

RESL CUSTOMER EXPORT CONTROL AGREEMENT

It is the Radiological and Environmental Sciences Laboratory's (RESL) policy to conduct business in accordance with all applicable U.S. export control laws and regulations. It is also RESL's policy that its Customers comply with U.S. export control laws and regulations. Therefore, Customer agrees to the following:

1. Because products, technical data, and technical assistance (i.e., services) provided to Customer by RESL may be subject to U.S. export control laws and regulations, (i) transactions with certain persons and companies and (ii) the export or reexport of certain types and levels of products, technical data, and services are prohibited or restricted.
2. Customer acknowledges that it is responsible for its own compliance with U.S. export control laws and regulations. Customer further agrees that it assumes the responsibility to obtain all necessary U.S. export licenses or other U.S. governmental authorizations, as well as all liability for the failure to do so.
3. Customer acknowledges that export control requirements may change and that the export or reexport of RESL products, technical data, and services without an export license or other appropriate governmental authorization may result in criminal and/or civil liability.
4. The obligations and requirements described herein shall survive the expiration or termination of any agreement or contract between RESL and Customer.

XaW35 Participating Laboratories

Lab Code	Lab Name	Matrix Code
ANTE01	ALS Environmental - Fort Collins, CO	XaW
ARSL01	ARS International, LLC	XaW
AY1201	Consolidated Nuclear Security, LLC, Analytical Chemistry Organization Lab.	XaW
CDHS01	California Department of Public Health	XaW
CHMH01	222-S Laboratory	XaW
ERCL01	Washington State Public Health Laboratories	XaW
FDHE01	Florida Dept of Health Environmental Laboratory	XaW
FDOH01	Florida Dept. of Health, Mobile Environmental Radiological Lab	XaW
GENE01	GEL Laboratories, LLC	XaW
MNDH01	Minnesota Department of Health, Public Health Lab. Division	XaW
NARL01	National Analytical Radiation Environmental Laboratory	XaW
NARL02	USEPA - NAREL - MERL	XaW
NESI01	BWXT-Radioisotope & Analytical Chemistry Laboratory	XaW
ORIS01	ORISE/IEAV	XaW
QUAN01	TestAmerica St. Louis	XaW
QUAN03	TestAmerica Laboratories - Richland	XaW
SAVA01	SAVANNAH RIVER NUCLEAR SOLUTIONS (SRNS)	XaW
SEML01	SRS Environmental Monitoring Laboratory	XaW
SOUT01	Southwest Research Institute	XaW
SRPD01	Sandia National Laboratories, Radiation Protection Sample Diagnostics	XaW
TELE02	ATI Environmental, Inc., Midwest Lab	XaW
TMAO01	EBERLINE SERVICES OAK RIDGE LABORATORY	XaW

Laboratories Not Reporting XaW35

Lab Code	Lab Name	Matrix Code
EULC01	EnergySolutions, LLC	XaW

Study Reference Values

MAPEP-16-XaW35

Radiological Reference Date: 08/01/2016

Analyte	Ref Value	Ref Unc
Radiological		Units: (Bq/L)
Iodine-129	4.54	0.07

Sample Statistical Summary

MAPEP-16-XaW35

Radiological Reference Date: 08/01/2016

Analyte	T(1)	A(2)	Grand(3) Mean	Std Dev	Ref Value	Ref Unc	Acceptance Range
Radiological							Units: (Bq/L)
Iodine-129	22	21	4.39	0.56	4.54	0.07	3.18 - 5.90

Note: (1) T = Total number of laboratories reporting analyte.
 (2) A = Number of laboratories with 'Acceptable' performance.
 (3) Mean excludes values derived as total metals and values indicated as "Not Acceptable".

Result Flags:

A = Result acceptable Bias $\leq 20\%$
 W = Result acceptable with warning $20\% < \text{Bias} < 30\%$
 N = Result not acceptable Bias $> 30\%$
 RW = Report Warning
 NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$
 ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$
 ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$
 NOT ACCEPTABLE.....RP $> 30\%$
 RP = Relative Precision

Flag Summary Report

MAPEP-16-XaW35

Radiological

Analyte	A	W	RW	N
Iodine-129	18	3		1



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (ANTE01) ALS Environmental - Fort Collins, CO
 225 Commerce Drive
 Fort Collins, CO 80524-1416

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	3.80	4.54	A		-16.3	3.18 - 5.90	1.55	N

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (ARSL01) ARS International, LLC
 2609 North River Road
 Port Allen, LA 70767

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.678	4.54	A		3.0	3.18 - 5.90	1.002	W

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35

(AY1201) Consolidated Nuclear Security, LLC, Analytical Chemistry Organization Laboratory
 Y12, NSC, Bldg. 9995, Rm 142
 Oak Ridge, TN 37831-8189

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	5.49	4.54	W		20.9	3.18 - 5.90	1.6	W

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias $\leq 20\%$

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

N = Result not acceptable Bias $> 30\%$

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$

ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$

ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$

NOT ACCEPTABLE.....RP $> 30\%$

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (CDHS01) California Department of Public Health
 Drinking Water & Radiation Lab.
 Richmond, CA 94804-6403

Radiological Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	5.23	4.54	A		15.2	3.18 - 5.90	0.16	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (CHMH01) 222-S Laboratory
 1955 Jadwin Ave Suite 330
 Richland, WA 99354

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.34	4.54	A		-4.4	3.18 - 5.90	5.73E-01	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (ERCL01) Washington State Public Health Laboratories
 1610 N.E. 150th Street
 Shoreline, WA 98155-9701

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.8	4.54	A		5.7	3.18 - 5.90	0.1	A

Radiological Reference Date: August 1, 2016

Result Flags:

- A = Result acceptable Bias <=20%
- W = Result acceptable with warning 20% < Bias < 30%
- N = Result not acceptable Bias > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP<2%
- ACCEPTABLE.....2%<=RP<=15%
- ACCEPTABLE WITH WARNING.....15%<RP<=30%
- NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (FDHE01) Florida Dept of Health Environmental Laboratory
 PO Box 680069
 Orlando, FL 32868-0069

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.090	4.54	A		-9.9	3.18 - 5.90	0.184	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35

(FDOH01) Florida Dept. of Health, Mobile Environmental Radiological Lab
 PO Box 680069
 Orlando, FL 32868-0069

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.479	4.54	A		-1.3	3.18 - 5.90	0.186	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (GENE01) GEL Laboratories, LLC
 2040 Savage Road
 Charleston, SC 29407

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.67	4.54	A		2.9	3.18 - 5.90	0.307	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35

(MNDH01) Minnesota Department of Health, Public Health Lab. Division
 601 Robert St. N.
 St. Paul, MN 55155

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	3.53	4.54	W		-22.2	3.18 - 5.90	1.09	N

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (NARL01) National Analytical Radiation Environmental Laboratory
 540 S. Morris Ave.
 Montgomery, AL 36115-2601

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	5.06	4.54	A		11.5	3.18 - 5.90	0.463	A

Radiological Reference Date: August 1, 2016

Result Flags:

- A = Result acceptable Bias <=20%
- W = Result acceptable with warning 20% < Bias < 30%
- N = Result not acceptable Bias > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP<2%
- ACCEPTABLE.....2%<=RP<=15%
- ACCEPTABLE WITH WARNING.....15%<RP<=30%
- NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (NARL02) USEPA - NAREL - MERL
 540 S Morris Ave
 Montgomery, AL 36115

Radiological Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.41	4.54	A		-2.9	3.18 - 5.90	0.230	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (NESI01) BWXT-Radioisotope & Analytical Chemistry Laboratory
 Lynchburg Technology Center
 Lynchburg, VA 24504-5447

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.15	4.54	A		-8.6	3.18 - 5.90	0.236	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35

(ORIS01) ORISE/IEAV

PO Box 117

Oak Ridge, TN 37831-0117

Radiological Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.28	4.54	A		-5.7	3.18 - 5.90	0.31	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35

(QUAN01) TestAmerica St. Louis
 13715 Rider Trail North
 Earth City, MO 63045-1205

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	3.71	4.54	A		-18.3	3.18 - 5.90	0.152	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias $\leq 20\%$

W = Result acceptable with warning $20\% < \text{Bias} < 30\%$

N = Result not acceptable Bias $> 30\%$

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP $< 2\%$

ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$

ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$

NOT ACCEPTABLE.....RP $> 30\%$

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (QUAN03) TestAmerica Laboratories - Richland
 2800 GEORGE WASHINGTON WAY
 RICHLAND, WA 99354-

Radiological Units: (Bq/L)

Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.3118	4.54	A		-5.0	3.18 - 5.90	.2438	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (SAVA01) SAVANNAH RIVER NUCLEAR SOLUTIONS (SRNS)
 SRNL (non-purchased material receipt)
 AIKEN, SC 29808-0000

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	3.72	4.54	A		-18.1	3.18 - 5.90	0.24	A

Radiological Reference Date: August 1, 2016

Result Flags:

- A = Result acceptable Bias $\leq 20\%$
- W = Result acceptable with warning $20\% < \text{Bias} < 30\%$
- N = Result not acceptable Bias $> 30\%$
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP $< 2\%$
- ACCEPTABLE..... $2\% \leq \text{RP} \leq 15\%$
- ACCEPTABLE WITH WARNING..... $15\% < \text{RP} \leq 30\%$
- NOT ACCEPTABLE.....RP $> 30\%$
- RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (SEML01) SRS Environmental Monitoring Laboratory
 Bldg 735-B
 Aiken, SC 29808

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.68	4.54	A		3.1	3.18 - 5.90	0.56	A

Radiological Reference Date: August 1, 2016

Result Flags:

- A = Result acceptable Bias <=20%
- W = Result acceptable with warning 20% < Bias < 30%
- N = Result not acceptable Bias > 30%
- RW = Report Warning
- NR = Not Reported

Uncertainty Flags:

- NOT ACCEPTABLE.....RP<2%
 - ACCEPTABLE.....2%<=RP<=15%
 - ACCEPTABLE WITH WARNING.....15%<RP<=30%
 - NOT ACCEPTABLE.....RP>30%
- RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (SOUT01) Southwest Research Institute
 6220 Culebra Rd.
 San Antonio, TX 78228-0510

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.93	4.54	A		8.6	3.18 - 5.90	0.229	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35

(SRPD01) Sandia National Laboratories, Radiation Protection Sample Diagnostics

PO Box 5800, MS1103

Albuquerque, NM 87185-1103

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	6.60	4.54	N		45.4	3.18 - 5.90	0.99	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (TELE02) ATI Environmental, Inc., Midwest Lab
 700 Landwehr Road
 Northbrook, IL 60062-

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	4.40	4.54	A		-3.1	3.18 - 5.90	0.199	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

RP = Relative Precision



Department of Energy RESL - 1955 Fremont Ave, MS4149 - Idaho Falls, ID 83415

Laboratory Results For MAPEP-16-XaW35
 (TMAO01) EBERLINE SERVICES OAK RIDGE LABORATORY
 601 SCARBORO RD
 OAK RIDGE, TN 37830-

Radiological							Units: (Bq/L)	
Analyte	Result	Ref Value	Flag	Notes	Bias (%)	Acceptance Range	Unc Value	Unc Flag
Iodine-129	3.338	4.54	W		-26.5	3.18 - 5.90	0.185	A

Radiological Reference Date: August 1, 2016

Result Flags:

A = Result acceptable Bias <=20%

W = Result acceptable with warning 20% < Bias < 30%

N = Result not acceptable Bias > 30%

RW = Report Warning

NR = Not Reported

Uncertainty Flags:

NOT ACCEPTABLE.....RP<2%

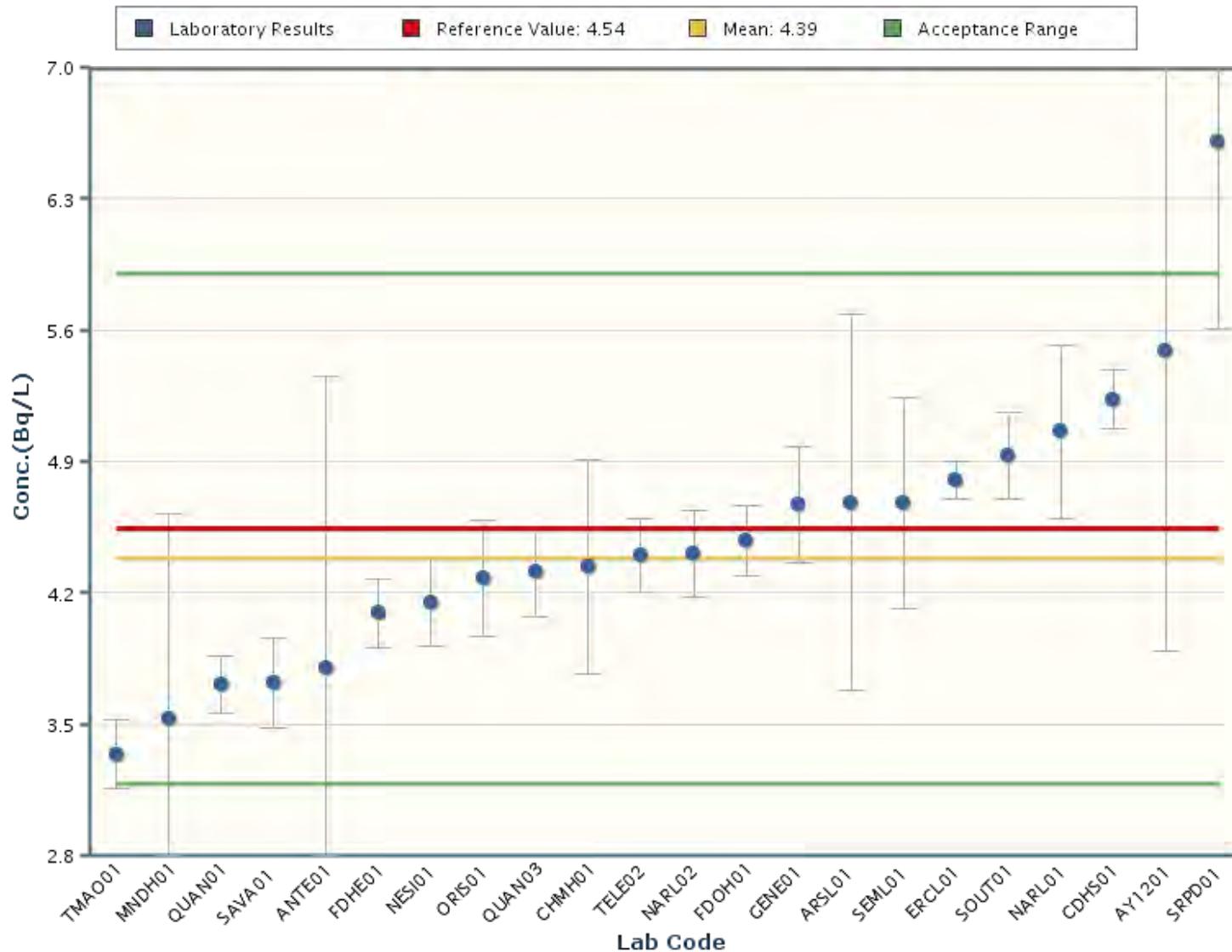
ACCEPTABLE.....2%<=RP<=15%

ACCEPTABLE WITH WARNING.....15%<RP<=30%

NOT ACCEPTABLE.....RP>30%

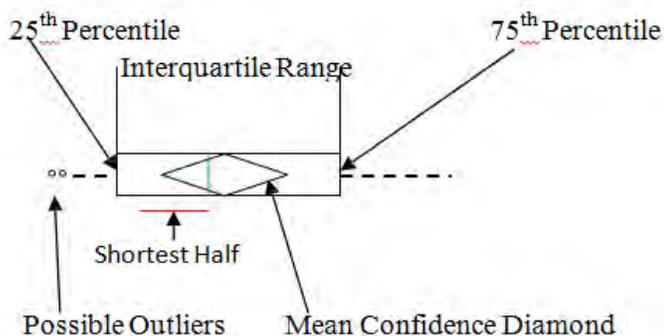
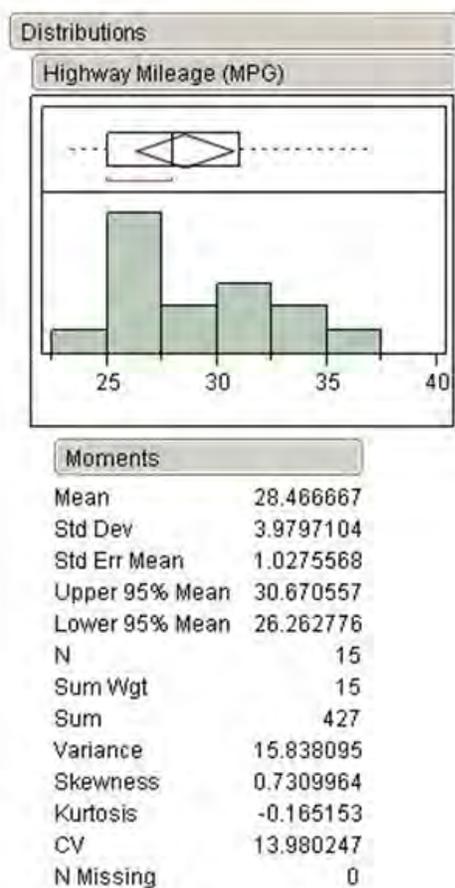
RP = Relative Precision

Iodine-129
MAPEP-16-XaW35



Notes:
 The chart mean excludes values outside of a bias range of $\pm 30\%$.
 The chart shows only data points with values between 1.57 and 7.20 (± 5 Standard Deviations).
 The error bars encompassing each result are plotted at ± 1 standard deviation.

The intent of the distribution graphs contained within this report is to graphically demonstrate to users how % Bias data within the current MAPEP Series appears when examined by matrix, by analyte, by method of sample preparation or by method of detection. The data points (small 'dots') plot the bias (or z-score for organic constituents) of each of the analytes in each of the matrices. Biases greater than +/- 100% have been screened from the data. The BLACK small vertical line inside the small rectangle at the top of the data distribution graph is the mean of the population of the bias shown for that analyte in the matrix.



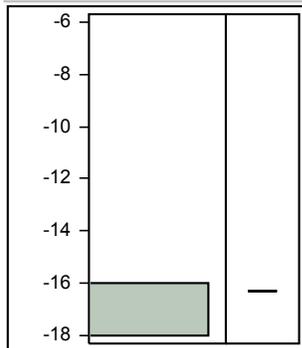
The box plots summarize the distribution of points for each analyte. The ends of the box are the 25th and 75th quantiles. The difference between the quartiles is the interquartile range. The line across the middle of the box identifies the median bias value. Each box has lines, sometimes called whiskers, which extend from each end. The whiskers extend from the ends of the small box to the outermost data point that falls within the distances computed. The bracket along the edge of the box identified the shortest half, which is the most dense 50% of the observations. Potential outliers are represented as small black dots.

The box plot of the bias data points and the mean visually illustrate the breadth of the distribution and where potential outliers in the distribution might lie. The moments for the distribution plot are provided below the Bias plot. In some cases, N becomes very small and thus developed statistics may not accurately reflect estimates of the population if N were a significantly larger value.

XaW Distribution by Detection Method

Distributions Analyte_Detection=Iodine-129 Beta
Counting - 2 pi gas flow proportional counter

Bias



Quantiles

100.0%	maximum	-16.3
99.5%		-16.3
97.5%		-16.3
90.0%		-16.3
75.0%	quartile	-16.3
50.0%	median	-16.3
25.0%	quartile	-16.3
10.0%		-16.3
2.5%		-16.3
0.5%		-16.3
0.0%	minimum	-16.3

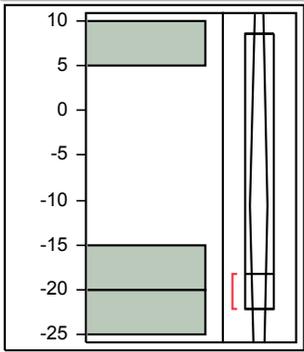
Summary Statistics

Mean	-16.3
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

XaW Distribution by Detection Method

**Distributions Analyte_Detection=Iodine-129
Beta Counting - liquid scintillation counter**

Bias



Quantiles

100.0%	maximum	8.6
99.5%		8.6
97.5%		8.6
90.0%		8.6
75.0%	quartile	8.6
50.0%	median	-18.3
25.0%	quartile	-22.2
10.0%		-22.2
2.5%		-22.2
0.5%		-22.2
0.0%	minimum	-22.2

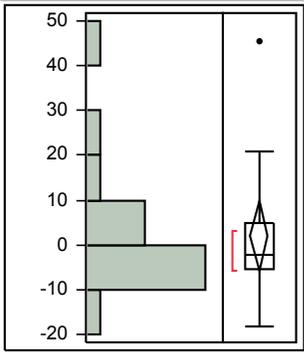
Summary Statistics

Mean	-10.6
Std Dev	16.8
Std Err Mean	9.7
Upper 95% Mean	31.0
Lower 95% Mean	-52.3
N	3.0

XaW Distribution by Detection Method

Distributions Analyte_Detection=Iodine-129 Gamma Spectrometry

Bias



Quantiles

100.0%	maximum	45.4
99.5%		45.4
97.5%		45.4
90.0%		28.3
75.0%	quartile	5.1
50.0%	median	-2.1
25.0%	quartile	-5.5
10.0%		-12.4
2.5%		-18.1
0.5%		-18.1
0.0%	minimum	-18.1

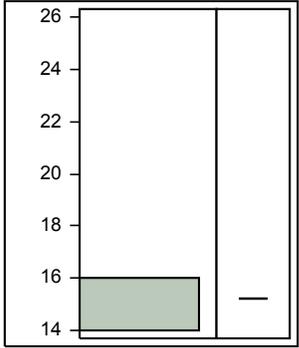
Summary Statistics

Mean	2.1
Std Dev	14.6
Std Err Mean	3.7
Upper 95% Mean	9.9
Lower 95% Mean	-5.7
N	16.0

XaW Distribution by Detection Method

**Distributions Analyte_Detection=Iodine-129
Inductively Coupled Plasma Mass Spectrometry**

Bias



Quantiles

100.0%	maximum	15.2
99.5%		15.2
97.5%		15.2
90.0%		15.2
75.0%	quartile	15.2
50.0%	median	15.2
25.0%	quartile	15.2
10.0%		15.2
2.5%		15.2
0.5%		15.2
0.0%	minimum	15.2

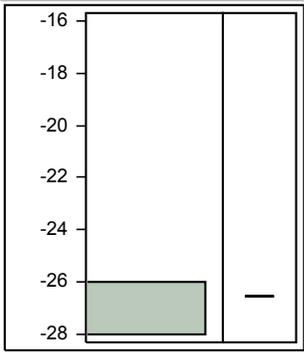
Summary Statistics

Mean	15.2
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

XaW Distribution by Detection Method

Distributions
Analyte_Detection=Iodine-129 Other

Bias



Quantiles

100.0%	maximum	-26.5
99.5%		-26.5
97.5%		-26.5
90.0%		-26.5
75.0%	quartile	-26.5
50.0%	median	-26.5
25.0%	quartile	-26.5
10.0%		-26.5
2.5%		-26.5
0.5%		-26.5
0.0%	minimum	-26.5

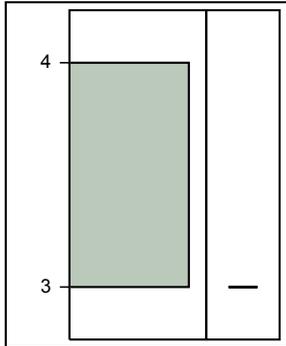
Summary Statistics

Mean	-26.5
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

XaW Distribution by Prep Method

**Distributions Analyte_Method=Iodine-129
EPA 901, Radioactive Cesium, 600/4-80-032**

Bias



Quantiles

100.0%	maximum	3.0
99.5%		3.0
97.5%		3.0
90.0%		3.0
75.0%	quartile	3.0
50.0%	median	3.0
25.0%	quartile	3.0
10.0%		3.0
2.5%		3.0
0.5%		3.0
0.0%	minimum	3.0

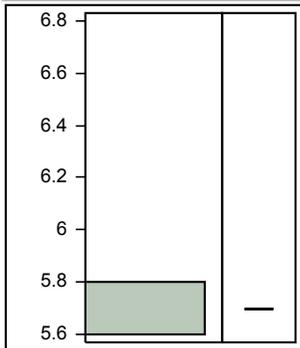
Summary Statistics

Mean	3.0
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

XaW Distribution by Prep Method

**Distributions Analyte_Method=Iodine-129
EPA 901.1, Gamma Emitting, 600/4-80-032**

Bias



Quantiles

100.0%	maximum	5.7
99.5%		5.7
97.5%		5.7
90.0%		5.7
75.0%	quartile	5.7
50.0%	median	5.7
25.0%	quartile	5.7
10.0%		5.7
2.5%		5.7
0.5%		5.7
0.0%	minimum	5.7

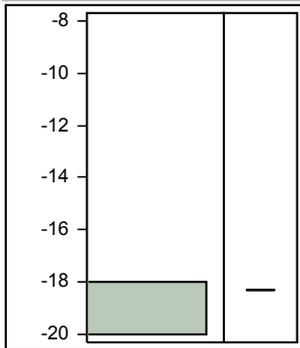
Summary Statistics

Mean	5.7
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

XaW Distribution by Prep Method

Distributions Analyte_Method=Iodine-129 Evaporation, acidified

Bias



Quantiles

100.0%	maximum	-18.3
99.5%		-18.3
97.5%		-18.3
90.0%		-18.3
75.0%	quartile	-18.3
50.0%	median	-18.3
25.0%	quartile	-18.3
10.0%		-18.3
2.5%		-18.3
0.5%		-18.3
0.0%	minimum	-18.3

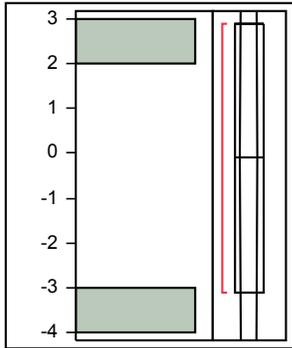
Summary Statistics

Mean	-18.3
Std Dev	.
Std Err Mean	.
Upper 95% Mean	.
Lower 95% Mean	.
N	1.0

XaW Distribution by Prep Method

Distributions Analyte_Method=Iodine-129 Ion Exchange Chromatography / Ion Chromatography

Bias



Quantiles

100.0%	maximum	2.9
99.5%		2.9
97.5%		2.9
90.0%		2.9
75.0%	quartile	2.9
50.0%	median	-0.1
25.0%	quartile	-3.1
10.0%		-3.1
2.5%		-3.1
0.5%		-3.1
0.0%	minimum	-3.1

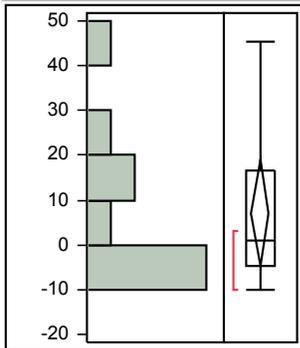
Summary Statistics

Mean	-0.1
Std Dev	4.2
Std Err Mean	3.0
Upper 95% Mean	38.0
Lower 95% Mean	-38.2
N	2.0

XaW Distribution by Prep Method

**Distributions Analyte_Method=Iodine-129
No preparation - analyzed as received**

Bias



Quantiles

100.0%	maximum	45.4
99.5%		45.4
97.5%		45.4
90.0%		43.0
75.0%	quartile	16.6
50.0%	median	0.9
25.0%	quartile	-4.7
10.0%		-9.5
2.5%		-9.9
0.5%		-9.9
0.0%	minimum	-9.9

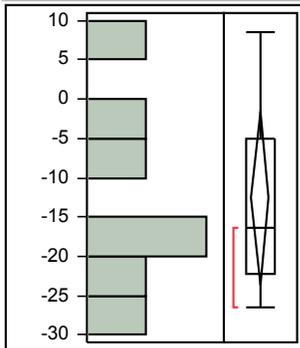
Summary Statistics

Mean	7.2
Std Dev	16.7
Std Err Mean	5.3
Upper 95% Mean	19.1
Lower 95% Mean	-4.8
N	10.0

XaW Distribution by Prep Method

Distributions
Analyte_Method=Iodine-129 Other

Bias



Quantiles

100.0%	maximum	8.6
99.5%		8.6
97.5%		8.6
90.0%		8.6
75.0%	quartile	-5.0
50.0%	median	-16.3
25.0%	quartile	-22.2
10.0%		-26.5
2.5%		-26.5
0.5%		-26.5
0.0%	minimum	-26.5

Summary Statistics

Mean	-12.6
Std Dev	11.9
Std Err Mean	4.5
Upper 95% Mean	-1.6
Lower 95% Mean	-23.6
N	7.0