CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I18-005	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: GW-IA Monitoring, February 201	**Logbook No.:** HNF-N-506 491 19 116 14 31-18	**Ice Chest No.:** N/A
Shipped To (Lab): TestAmerica Incorporated, Rich	**Method of Shipment** GOVERNMENT VEHICLE	**Bill of Lading/Air Bill No.:** N/A
Protocol SURV	**Priority:** 30 Days	**Offsite Property No.:** N/A

POSSIBLE SAMPLE HAZARDS/REMARK
** ** 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

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3H2W7	N	W	MAR 0 1 2018	0901	1x500-mL G/P	C14_LSC: COMMON NANVE	6 Months	None

J8C010405
W08023

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04/09/2018

Relinquished By	Received By
Kevin Patterson CHPRC — MAR 0 1 2018 0940	Dan Woehle CHPRC — MAR 0 1 2018 0940
Print First and Last Name / Signature / Date/Time	*Print First and Last Name / Signature / Date/Time*
Dan Woehle CHPRC — MAR 0 1 2018 1255	J. Bock, TARL — MAR 0 1 2018 1255
Print First and Last Name / Signature / Date/Time	*Print First and Last Name / Signature / Date/Time*
Print First and Last Name / Signature / Date/Time	*Print First and Last Name / Signature / Date/Time*
Print First and Last Name / Signature / Date/Time	*Print First and Last Name / Signature / Date/Time*

Matrix *

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

AMENDED REV 0

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

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Sample Check-in List

04/09/2018

AMENDED REPORT REV.0

Date/Time Received: 3-1-18 | 1255 Container GM Screen Result: (Airlock) 0 cpm Initials[B]
Sample GM Screen Result (Sample Receiving) 0 cpm Initials[ ]
Container Alpha Screen Result: (Airlock) 0 cpm Initials[ ]
Sample Alpha Screen Result (Sample Receiving) 0 cpm Initials[B]

Client: PGW SDG #: W08023 SAF #: 118-005 NA [ ]

Lot Number: 18C010405

Chain of Custody # 118-005-041; 043

Shipping Container ID or Air Bill Number : _____ NA [B]

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: 6.6 °C IR NA [ ]
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): 2
7. Containers received: 1x250mLP; 3x500mLP; 2xLP; 1x4LP
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 pH area & 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: _____ Date: 3-1-18

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

[B] No action necessary; process as is

Project Manager _____ Date 3-2-18

Sample Results Summary

Date: 09-Apr-18

TestAmerica Inc TARL

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

Report No. : 72589 **SDG No:** W08023

Batch / Client Id / Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
8064022 SRISO_SEP_PRECIP_GPC								
B3H2W5								
NANT71AG	STRONTIUM	-1.90E-01 +- 6.5E-01	U	pCi/L	87%	1.22E+00	2.00E+00	
B3H2W5 DUP								
NANT71AV	STRONTIUM	-6.04E-02 +- 6.4E-01	U	pCi/L	88%	1.19E+00	2.00E+00	-103.6
8081016 PUISO_PLATE_AEA								
B3H2W5								
NANT74AE	PU-238	6.43E-02 +- 1.4E-01	U	pCi/L	103%	2.88E-01	1.00E+00	
	PU239/40	-3.41E-02 +- 1.4E-01	U	pCi/L	103%	3.79E-01	1.00E+00	
B3H2W5 DUP								
NANT71AX	PU-238	6.19E-02 +- 1.4E-01	U	pCi/L	106%	2.77E-01	1.00E+00	3.8
	PU239/40	-3.29E-02 +- 1.4E-01	U	pCi/L	106%	3.65E-01	1.00E+00	-3.8
8064018 UISO_PLATE_AEA								
B3H2W5								
NANT71AJ	U-234	8.87E-01 +- 5.4E-01		pCi/L	79%	3.25E-01	1.00E+00	
	U-235	6.89E-02 +- 1.5E-01	U	pCi/L	79%	2.96E-01	1.00E+00	
	U-238	2.07E-01 +- 2.6E-01	U	pCi/L	79%	3.48E-01	1.00E+00	
B3H2W5 DUP								
NANT71AP	U-234	8.42E-01 +- 5.4E-01		pCi/L	76%	3.51E-01	1.00E+00	5.1
	U-235	7.18E-02 +- 1.6E-01	U	pCi/L	76%	3.08E-01	1.00E+00	4.1
	U-238	5.24E-01 +- 4.2E-01		pCi/L	76%	3.73E-01	1.00E+00	86.9
8064015 GAMMA_GS								
B3H2W5								
NANT71AD	CO-60	3.91E+00 +- 3.1E+00	U	pCi/L		4.42E+00	2.50E+01	
	CS-134	-4.99E-01 +- 3.6E+00	U	pCi/L		3.65E+00	8.00E+01	
	CS-137	1.76E+00 +- 3.1E+00	U	pCi/L		3.80E+00	1.50E+01	
	EU-152	2.02E+00 +- 7.2E+00	U	pCi/L		5.71E+00	5.00E+01	
	EU-154	4.90E+00 +- 9.8E+00	U	pCi/L		3.95E+00	5.00E+01	
	EU-155	1.81E+00 +- 5.8E+00	U	pCi/L		8.11E+00	5.00E+01	
	K-40	3.15E+00 +- 2.9E+01	U	pCi/L		5.30E+01		
	SB-125	2.84E+00 +- 7.3E+00	U	pCi/L		9.02E+00	5.00E+01	
B3H2W5 DUP								
NANT71AK	CO-60	2.49E-01 +- 1.9E+00	U	pCi/L		3.47E+00	2.50E+01	176.1
	CS-134	-1.19E+00 +- 2.4E+00	U	pCi/L		3.97E+00	8.00E+01	-81.6
	CS-137	1.09E+00 +- 2.2E+00	U	pCi/L		3.95E+00	1.50E+01	46.4
	EU-152	5.22E-01 +- 5.9E+00	U	pCi/L		1.02E+01	5.00E+01	117.9
	EU-154	-5.24E-01 +- 6.2E+00	U	pCi/L		1.12E+01	5.00E+01	247.9
	EU-155	-7.26E+00 +- 5.2E+00	U	pCi/L		8.04E+00	5.00E+01	-332.9
	K-40	5.81E-01 +- 2.7E+01	U	pCi/L		4.98E+01		137.6

RPD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

Sample Results Summary

Date: 09-Apr-18

TestAmerica Inc TARL

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

Report No. : 72589 **SDG No:** W08023

Batch / Client Id / Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
8064015 GAMMA_GS								
B3H2W5 DUP								
NANT71AK	SB-125	1.76E+00 +- 5.4E+00	U	pCi/L		9.48E+00	5.00E+01	47.1
8064019 C14_LSC								
B3H2W7								
NANVE1AA	C-14	-2.23E-01 +- 8.6E+00	U	pCi/L	100%	1.63E+01	5.00E+01	
B3H2W7 DUP								
NANVE1AD	C-14	-4.15E+00 +- 8.5E+00	U	pCi/L	100%	1.66E+01	5.00E+01	-179.6
8064020 TC99_ETVDSK_LSC								
B3H2W5								
NANT71AH	Tc-99	3.90E+02 +- 1.7E+01		pCi/L	100%	1.19E+01	5.00E+01	
B3H2W5 DUP								
NANT71AR	Tc-99	4.19E+02 +- 1.8E+01		pCi/L	100%	1.31E+01	5.00E+01	7.2
8064023 SE79_SEP_IE_LSC								
B3H2W5								
NANT71AF	Se-79	8.69E+00 +- 6.7E+00	U	pCi/L	71%	1.38E+01	5.00E+01	
B3H2W5 DUP								
NANT71AW	Se-79	5.83E+00 +- 6.2E+00	U	pCi/L	77%	1.28E+01	5.00E+01	39.4
8066034 906.0_H3_LSC								
B3H2W5								
NANT72AC	H-3	1.26E+03 +- 3.1E+02		pCi/L	100%	5.14E+02	7.00E+02	
B3H2W5 DUP								
NANT72AU	H-3	1.11E+03 +- 3.0E+02		pCi/L	100%	5.13E+02	7.00E+02	12.9
8093011 PU241_IE_LSC								
B3H2W5								
NANT74AA	Pu-241	9.36E-01 +- 5.7E+00	U	pCi/L	100%	1.10E+01	2.50E+01	
B3H2W5 DUP								
NANT72A0	Pu-241	1.22E+00 +- 5.5E+00	U	pCi/L	100%	1.06E+01	2.50E+01	26.2

No. of Results: 38

RPD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

QC Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Date: 09-Apr-18

Report No. : 72589 **SDG No.:** W08023

Batch / Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
SRISO_SEP_PRECIP_GPC								
8064022 BLANK QC,								
NANV31AA	STRONTIUM	1.30E-01 +- 6.6E-01	U	pCi/L	89%			1.17E+00
8064022 LCS,								
NANV31AC	STRONTIUM	1.46E+01 +- 3.9E+00		pCi/L	84%	110%	0.1	1.30E+00
PUISO_PLATE_AEA								
8064016 BLANK QC,								
NANVV2AA	PU-238	5.99E-02 +- 1.4E-01	U	pCi/L	103%			2.99E-01
	PU239/40	-3.36E-03 +- 1.4E-01	U	pCi/L	103%			2.62E-01
8064016 LCS,								
NANVV1AC	PU239/40	4.21E+00 +- 1.3E+00		pCi/L	98%	94%	-0.1	2.67E-01
PUISO_PLATE_AEA								
8081016 BLANK QC,								
NAPMF1AA	PU-238	1.93E-02 +- 1.2E-01	U	pCi/L	101%			3.39E-01
	PU239/40	-3.39E-02 +- 1.2E-01	U	pCi/L	101%			3.27E-01
8081016 LCS,								
NAPMF1AC	PU239/40	6.44E+00 +- 1.8E+00		pCi/L	98%	144%	0.4	2.65E-01
UISO_PLATE_AEA								
8064018 BLANK QC,								
NANVX1AA	U-234	5.62E-02 +- 1.6E-01	U	pCi/L	76%			3.73E-01
	U-235	-9.38E-03 +- 1.6E-01	U	pCi/L	76%			3.25E-01
	U-238	-1.88E-02 +- 1.6E-01	U	pCi/L	76%			3.63E-01
8064018 LCS,								
NANVX1AC	U-234	1.52E+01 +- 3.5E+00		pCi/L	81%	94%	-0.1	3.82E-01
	U-238	1.70E+01 +- 3.8E+00		pCi/L	81%	100%	0.0	5.92E-01
GAMMA_GS								
8064015 BLANK QC,								
NANVT1AA	CO-60	7.74E-01 +- 4.2E+00	U	pCi/L				4.01E+00
	CS-134	4.05E-01 +- 3.7E+00	U	pCi/L				3.53E+00
	CS-137	-3.12E-01 +- 3.6E+00	U	pCi/L				3.82E+00
	EU-152	9.13E-01 +- 7.0E+00	U	pCi/L				6.27E+00
	EU-154	-1.47E+00 +- 1.2E+01	U	pCi/L				4.23E+00
	EU-155	-1.82E+00 +- 5.9E+00	U	pCi/L				7.72E+00
	K-40	1.93E+01 +- 3.6E+01	U	pCi/L				6.16E+01
	SB-125	-7.05E+00 +- 9.1E+00	U	pCi/L				9.42E+00
8064015 LCS,								
NANVT1AC	CO-60	3.65E+02 +- 6.8E+01		pCi/L		100%	0.0	3.16E+01
	CS-137	4.63E+02 +- 8.4E+01		pCi/L		95%	-0.1	4.29E+01
	EU-152	6.57E+02 +- 1.5E+02		pCi/L		87%	-0.1	1.18E+02
C14_LSC								
8064019 MATRIX SPIKE, B3H2W7								
NANVE1AC	C-14	4.53E+02 +- 3.3E+01		pCi/L	100%	95%	-0.1	1.66E+01

TestAmerica Inc

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Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

QC Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Date: 09-Apr-18

Report No. : 72589 **SDG No.:** W08023

Batch / Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
8064019 BLANK QC,								
NANV01AA	C-14	-8.82E+00 +- 8.3E+00	U	pCi/L	100%			1.65E+01
8064019 LCS,								
NANV01AC	C-14	4.47E+02 +- 3.3E+01		pCi/L	100%	96%	0.0	1.65E+01
TC99_ETVDSK_LSC								
8064020 MATRIX SPIKE, B3H2W5								
NANT71AQ	Tc-99	5.11E+02 +- 3.4E+01		pCi/L	100%	94%	-0.1	1.24E+01
8064020 BLANK QC,								
NANV11AA	Tc-99	-3.45E+00 +- 5.6E+00	U	pCi/L	100%			1.25E+01
8064020 LCS,								
NANV11AC	Tc-99	1.09E+02 +- 9.5E+00		pCi/L	100%	100%	0.0	1.23E+01
SE79_SEP_IE_LSC								
8064023 BLANK QC,								
NANV41AA	Se-79	3.37E+00 +- 6.0E+00	U	pCi/L	78%			1.27E+01
906.0_H3_LSC								
8066034 MATRIX SPIKE, B3H2W5								
NANT72AT	H-3	1.72E+03 +- 5.2E+02		pCi/L	100%	106%	0.1	5.97E+02
8066034 BLANK QC,								
NANV22AA	H-3	2.46E+02 +- 2.6E+02	U	pCi/L	100%			5.22E+02
8066034 LCS,								
NANV22AC	H-3	2.35E+03 +- 3.6E+02		pCi/L	100%	85%	-0.1	5.21E+02
PU241_IE_LSC								
8093011 BLANK QC,								
NAPMG2AA	Pu-241	-1.22E+00 +- 5.4E+00	U	pCi/L	100%			1.06E+01
8093011 LCS,								
NAPMG2AC	Pu-241	1.04E+03 +- 6.4E+01		pCi/L	98%	91%	-0.1	1.07E+01

No. of Results: 36

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 09-Apr-18

Lab Name: TestAmerica Inc | **SDG:** W08023 | **Collection Date:** 3/1/2018 9:01:00 AM

Lot-Sample No.: J8C010405-1 | **Report No. :** 72589 | **Received Date:** 3/1/2018 12:55:00 PM

Client Sample ID: B3H2W5 | **COC No. :** I18-005-041 | **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: 8064015	GAMMA_GS			**Work Order:** NANT71AD		**Report DB ID:** 9NANT710						
CO-60	**3.91E+00**	U	3.1E+00	3.1E+00	4.42E+00	pCi/L		*0.89*	3/13/18 01:53 p		2.0018	$GER11
						1.99E+00	2.50E+01	*(2.5)*			L	
CS-134	**-4.99E-01**	U	3.6E+00	3.6E+00	3.65E+00	pCi/L		*-0.14*	3/13/18 01:53 p		2.0018	$GER11
						1.68E+00	8.00E+01	*-0.28*			L	
CS-137	**1.76E+00**	U	3.1E+00	3.1E+00	3.80E+00	pCi/L		*0.46*	3/13/18 01:53 p		2.0018	$GER11
						1.73E+00	1.50E+01	*(1.1)*			L	
EU-152	**2.02E+00**	U	7.2E+00	7.2E+00	5.71E+00	pCi/L		*0.35*	3/13/18 01:53 p		2.0018	$GER11
						2.64E+00	5.00E+01	*0.56*			L	
EU-154	**4.90E+00**	U	9.8E+00	9.8E+00	3.95E+00	pCi/L		*(1.2)*	3/13/18 01:53 p		2.0018	$GER11
						1.83E+00	5.00E+01	*(1.)*			L	
EU-155	**1.81E+00**	U	5.8E+00	5.8E+00	8.11E+00	pCi/L		*0.22*	3/13/18 01:53 p		2.0018	$GER11
						3.76E+00	5.00E+01	*0.62*			L	
K-40	**3.15E+00**	U	2.9E+01	2.9E+01	5.30E+01	pCi/L		*0.06*	3/13/18 01:53 p		2.0018	$GER11
						2.40E+01		*0.21*			L	
SB-125	**2.84E+00**	U	7.3E+00	7.3E+00	9.02E+00	pCi/L		*0.31*	3/13/18 01:53 p		2.0018	$GER11
						4.16E+00	5.00E+01	*0.77*			L	
Batch: 8064018	UISO_PLATE_AEA			**Work Order:** NANT71AJ		**Report DB ID:** 9NANT710						
U-234	**8.87E-01**		5.2E-01	5.4E-01	3.25E-01	pCi/L	79%	*(2.7)*	3/19/18 12:27 p		0.20019	ALP211
						7.66E-02	1.00E+00	*(3.3)*			L	
U-235	**6.89E-02**	U	1.5E-01	1.5E-01	2.96E-01	pCi/L	79%	*0.23*	3/19/18 12:27 p		0.20019	ALP2
						6.29E-02	1.00E+00	*0.92*			L	

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TestAmerica Inc

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

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 09-Apr-18

Lab Name: TestAmerica Inc | **SDG:** W08023 | **Collection Date:** 3/1/2018 9:01:00 AM

Lot-Sample No.: J8C010405-1 | **Report No. :** 72589 | **Received Date:** 3/1/2018 12:55:00 PM

Client Sample ID: B3H2W5 | **COC No. :** I18-005-041 | **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
U-238	**2.07E-01**	U	2.6E-01	2.6E-01	3.48E-01	pCi/L	79%	*0.59*	3/19/18 12:27 p		0.20019	ALP211
						8.75E-02	1.00E+00	*(1.6)*			L	
								Ratio U-234/238 = 4.3				
Batch: 8064020	TC99_ETVDSK_LSC			**Work Order:**	NANT71AH		**Report DB ID:**	9NANT710				
Tc-99	**3.90E+02**		1.4E+01	1.7E+01	1.19E+01	pCi/L	100%	*(32.9)*	3/8/18 11:59 a		0.1251	LSC9
						5.62E+00	5.00E+01	*(46.3)*			L	
Batch: 8064022	SRISO_SEP_PRECIP_GPC			**Work Order:**	NANT71AG		**Report DB ID:**	9NANT710				
STRONTIUM	**-1.90E-01**	U	6.4E-01	6.5E-01	1.22E+00	pCi/L	87%	*-0.16*	3/9/18 11:12 a		0.50023	GPC3
						5.49E-01	2.00E+00	*-0.59*			L	
Batch: 8064023	SE79_SEP_IE_LSC			**Work Order:**	NANT71AF		**Report DB ID:**	9NANT710				
Se-79	**8.69E+00**	U	5.9E+00	6.7E+00	1.38E+01	pCi/L	71%	*0.63*	4/3/18 03:14 a		0.20014	LSC4
						6.55E+00	5.00E+01	*(2.6)*			L	
Batch: 8066034	906.0_H3_LSC			**Work Order:**	NANT72AC		**Report DB ID:**	9NANT720				
H-3	**1.26E+03**		2.7E+02	3.1E+02	5.14E+02	pCi/L	100%	*(2.5)*	3/8/18 11:04 a		0.00503	LSC6
						2.40E+02	7.00E+02	*(8.3)*			L	
Batch: 8081016	PUISO_PLATE_AEA			**Work Order:**	NANT74AE		**Report DB ID:**	9NANT740				
PU-238	**6.43E-02**	U	1.4E-01	1.4E-01	2.88E-01	pCi/L	103%	*0.22*	3/29/18 04:53 p		0.19266	ALP39
						6.40E-02	1.00E+00	*0.9*			L	
PU239/40	**-3.41E-02**	U	1.4E-01	1.4E-01	3.79E-01	pCi/L	103%	*-0.09*	3/29/18 04:53 p		0.19266	ALP39
						1.08E-01	1.00E+00	*-0.47*			L	
Batch: 8093011	PU241_IE_LSC			**Work Order:**	NANT74AA		**Report DB ID:**	9NANT740				

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TestAmerica Inc

rptSTLRchSample V5.8.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 09-Apr-18

Lab Name:	**TestAmerica Inc**	**SDG:**	W08023	**Collection Date:**	3/1/2018 9:01:00 AM
Lot-Sample No.:	**J8C010405-1**	**Report No. :**	72589	**Received Date:**	3/1/2018 12:55:00 PM
Client Sample ID:	**B3H2W5**	**COC No. :**	I18-005-041	**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
Pu-241	**9.36E-01**	U	4.6E+00	5.7E+00	1.10E+01	pCi/L	100%	*0.09*	4/3/18 09:37 p		0.19266	LSC10
						5.27E+00	2.50E+01	*0.33*			L	

No. of Results: 18 **Comments:**

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AMENDED REPORT

FORM I

SAMPLE RESULTS

Date: 09-Apr-18

Lab Name: TestAmerica Inc | **SDG:** W08023 | **Collection Date:** 3/1/2018 9:01:00 AM

Lot-Sample No.: J8C010405-2 | **Report No. :** 72589 | **Received Date:** 3/1/2018 12:55:00 PM

Client Sample ID: B3H2W7 | **COC No. :** I18-005-043 | **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: 8064019	C14_LSC			**Work Order:**	NANVE1AA		**Report DB ID:**	9NANVE10				
C-14	**-2.23E-01**	U	6.8E+00	8.6E+00	1.63E+01	pCi/L	100%	*-0.01*	3/6/18 08:04 p		0.075	LSC5
						7.80E+00	5.00E+01	*-0.05*			L	

No. of Results: 1 **Comments:**

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REV.0

TestAmerica Inc

rptSTLRchSample V5.8.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

AMENDED REPORT

FORM II

Date: 09-Apr-18

DUPLICATE RESULTS

Lab Name:	TestAmerica Inc	**SDG:**	W08023	**Collection Date:**	3/1/2018 9:01:00 AM
Lot-Sample No.:	J8C010405-1	**Report No. :**	72589	**Received Date:**	3/1/2018 12:55:00 PM
Client Sample ID:	B3H2W5 DUP	**COC No. :**	I18-005-041	**Matrix:**	WATER

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: 8064015	GAMMA_GS			**Work Order:** NANT71AK		**Report DB ID:** NANT71KR			**Orig Sa DB ID:** 9NANT710			
CO-60	2.49E-01	U	1.9E+00	1.9E+00	3.47E+00	pCi/L		0.07	3/13/18 01:54 p		1.88721	GER10$1
	3.91E+00	U	**RPD**	**176.1**		2.50E+01		0.27			L	
CS-134	-1.19E+00	U	2.4E+00	2.4E+00	3.97E+00	pCi/L		-0.3	3/13/18 01:54 p		1.88721	GER10$1
	-4.99E-01	U	**RPD**	**-81.6**		8.00E+01		-(1.)			L	
CS-137	1.09E+00	U	2.2E+00	2.2E+00	3.95E+00	pCi/L		0.28	3/13/18 01:54 p		1.88721	GER10$1
	1.76E+00	U	**RPD**	**46.4**		1.50E+01		(1.)			L	
EU-152	5.22E-01	U	5.9E+00	5.9E+00	1.02E+01	pCi/L		0.05	3/13/18 01:54 p		1.88721	GER10$1
	2.02E+00	U	**RPD**	**117.9**		5.00E+01		0.18			L	
EU-154	-5.24E-01	U	6.2E+00	6.2E+00	1.12E+01	pCi/L		-0.05	3/13/18 01:54 p		1.88721	GER10$1
	4.90E+00	U	**RPD**	**247.9**		5.00E+01		-0.17			L	
EU-155	-7.26E+00	U	5.2E+00	5.2E+00	8.04E+00	pCi/L		-0.9	3/13/18 01:54 p		1.88721	GER10$1
	1.81E+00	U	**RPD**	**-332.9**		5.00E+01		-(2.8)			L	
K-40	5.81E-01	U	2.7E+01	2.7E+01	4.98E+01	pCi/L		0.01	3/13/18 01:54 p		1.88721	GER10$1
	3.15E+00	U	**RPD**	**137.6**				0.04			L	
SB-125	1.76E+00	U	5.4E+00	5.4E+00	9.48E+00	pCi/L		0.19	3/13/18 01:54 p		1.88721	GER10$1
	2.84E+00	U	**RPD**	**47.1**		5.00E+01		0.66			L	
Batch: 8064018	UISO_PLATE_AEA			**Work Order:** NANT71AP		**Report DB ID:** NANT71PR			**Orig Sa DB ID:** 9NANT710			
U-234	8.42E-01		5.2E-01	5.4E-01	3.51E-01	pCi/L	76%	(2.4)	3/19/18 12:27 p		0.20047	ALP212
	8.87E-01		**RPD**	**5.1**		1.00E+00		(3.1)			L	
U-235	7.18E-02	U	1.6E-01	1.6E-01	3.08E-01	pCi/L	76%	0.23	3/19/18 12:27 p		0.20047	ALP212
	6.89E-02	U	**RPD**	**4.1**		1.00E+00		0.92			L	

04/09/2018

REV.0

RPD - Relative Percent Difference.

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

AMENDED REPORT

FORM II

Date: 09-Apr-18

DUPLICATE RESULTS

Lab Name:	**TestAmerica Inc**	**SDG:**	W08023	**Collection Date:**	3/1/2018 9:01:00 AM
Lot-Sample No.:	**J8C010405-1**	**Report No. :**	72589	**Received Date:**	3/1/2018 12:55:00 PM
Client Sample ID:	**B3H2W5 DUP**	**COC No. :**	I18-005-041	**Matrix:**	WATER

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
U-238	5.24E-01		4.1E-01	4.2E-01	3.73E-01	pCi/L	76%	(1.4)	3/19/18 12:27 p		0.20047	ALP212
	2.07E-01	U	**RPD**	**86.9**		1.00E+00		(2.5)			L	
									Alpha Spec Result Sum = 5.2E-01			
Batch: 8064020	TC99_ETVDSK_LSC			**Work Order:**	NANT71AR	**Report DB ID:**	NANT71RR		**Orig Sa DB ID:**	9NANT710		
Tc-99	4.19E+02		1.5E+01	1.8E+01	1.31E+01	pCi/L	100%	(32.1)	3/8/18 01:25 p		0.12509	LSC9
	3.90E+02		**RPD**	**7.2**		5.00E+01		(46.1)			L	
									Alpha Spec Result Sum = 5.2E-01			
Batch: 8064022	SRISO_SEP_PRECIP_GPC			**Work Order:**	NANT71AV	**Report DB ID:**	NANT71VR		**Orig Sa DB ID:**	9NANT710		
STRONTIUM	-6.04E-02	U	6.4E-01	6.4E-01	1.19E+00	pCi/L	88%	-0.05	3/9/18 11:12 a		0.48386	GPC32B
	-1.90E-01	U	**RPD**	**-103.6**		2.00E+00		-0.19			L	
									Alpha Spec Result Sum = 5.2E-01			
Batch: 8064023	SE79_SEP_IE_LSC			**Work Order:**	NANT71AW	**Report DB ID:**	NANT71WR		**Orig Sa DB ID:**	9NANT710		
Se-79	5.83E+00	U	5.4E+00	6.2E+00	1.28E+01	pCi/L	77%	0.46	4/3/18 03:59 a		0.20057	LSC4
	8.69E+00	U	**RPD**	**39.4**		5.00E+01		(1.9)			L	
									Alpha Spec Result Sum = 5.2E-01			
Batch: 8066034	906.0_H3_LSC			**Work Order:**	NANT72AU	**Report DB ID:**	NANT72UR		**Orig Sa DB ID:**	9NANT720		
H-3	1.11E+03		2.6E+02	3.0E+02	5.13E+02	pCi/L	100%	(2.2)	3/8/18 12:31 p		0.00501	LSC6
	1.26E+03		**RPD**	**12.9**		7.00E+02		(7.4)			L	
									Alpha Spec Result Sum = 5.2E-01			
Batch: 8081016	PUISO_PLATE_AEA			**Work Order:**	NANT71AX	**Report DB ID:**	NANT71XR		**Orig Sa DB ID:**	9NANT740		

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RPD - Relative Percent Difference.

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

AMENDED REPORT

FORM II

Date: 09-Apr-18

DUPLICATE RESULTS

Lab Name:	TestAmerica Inc	**SDG:**	W08023	**Collection Date:**	3/1/2018 9:01:00 AM
Lot-Sample No.:	J8C010405-1	**Report No. :**	72589	**Received Date:**	3/1/2018 12:55:00 PM
Client Sample ID:	B3H2W5 DUP	**COC No. :**	I18-005-041	**Matrix:**	WATER

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
PU-238	6.19E-02	U	1.4E-01	1.4E-01	2.77E-01	pCi/L	106%	0.22	3/29/18 11:58 a		0.20003	ALP39
	6.43E-02	U	**RPD**	**3.8**		1.00E+00		0.9			L	
PU239/40	-3.29E-02	U	1.4E-01	1.4E-01	3.65E-01	pCi/L	106%	-0.09	3/29/18 11:58 a		0.20003	ALP39
	-3.41E-02	U	**RPD**	**-3.8**		1.00E+00		-0.47			L	

Alpha Spec Result Sum = 2.9E-02

Batch: 8093011 PU241_IE_LSC **Work Order:** NANT72A0 **Report DB ID:** NANT720R **Orig Sa DB ID:** 9NANT740

Pu-241	1.22E+00	U	4.4E+00	5.5E+00	1.06E+01	pCi/L	100%	0.11	4/3/18 07:32 p		0.20003	LSC10
	9.36E-01	U	**RPD**	**26.2**		2.50E+01		0.45			L	

Alpha Spec Result Sum = 2.9E-02

No. of Results: 18 **Comments:**

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AMENDED REPORT

FORM II

Date: 09-Apr-18

DUPLICATE RESULTS

Lab Name:	TestAmerica Inc	**SDG:**	W08023	**Collection Date:**	3/1/2018 9:01:00 AM
Lot-Sample No.:	J8C010405-2	**Report No. :**	72589	**Received Date:**	3/1/2018 12:55:00 PM
Client Sample ID:	B3H2W7 DUP	**COC No. :**	I18-005-043	**Matrix:**	WATER

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: 8064019	C14_LSC			**Work Order:**	NANVE1AD	**Report DB ID:**	NANVE1DR		**Orig Sa DB ID:**	9NANVE10		
C-14	-4.15E+00	U	6.8E+00	8.5E+00	1.66E+01	pCi/L	100%	-0.25	3/6/18 10:13 p		0.075	LSC5
	-2.23E-01	U	**RPD**	**-179.6**		5.00E+01		-0.98			L	

No. of Results: 1 **Comments:**

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AMENDED REPORT

FORM II

BLANK RESULTS

Date: 09-Apr-18

Lab Name: TestAmerica Inc **SDG:** W08023

Matrix: WATER **Report No. :** 72589

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
Batch: 8064019	C14_LSC			**Work Order:**	NANV01AA		**Report DB ID:**	NANV01AB				
C-14	-8.82E+00	U	6.6E+00	8.3E+00	1.65E+01	pCi/L	100%	-0.54	3/6/18 11:17 p		0.075	LSC5
					7.89E+00	5.00E+01		-(2.1)			L	
Batch: 8064016	PUISO_PLATE_AEA			**Work Order:**	NANVV2AA		**Report DB ID:**	NANVV2AB				
PU-238	5.99E-02	U	1.4E-01	1.4E-01	2.99E-01	pCi/L	103%	0.2	3/13/18 11:07 a		0.20015	ALP44
					7.06E-02	1.00E+00		0.85			L	
PU239/40	-3.36E-03	U	1.4E-01	1.4E-01	2.62E-01	pCi/L	103%	-0.01	3/13/18 11:07 a		0.20015	ALP44
					5.35E-02	1.00E+00		-0.05			L	
Batch: 8081016	PUISO_PLATE_AEA			**Work Order:**	NAPMF1AA		**Report DB ID:**	NAPMF1AB				
PU-238	1.93E-02	U	1.2E-01	1.2E-01	3.39E-01	pCi/L	101%	0.06	3/29/18 11:58 a		0.20031	ALP43
					1.02E-01	1.00E+00		0.32			L	
PU239/40	-3.39E-02	U	1.2E-01	1.2E-01	3.27E-01	pCi/L	101%	-0.1	3/29/18 11:58 a		0.20031	ALP43
					9.57E-02	1.00E+00		-0.57			L	
Batch: 8064018	UISO_PLATE_AEA			**Work Order:**	NANVX1AA		**Report DB ID:**	NANVX1AB				
U-234	5.62E-02	U	1.6E-01	1.6E-01	3.73E-01	pCi/L	76%	0.15	3/19/18 12:27 p		0.2007	ALP216
					9.63E-02	1.00E+00		0.71			L	
U-235	-9.38E-03	U	1.6E-01	1.6E-01	3.25E-01	pCi/L	76%	-0.03	3/19/18 12:27 p		0.2007	ALP216
					7.33E-02	1.00E+00		-0.12			L	
U-238	-1.88E-02	U	1.6E-01	1.6E-01	3.63E-01	pCi/L	76%	-0.05	3/19/18 12:27 p		0.2007	ALP216
					9.13E-02	1.00E+00		-0.24			L	
								Ratio U-234/238 = -3.0				
Batch: 8093011	PU241_IE_LSC			**Work Order:**	NAPMG2AA		**Report DB ID:**	NAPMG2AB				

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

AMENDED REPORT

FORM II

BLANK RESULTS

Date: 09-Apr-18

Lab Name: TestAmerica Inc **SDG:** W08023

Matrix: WATER **Report No. :** 72589

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
Pu-241	-1.22E+00	U	4.3E+00	5.4E+00	1.06E+01	pCi/L	100%	-0.12	4/3/18 11:43 p		0.20031	LSC10
					5.07E+00	2.50E+01		-0.45			L	
Batch: 8066034	906.0_H3_LSC			**Work Order:**	NANV22AA		**Report DB ID:**	NANV22AB				
H-3	2.46E+02	U	2.2E+02	2.6E+02	5.22E+02	pCi/L	100%	0.47	3/8/18 01:15 p		0.00504	LSC6
					2.44E+02	7.00E+02		(1.9)			L	
Batch: 8064015	GAMMA_GS			**Work Order:**	NANVT1AA		**Report DB ID:**	NANVT1AB				
CO-60	7.74E-01	U	4.2E+00	4.2E+00	4.01E+00	pCi/L		0.19	3/13/18 07:08 p		2.00013	$GER11
					1.79E+00	2.50E+01		0.37			L	
CS-134	4.05E-01	U	3.7E+00	3.7E+00	3.53E+00	pCi/L		0.11	3/13/18 07:08 p		2.00013	$GER11
					1.62E+00	8.00E+01		0.22			L	
CS-137	-3.12E-01	U	3.6E+00	3.6E+00	3.82E+00	pCi/L		-0.08	3/13/18 07:08 p		2.00013	$GER11
					1.75E+00	1.50E+01		-0.17			L	
EU-152	9.13E-01	U	7.0E+00	7.0E+00	6.27E+00	pCi/L		0.15	3/13/18 07:08 p		2.00013	$GER11
					2.91E+00	5.00E+01		0.26			L	
EU-154	-1.47E+00	U	1.2E+01	1.2E+01	4.23E+00	pCi/L		-0.35	3/13/18 07:08 p		2.00013	$GER11
					1.97E+00	5.00E+01		-0.25			L	
EU-155	-1.82E+00	U	5.9E+00	5.9E+00	7.72E+00	pCi/L		-0.24	3/13/18 07:08 p		2.00013	$GER11
					3.59E+00	5.00E+01		-0.62			L	
K-40	1.93E+01	U	3.6E+01	3.6E+01	6.16E+01	pCi/L		0.31	3/13/18 07:08 p		2.00013	$GER11
					2.82E+01			(1.1)			L	
SB-125	-7.05E+00	U	9.1E+00	9.1E+00	9.42E+00	pCi/L		-0.75	3/13/18 07:08 p		2.00013	$GER11
					4.35E+00	5.00E+01		-(1.5)			L	
Batch: 8064022	SRISO_SEP_PRECIP_GPC			**Work Order:**	NANV31AA		**Report DB ID:**	NANV31AB				

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TestAmerica Inc

rptSTLRchBlank

V5.8.5 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

AMENDED REPORT

FORM II

BLANK RESULTS

Date: 09-Apr-18

Lab Name: TestAmerica Inc **SDG:** W08023

Matrix: WATER **Report No. :** 72589

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
STRONTIUM	1.30E-01	U	6.6E-01	6.6E-01	1.17E+00	pCi/L	89%	0.11	3/9/18 11:12 a		0.50134	GPC32C
					5.29E-01	2.00E+00		0.4			L	
Batch: 8064023	SE79_SEP_IE_LSC			**Work Order:**	NANV41AA		**Report DB ID:**	NANV41AB				
Se-79	3.37E+00	U	5.2E+00	6.0E+00	1.27E+01	pCi/L	78%	0.27	4/3/18 04:45 a		0.20051	LSC4
					6.04E+00	5.00E+01		(1.1)			L	
Batch: 8064020	TC99_ETVDSK_LSC			**Work Order:**	NANV11AA		**Report DB ID:**	NANV11AB				
Tc-99	-3.45E+00	U	5.0E+00	5.6E+00	1.25E+01	pCi/L	100%	-0.28	3/8/18 02:07 p		0.1254	LSC9
					5.90E+00	5.00E+01		-(1.2)			L	

No. of Results: 21 **Comments:**

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AMENDED REPORT

FORM II

Date: 09-Apr-18

LCS RESULTS

Lab Name: TestAmerica Inc **SDG:** W08023

Matrix: WATER **Report No. :** 72589

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
Batch: 8064019	C14_LSC			**Work Order:**	NANV01AC		**Report DB ID:**	NANV01CS					
C-14	4.47E+02		1.6E+01	3.3E+01	1.65E+01	pCi/L	100%	4.66E+02	9.4E+00	96%	3/7/18 12:22 a	0.075	LSC5
							Rec Limits:	80	120	0.0		L	
Batch: 8064016	PUISO_PLATE_AEA			**Work Order:**	NANVV1AC		**Report DB ID:**	NANVV1CS					
PU239/40	4.21E+00		1.1E+00	1.3E+00	2.67E-01	pCi/L	98%	4.49E+00	4.5E-02	94%	3/12/18 04:10 p	0.20072	ALP44
							Rec Limits:	80	120	-0.1		L	
Batch: 8081016	PUISO_PLATE_AEA			**Work Order:**	NAPMF1AC		**Report DB ID:**	NAPMF1CS					
PU239/40	6.44E+00		1.4E+00	1.8E+00	2.65E-01	pCi/L	98%	4.48E+00	4.5E-02	144%	3/29/18 11:58 a	0.20103	ALP44
							Rec Limits:	80	120	0.4		L	
Batch: 8064018	UISO_PLATE_AEA			**Work Order:**	NANVX1AC		**Report DB ID:**	NANVX1CS					
U-234	1.52E+01		2.2E+00	3.5E+00	3.82E-01	pCi/L	81%	1.62E+01	8.5E-02	94%	3/19/18 12:28 p	0.2003	ALP218
							Rec Limits:	80	120	-0.1		L	
U-238	1.70E+01		2.3E+00	3.8E+00	5.92E-01	pCi/L	81%	1.69E+01	8.9E-02	100%	3/19/18 12:28 p	0.2003	ALP218
							Rec Limits:	80	120	0.0		L	
Batch: 8093011	PU241_IE_LSC			**Work Order:**	NAPMG2AC		**Report DB ID:**	NAPMG2CS					
Pu-241	1.04E+03		1.8E+01	6.4E+01	1.07E+01	pCi/L	98%	1.14E+03	1.4E+01	91%	4/4/18 01:49 a	0.20103	LSC10
							Rec Limits:	80	120	-0.1		L	
Batch: 8066034	906.0_H3_LSC			**Work Order:**	NANV22AC		**Report DB ID:**	NANV22CS					
H-3	2.35E+03		3.1E+02	3.6E+02	5.21E+02	pCi/L	100%	2.75E+03	8.2E+01	85%	3/8/18 01:59 p	0.00503	LSC6
							Rec Limits:	80	120	-0.1		L	
Batch: 8064015	GAMMA_GS			**Work Order:**	NANVT1AC		**Report DB ID:**	NANVT1CS					
CO-60	3.65E+02		6.8E+01	6.8E+01	3.16E+01	pCi/L		3.65E+02		100%	3/13/18 07:26 p	0.20006	GER10$1
							Rec Limits:	80	120	0.0		L	

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TestAmerica Inc **Bias** **- (Result/Expected)-1 as defined by ANSI N13.30.**

rptSTLRchLcs
V5.8.5 A2002

AMENDED REPORT

FORM II

Date: 09-Apr-18

LCS RESULTS

Lab Name: TestAmerica Inc **SDG:** W08023

Matrix: WATER **Report No. :** 72589

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
CS-137	4.63E+02		8.4E+01	8.4E+01	4.29E+01	pCi/L		4.90E+02		95%	3/13/18 07:26 p	0.20006	GER10$1
							Rec Limits:	80	120	-0.1		L	
EU-152	6.57E+02		1.5E+02	1.5E+02	1.18E+02	pCi/L		7.58E+02		87%	3/13/18 07:26 p	0.20006	GER10$1
							Rec Limits:	80	120	-0.1		L	
Batch: 8064022	SRISO_SEP_PRECIP_GPC			**Work Order:**	NANV31AC		**Report DB ID:**	NANV31CS					
STRONTIUM	1.46E+01		1.7E+00	3.9E+00	1.30E+00	pCi/L	84%	1.33E+01	9.4E-02	110%	3/9/18 11:12 a	0.50076	GPC32D
							Rec Limits:	80	120	0.1		L	
Batch: 8064020	TC99_ETVDSK_LSC			**Work Order:**	NANV11AC		**Report DB ID:**	NANV11CS					
Tc-99	1.09E+02		8.6E+00	9.5E+00	1.23E+01	pCi/L	100%	1.08E+02	6.2E-01	100%	3/8/18 02:50 p	0.12552	LSC9
							Rec Limits:	80	120	0.0		L	

No. of Results: 12 **Comments:**

04/09/2018

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AMENDED REPORT

FORM II

Date: 09-Apr-18

MATRIX SPIKE RESULTS

Lab Name: TestAmerica Inc **SDG:** W08023

Lot-Sample No.: J8C010405-1, B3H2W5 **Report No. :** 72589 **Matrix:** WATER

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	CSU (2 s)	MDC|MDA	Rpt Unit	Yield	Rec-overy	Expected, Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 8064020	**Work Order:** NANT71AQ			**Report DB ID:** NANT71QW			**Orig Sa DB ID:** 9NANT710					
Tc-99	5.11E+02		2.1E+01	3.4E+01	1.24E+01	pCi/L	100%	94.44%	5.41E+02	3/8/18 12:42 p	0.12523	TC99_ETVDSK_LSC
	3.90E+02								3.1E+00		L	LSC9
Batch: 8066034	**Work Order:** NANT72AT			**Report DB ID:** NANT72TW			**Orig Sa DB ID:** 9NANT720					
H-3	1.72E+03		3.7E+02	5.2E+02	5.97E+02	pCi/L	100%	106.07%	1.62E+03	3/8/18 11:47 a	0.00431	906.0_H3_LSC
	1.26E+03								4.9E+01		L	LSC6

Number of Results: 2

Comments:

04/09/2018

REV.0

AMENDED REPORT

FORM II

Date: 09-Apr-18

MATRIX SPIKE RESULTS

Lab Name: TestAmerica Inc **SDG:** W08023

Lot-Sample No.: J8C010405-2, B3H2W7 **Report No. :** 72589 **Matrix:** WATER

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	CSU (2 s)	MDC|MDA	Rpt Unit	Yield	Rec-overy	Expected, Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 8064019	**Work Order:** NANVE1AC			**Report DB ID:** NANVE1CW			**Orig Sa DB ID:** 9NANVE10					
C-14	4.53E+02		1.6E+01	3.3E+01	1.66E+01	pCi/L	100%	94.55%	4.80E+02	3/6/18 09:08 p	0.075	C14_LSC
	-2.23E-01								9.6E+00		L	LSC5

Number of Results: 1

Comments:

04/09/2018

REV.0

OPERATIONS RECORDS FOR SDG W08023

USING THE TOOL PROVIDED BY ENVIORMENTAL DATA INTEGRATION, **W08023** IS NOT REQUIRED TO BE MARKED AS AN OPERTAION RECORD.