APPENDIX E

First Quarter 2018 Analytical Laboratory Reports and Validation Reports

APPENDIX E

TABLE OF CONTENTS

Section No.

APPENDIX E
Table of Contents (continued)

Section No.

DATA VALIDATION REPORT

Boeing SSFL NPDES

SAMPLE DELIVERY GROUP: 440-206832-3, 440-206741-3

Prepared for

Haley & Aldrich, Inc.

600 South Meyer Avenue, Suite 100

Tucson, Arizona 85701

May 1, 2018

TABLE OF CONTENTS

TABLES

I. INTRODUCTION

Task Order Title: Boeing SSFL NPDES

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003H.01

Sample Delivery Group: 440-206832-3, 440-206741-3

Project Manager: Katherine Miller

Matrix: Water

QC Level: IV

No. of Samples: 2

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica-Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Sub Lab Sample ID	Matrix	Collection	Method
Outfall002_20180323_Comp	440-206832-3	N/A	Water	3/23/2018 10:00:00 AM	Radium
Outfall009_20180322_Comp	440-206741-3	N/A	Water	3/22/2018 03:30:00 PM	Radium

II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt forms and the chains-of-custody (COCs) provided by the laboratory for multiple sample delivery groups (SDGs):

- The laboratories received the samples in these SDGs on ice and within the temperature limits of ≤6 degrees Celsius (°C) and >0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COCs.

The following issues were noted:

- Some corrections to the original COCs were not initialed or dated.
- The client issued a list of sample collection times which affected samples in several SDGs; therefore, the sample collection dates and times on the COCs do not always match the revised collection dates and times used in the laboratory's raw data package and in this report.

TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	The sequence or number of standards used for the calibration was incorrect.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.

Reason Code	Organic	Inorganic
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
?	TIC identity or reported retention time has been changed.	Not applicable.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. VARIOUS EPA METHODS —RADIONUCLIDES; RADIUM 226 AND RADIUM 228

Elizabeth Wessling of MEC[X] reviewed the SDGs on May 1, 2018

The samples listed in Table 1 for these analyses were validated based on the guidelines outlined in the *EPA Methods 903.0 and 904.0,* and the *National Functional Guidelines for Inorganic Data Review* (2014).

III.1. HOLDING TIMES:

The samples were received unpreserved. The samples were acidified and allowed to equilibrate. The samples were prepared within five days of preservation and analyzed following in-growth.

III.2. CALIBRATION:

The radium-226 detector efficiencies were less than 20%; therefore, the nondetected results for radium-226 were qualified as estimated (UJ) in both site samples. Carrier/tracer recoveries were within the laboratory control limits of 40-110%. All calibration checks were acceptable.

III.3. QUALITY CONTROL SAMPLES

III.3.1. *METHOD BLANKS*

Qualifications for activity in method blanks were not required as all sample results were nondetect.

III.3.2. *LABORATORY CONTROL SAMPLES:*

The recoveries and RPDs were within laboratory-established control limits.

III.3.3. *LABORATORY DUPLICATES:*

Laboratory duplicates were performed for radium-226 and radium-228 for sample Outfall009_20180322. Both the sample and duplicate results were nondetect.

III.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE:*

Matrix spike (MS)/MSD analyses were performed for radium-226 and radium-228 for sample Outfall009_20180322. Recoveries and RPDs were within the laboratory control limits.

III.4. SAMPLE RESULT VERIFICATION:

An EPA Level IV review was performed on a representative number of samples in this data package. The sample results and MDCs reported on the sample result form were verified against the raw data and no calculation or transcription errors were noted. Reported nondetects are valid to the MDC.

III.5. FIELD QC SAMPLES:

Field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. Any remaining detects were used to evaluate the associated site samples. The following are findings associated with field QC samples:

III.5.1. *FIELD BLANKS AND EQUIPMENT BLANKS:*

This SDG had no identified field blank or equipment blank samples.

III.5.2. *FIELD DUPLICATES:*

There were no field duplicate samples identified for this SDG.

Validated Sample Result Forms: 4402067413

Analysis Method RADIUM

Sample Name Outfall009_20180322_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/22/2018 3:30:00 PM **Validation Level:** 8

Lab Sample Name: 440-206741-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226 & 228	RADIUM226228	0.0305	0.238				U, U	UJ	C, $

Validated Sample Result Forms: 4402068323

Analysis Method RADIUM

Sample Name Outfall002_20180323_Comp **Matrix Type:** WM **Result Type:** TRG

Sample Date: 3/23/2018 10:00:00 AM **Validation Level:** 8

Lab Sample Name: 440-206832-3

Analyte	CAS No	Result Value	Total Uncert.	RL	MDC	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Radium-226 & 228	RADIUM226228	0.129	0.302				U, U	UJ	C, $

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-206741-3
Client Project/Site: Annual Outfall 009 Comp

For:
Haley & Aldrich, Inc.
400 E Van Buren St.
Suite 545
Phoenix, Arizona 85004

Attn: Katherine Miller

Authorized for release by:
4/23/2018 6:28:28 PM

Urvashi Patel, Manager of Project Management
(949)261-1022
urvashi.patel@testamericainc.com

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.

Urvashi Patel
Manager of Project Management
4/23/2018 6:28:28 PM

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-3

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-206741-1	Outfall009_20180322_Comp	Water	03/22/18 15:30	03/22/18 20:00

Job ID: 440-206741-3

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-206741-3

Comments
No additional comments.

Receipt
The samples were received on 3/22/2018 8:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 5 coolers at receipt time were 2.1º C, 2.1º C, 2.3º C, 3.5º C and 3.6º C.

Receipt Exceptions

Method(s) 900.0, 901.1, 903.0, 904.0, 905, A-01-R: The following samples for metals were received unpreserved and were preserved with nitric acid, lot # 1235960, upon receipt to the laboratory: Outfall009_20180322_Comp (440-206741-1), Outfall009_20180322_Comp (440-206741-1[MS]) and Outfall009_20180322_Comp (440-206741-1[MSD]). Regulatory documents require a 24-hour waiting period from the time of the addition of the acid preservative to the time of digestion.

Method(s) 906.0: 500 mL of the following samples were poured into an unpreserved container for Tritium analysis:

Outfall009_20180322_Comp (440-206741-1), Outfall009_20180322_Comp (440-206741-1[MS]) and Outfall009_20180322_Comp (440-206741-1[MSD])

RAD
Method(s) A-01-R: Uranium prep batch 160-358015

The detection goal was not met for the following sample due to a reduced aliquot attributed to the presence of matrix interferences: Outfall009_20180322_Comp (440-206741-1). See prep NCM 135817. Analytical results are reported with the MDC achieved.

Method(s) ExtChrom: Uranium prep batch 160-358015: The following samples were yellow in color and had a strong odor. The samples were weighed at a reduced aliquot to prevent possible matrix interference.

Outfall009_20180322_Comp (440-206741-1), Outfall009_20180322_Comp (440-206741-1[MS]) and Outfall009_20180322_Comp (440-206741-1[MSD])

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample ID: Outfall009_20180322_Comp
Date Collected: 03/22/18 15:30
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206741-1
Matrix: Water

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.967	U	0.841	0.849	3.00	1.31	pCi/L	03/26/18 15:25	03/30/18 06:16	1
Gross Beta	**2.80**		0.773	0.822	4.00	0.976	pCi/L	03/26/18 15:25	03/30/18 06:16	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	2.73	U	7.47	7.48	20.0	12.8	pCi/L	03/27/18 10:20	03/31/18 20:11	1
Potassium-40	51.8	U	148	148		197	pCi/L	03/27/18 10:20	03/31/18 20:11	1

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0263	U	0.0527	0.0528	1.00	0.0949	pCi/L	03/26/18 13:00	04/17/18 05:56	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*03/26/18 13:00*	*04/17/18 05:56*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00415	U	0.232	0.232	1.00	0.412	pCi/L	03/26/18 13:36	04/03/18 14:51	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.9*		*40 - 110*	*03/26/18 13:36*	*04/03/18 14:51*	*1*
Y Carrier	*89.3*		*40 - 110*	*03/26/18 13:36*	*04/03/18 14:51*	*1*

Method: 905 - Strontium-90 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	**0.322**		0.202	0.203	3.00	0.308	pCi/L	03/27/18 13:21	04/06/18 09:46	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*73.9*		*40 - 110*	*03/27/18 13:21*	*04/06/18 09:46*	*1*
Y Carrier	*97.6*		*40 - 110*	*03/27/18 13:21*	*04/06/18 09:46*	*1*

Method: 906.0 - Tritium, Total (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-140	U	188	188	500	361	pCi/L	04/17/18 15:33	04/18/18 14:47	1

Client Sample ID: Outfall009_20180322_Comp
Date Collected: 03/22/18 15:30
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206741-1
Matrix: Water

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.0411	U G	0.715	0.715	1.00	1.30	pCi/L	03/28/18 13:56	03/31/18 19:25	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium-232	*64.4*		*30 - 110*	*03/28/18 13:56*	*03/31/18 19:25*	*1*

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-3

Method	Method Description	Protocol	Laboratory
900.0	Gross Alpha and Gross Beta Radioactivity	EPA	TAL SL
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL SL
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
905	Strontium-90 (GFPC)	EPA	TAL SL
906.0	Tritium, Total (LSC)	EPA	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
Evaporation	Preparation, Evaporation	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL
LSC_Dist_Susp	Distillation and Suspension (LSC)	None	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL
PrecSep-7	Preparation, Precipitate Separation (7-Day In-Growth)	None	TAL SL

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency
None = None

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-3

Client Sample ID: Outfall009_20180322_Comp
Date Collected: 03/22/18 15:30
Date Received: 03/22/18 20:00

Lab Sample ID: 440-206741-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation			200 mL	1.0 g	357678	03/26/18 15:25	MRB	TAL SL
Total/NA	Analysis	900.0		1			358309	03/30/18 06:16	RTM	TAL SL
Total/NA	Prep	Fill_Geo-0			1000 mL	1.0 g	357810	03/27/18 10:20	KRS	TAL SL
Total/NA	Analysis	901.1		1			358374	03/31/18 20:11	CDR	TAL SL
Total/NA	Prep	PrecSep-21			999.86 mL	1.0 g	357667	03/26/18 13:00	TJT	TAL SL
Total/NA	Analysis	903.0		1			361425	04/17/18 05:56	RTM	TAL SL
Total/NA	Prep	PrecSep_0			999.86 mL	1.0 g	357670	03/26/18 13:36	TJT	TAL SL
Total/NA	Analysis	904.0		1			358655	04/03/18 14:51	RTM	TAL SL
Total/NA	Prep	PrecSep-7			999.63 mL	1.0 g	357832	03/27/18 13:21	TJT	TAL SL
Total/NA	Analysis	905		1			359320	04/06/18 09:46	RTM	TAL SL
Total/NA	Prep	LSC_Dist_Susp			100.3 mL	1.0 g	361491	04/17/18 15:33	JDL	TAL SL
Total/NA	Analysis	906.0		1			361708	04/18/18 14:47	SMR	TAL SL
Total/NA	Prep	ExtChrom			100.64 mL	1.0 mL	358015	03/28/18 13:56	CMM	TAL SL
Total/NA	Analysis	A-01-R		1			358454	03/31/18 19:25	ALD	TAL SL

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity

Lab Sample ID: MB 160-357678/1-A
Matrix: Water
Analysis Batch: 358319

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 357678

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Gross Alpha	0.05086	U	0.414	0.414	3.00	0.813	pCi/L	03/26/18 15:25	03/30/18 06:11	1
Gross Beta	0.4707	U	0.600	0.602	4.00	0.994	pCi/L	03/26/18 15:25	03/30/18 06:11	1

Lab Sample ID: LCS 160-357678/2-A
Matrix: Water
Analysis Batch: 358319

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 357678

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	49.8	48.97		6.95	3.00	1.39	pCi/L	98	73 - 133

Lab Sample ID: LCSB 160-357678/3-A
Matrix: Water
Analysis Batch: 358319

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 357678

Analyte	Spike Added	LCSB Result	LCSB Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	88.7	89.43		9.48	4.00	0.973	pCi/L	101	75 - 125

Lab Sample ID: 440-206741-1 MS
Matrix: Water
Analysis Batch: 358309

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 357678

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Alpha	0.967	U	49.8	41.76		5.81	3.00	1.14	pCi/L	82	60 - 140

Lab Sample ID: 440-206741-1 MSBT
Matrix: Water
Analysis Batch: 358309

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 357678

Analyte	Sample Result	Sample Qual	Spike Added	MSBT Result	MSBT Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Gross Beta	2.80		88.7	85.34		9.05	4.00	0.964	pCi/L	93	60 - 140

Lab Sample ID: 440-206741-1 MSBTD
Matrix: Water
Analysis Batch: 358309

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 357678

Analyte	Sample Result	Sample Qual	Spike Added	MSBTD Result	MSBTD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Beta	2.80		88.7	86.55		9.16	4.00	0.899	pCi/L	94	60 - 140	0.07	1

Method: 900.0 - Gross Alpha and Gross Beta Radioactivity (Continued)

Lab Sample ID: 440-206741-1 MSD — **Client Sample ID: Outfall009_20180322_Comp**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 358309 — **Prep Batch: 357678**

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Gross Alpha	0.967	U	49.8	45.56		6.20	3.00	0.902	pCi/L	90	60 - 140	0.32	1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-357810/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 358386 — **Prep Batch: 357810**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-0.1238	U	9.59	9.59	20.0	17.7	pCi/L	03/27/18 10:20	03/31/18 22:34	1
Potassium-40	-20.81	U	92.9	93.0		186	pCi/L	03/27/18 10:20	03/31/18 22:34	1

Lab Sample ID: LCS 160-357810/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 358395 — **Prep Batch: 357810**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Americium-241	136000	132400		15300		433	pCi/L	97	90 - 111
Cesium-137	45800	44760		4490	20.0	142	pCi/L	98	90 - 111
Cobalt-60	34300	33170		3280		86.2	pCi/L	97	89 - 110

Lab Sample ID: 440-206741-1 DU — **Client Sample ID: Outfall009_20180322_Comp**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 358386 — **Prep Batch: 357810**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RER	RER Limit
Cesium-137	2.73	U	-1.066	U	10.6	20.0	19.6	pCi/L	0.21	1
Potassium-40	51.8	U	-16.85	U	163		235	pCi/L	0.22	1

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-357667/19-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 361426 — **Prep Batch: 357667**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.007862	U	0.0388	0.0388	1.00	0.0769	pCi/L	03/26/18 13:00	04/17/18 06:00	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*109*		*40 - 110*	*03/26/18 13:00*	*04/17/18 06:00*	*1*

Method: 903.0 - Radium-226 (GFPC) (Continued)

Lab Sample ID: LCS 160-357667/1-A
Matrix: Water
Analysis Batch: 361425

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 357667

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.8	11.57		1.17	1.00	0.0731	pCi/L	98	68 - 137		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*98.8*		*40 - 110*

Lab Sample ID: 440-206741-1 MS
Matrix: Water
Analysis Batch: 361425

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 357667

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226	0.0263	U	11.8	9.984		1.04	1.00	0.0787	pCi/L	84	75 - 138		

Carrier	*MS %Yield*	*MS Qualifier*	*Limits*
Ba Carrier	*91.7*		*40 - 110*

Lab Sample ID: 440-206741-1 MSD
Matrix: Water
Analysis Batch: 361425

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 357667

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226	0.0263	U	11.8	10.10		1.05	1.00	0.0737	pCi/L	85	75 - 138	0.05	1

Carrier	*MSD %Yield*	*MSD Qualifier*	*Limits*
Ba Carrier	*92.9*		*40 - 110*

Lab Sample ID: 460-152183-F-1-M DU
Matrix: Water
Analysis Batch: 361425

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 357667

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-226	0.0469	U		0.04038	U	0.0486	1.00	0.0789	pCi/L			0.06	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Ba Carrier	*98.5*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-357670/19-A
Matrix: Water
Analysis Batch: 358655

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 357670

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2098	U	0.206	0.207	1.00	0.334	pCi/L	03/26/18 13:36	04/03/18 14:54	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*109*		*40 - 110*	*03/26/18 13:36*	*04/03/18 14:54*	*1*
Y Carrier	*89.3*		*40 - 110*	*03/26/18 13:36*	*04/03/18 14:54*	*1*

Lab Sample ID: LCS 160-357670/1-A
Matrix: Water
Analysis Batch: 358655

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 357670

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.43	7.164		0.866	1.00	0.319	pCi/L	85	56 - 140		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*98.8*		*40 - 110*
Y Carrier	*89.3*		*40 - 110*

Lab Sample ID: 440-206741-1 MS
Matrix: Water
Analysis Batch: 358655

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 357670

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228	0.00415	U	8.42	6.838		0.862	1.00	0.411	pCi/L	81	45 - 150		

Carrier	*MS %Yield*	*MS Qualifier*	*Limits*
Ba Carrier	*91.7*		*40 - 110*
Y Carrier	*88.6*		*40 - 110*

Lab Sample ID: 440-206741-1 MSD
Matrix: Water
Analysis Batch: 358655

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 357670

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228	0.00415	U	8.43	8.755		1.03	1.00	0.352	pCi/L	104	45 - 150	1.01	1

Carrier	*MSD %Yield*	*MSD Qualifier*	*Limits*
Ba Carrier	*92.9*		*40 - 110*
Y Carrier	*87.5*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: 460-152183-F-1-N DU
Matrix: Water
Analysis Batch: 358655

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 357670

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RER	RER Limit
Radium-228	0.184	U		0.08239	U	0.205	1.00	0.353	pCi/L			0.26	1

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Ba Carrier	*98.5*		*40 - 110*
Y Carrier	*90.5*		*40 - 110*

Method: 905 - Strontium-90 (GFPC)

Lab Sample ID: MB 160-357832/11-A
Matrix: Water
Analysis Batch: 359320

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 357832

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Strontium-90	0.1136	U	0.153	0.153	3.00	0.254	pCi/L	03/27/18 13:21	04/06/18 09:46	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr Carrier	*85.8*		*40 - 110*	*03/27/18 13:21*	*04/06/18 09:46*	*1*
Y Carrier	*100*		*40 - 110*	*03/27/18 13:21*	*04/06/18 09:46*	*1*

Lab Sample ID: LCS 160-357832/1-A
Matrix: Water
Analysis Batch: 359320

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 357832

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Strontium-90			8.28	9.309		0.949	3.00	0.294	pCi/L	112	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Sr Carrier	*83.2*		*40 - 110*
Y Carrier	*94.2*		*40 - 110*

Lab Sample ID: 440-206741-1 MS
Matrix: Water
Analysis Batch: 359320

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 357832

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Strontium-90	0.322		8.28	8.130		0.864	3.00	0.311	pCi/L	94	19 - 150		

Carrier	*MS %Yield*	*MS Qualifier*	*Limits*
Sr Carrier	*76.8*		*40 - 110*
Y Carrier	*96.4*		*40 - 110*

Method: 905 - Strontium-90 (GFPC) (Continued)

Lab Sample ID: 440-206741-1 MSD
Matrix: Water
Analysis Batch: 359320

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 357832

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Strontium-90	0.322		8.27	9.160		0.941	3.00	0.289	pCi/L	107	19 - 150	0.57	1

Carrier	*MSD %Yield*	*MSD Qualifier*	*Limits*
Sr Carrier	*80.9*		*40 - 110*
Y Carrier	*95.7*		*40 - 110*

Method: 906.0 - Tritium, Total (LSC)

Lab Sample ID: MB 160-361491/1-A
Matrix: Water
Analysis Batch: 361708

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 361491

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tritium	-172.5	U	183	183	500	355	pCi/L	04/17/18 15:33	04/18/18 14:05	1

Lab Sample ID: LCS 160-361491/2-A
Matrix: Water
Analysis Batch: 361708

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 361491

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Tritium			2760	2640		432	500	367	pCi/L	96	74 - 114		

Lab Sample ID: 440-206741-1 MS
Matrix: Water
Analysis Batch: 361708

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 361491

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Tritium	-140	U	2760	2509		422	500	369	pCi/L	91	67 - 130		

Lab Sample ID: 440-206741-1 MSD
Matrix: Water
Analysis Batch: 361708

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 361491

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Tritium	-140	U	2760	2347		391	500	335	pCi/L	85	67 - 130	0.20	1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 160-358015/1-A
Matrix: Water
Analysis Batch: 358407

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 358015

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Uranium	0.08637	U	0.1188	0.1188	1.00	0.159	pCi/L	03/28/18 13:56	03/31/18 19:25	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Uranium-232	*96.5*		*30 - 110*	*03/28/18 13:56*	*03/31/18 19:25*	*1*

Lab Sample ID: LCS 160-358015/2-A
Matrix: Water
Analysis Batch: 358445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 358015

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Uranium-234			12.7	12.75		1.52	1.00	0.156	pCi/L	100	84 - 120		
Uranium-238			13.0	13.94		1.63	1.00	0.148	pCi/L	107	83 - 121		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Uranium-232	*93.5*		*30 - 110*

Lab Sample ID: 440-206741-1 MS
Matrix: Water
Analysis Batch: 358462

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 358015

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Uranium-234	-0.144	U G	64.1	61.00		8.10	1.00	1.34	pCi/L	95	65 - 146		
Uranium-238	0.338	U G	65.5	68.71		8.80	1.00	1.34	pCi/L	104	68 - 143		

Tracer	*MS %Yield*	*MS Qualifier*	*Limits*
Uranium-232	*64.3*		*30 - 110*

Lab Sample ID: 440-206741-1 MSD
Matrix: Water
Analysis Batch: 358408

Client Sample ID: Outfall009_20180322_Comp
Prep Type: Total/NA
Prep Batch: 358015

Analyte	Sample Result	Sample Qual	Spike Added	MSD Result	MSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Uranium-234	-0.144	U G	63.8	59.79		8.01	1.00	1.05	pCi/L	94	65 - 146	0.07	1
Uranium-238	0.338	U G	65.2	64.10		8.40	1.00	0.920	pCi/L	98	68 - 143	0.27	1

Tracer	*MSD %Yield*	*MSD Qualifier*	*Limits*
Uranium-232	*65.0*		*30 - 110*

Rad

Prep Batch: 357667

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	PrecSep-21	
MB 160-357667/19-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-357667/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	PrecSep-21	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	PrecSep-21	
460-152183-F-1-M DU	Duplicate	Total/NA	Water	PrecSep-21	

Prep Batch: 357670

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	PrecSep_0	
MB 160-357670/19-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-357670/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	PrecSep_0	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	PrecSep_0	
460-152183-F-1-N DU	Duplicate	Total/NA	Water	PrecSep_0	

Prep Batch: 357678

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	Evaporation	
MB 160-357678/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 160-357678/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
LCSB 160-357678/3-A	Lab Control Sample	Total/NA	Water	Evaporation	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	Evaporation	
440-206741-1 MSBT	Outfall009_20180322_Comp	Total/NA	Water	Evaporation	
440-206741-1 MSBTD	Outfall009_20180322_Comp	Total/NA	Water	Evaporation	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	Evaporation	

Prep Batch: 357810

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	Fill_Geo-0	
MB 160-357810/1-A	Method Blank	Total/NA	Water	Fill_Geo-0	
LCS 160-357810/2-A	Lab Control Sample	Total/NA	Water	Fill_Geo-0	
440-206741-1 DU	Outfall009_20180322_Comp	Total/NA	Water	Fill_Geo-0	

Prep Batch: 357832

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	PrecSep-7	
MB 160-357832/11-A	Method Blank	Total/NA	Water	PrecSep-7	
LCS 160-357832/1-A	Lab Control Sample	Total/NA	Water	PrecSep-7	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	PrecSep-7	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	PrecSep-7	

Prep Batch: 358015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	ExtChrom	
MB 160-358015/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 160-358015/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	ExtChrom	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	ExtChrom	

Rad (Continued)

Prep Batch: 361491

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206741-1	Outfall009_20180322_Comp	Total/NA	Water	LSC_Dist_Susp	
MB 160-361491/1-A	Method Blank	Total/NA	Water	LSC_Dist_Susp	
LCS 160-361491/2-A	Lab Control Sample	Total/NA	Water	LSC_Dist_Susp	
440-206741-1 MS	Outfall009_20180322_Comp	Total/NA	Water	LSC_Dist_Susp	
440-206741-1 MSD	Outfall009_20180322_Comp	Total/NA	Water	LSC_Dist_Susp	

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
G	The Sample MDC is greater than the requested RL.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-3

Laboratory: TestAmerica Irvine

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

Laboratory: TestAmerica St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska	State Program	10	MO00054	06-30-18 *
Arizona	State Program	9	AZ0813	12-08-18
California	State Program	9	2886	06-30-18 *
Connecticut	State Program	1	PH-0241	03-31-19
Florida	NELAP	4	E87689	06-30-18 *
Illinois	NELAP	5	200023	11-30-18
Iowa	State Program	7	373	12-01-18
Kansas	NELAP	7	E-10236	10-31-18
Kentucky (DW)	State Program	4	90125	12-31-18
L-A-B	DoD ELAP		L2305	04-06-19
Louisiana	NELAP	6	04080	06-30-18
Louisiana (DW)	NELAP	6	LA180017	12-31-18
Maryland	State Program	3	310	09-30-18
Michigan	State Program	5	9005	06-30-18
Missouri	State Program	7	780	06-30-18
Nevada	State Program	9	MO000542018-1	07-31-18
New Jersey	NELAP	2	MO002	06-30-18 *
New York	NELAP	2	11616	03-31-19
North Dakota	State Program	8	R207	06-30-18
NRC	NRC		24-24817-01	12-31-22
Oklahoma	State Program	6	9997	08-31-18
Pennsylvania	NELAP	3	68-00540	02-28-19
South Carolina	State Program	4	85002001	06-30-18
Texas	NELAP	6	T104704193-17-11	07-31-18
US Fish & Wildlife	Federal		058448	08-31-18
USDA	Federal		P330-17-0028	02-02-20
Utah	NELAP	8	MO000542016-8	07-31-18
Virginia	NELAP	3	460230	06-14-18 *
Washington	State Program	10	C592	08-30-18
West Virginia DEP	State Program	3	381	08-31-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Patel, Urvashi

From: Baluran, Dwayne <DBaluran@haleyaldrich.com>
Sent: Friday, March 30, 2018 3:25 PM
To: Patel, Urvashi
Cc: Miller, Katherine
Subject: SSFL Boeing - COC 440-206741
Attachments: COC 440-206741 (201803222242)_20180328_DB update.pdf

-External Email-

Hi Urvashi,

Catching up on the recent sampling events that occurred, could you please ensure that sample delivery group **440-206741** (OF009 – Annual Composite) reflects the following:

- COC had no sample time written on; lab listed time in receipt from labels. Updated COC sample times to 15:30, scanned, and is attached here.

If you have any questions feel free to contact me.

Thank you,
Dwayne Baluran, EIT, QSP
Staff Engineer

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CHAIN OF CUSTODY FORM

Client Name/Address:	Project:
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108	Boeing-SSFL NPDES Permit 2018 Annual Outfall [003-007, 009, 010] Outfall 009 Comp
Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055	Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)
TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Standard Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.	Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)
Sampler:	

Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	ANALYSIS REQUIRED: Total Recoverable Metals (E200.7): Al, As, B, Be, Cr, Fe, Ni, V, Zn, Hardness as CaCO3 (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Tl (R/A)	TCDD (and all congeners) (E1613B) (R)	Cl-, F-, SO4, NO3+NO2-N, Perchlorate (E300) (R/A)	TDS (SM2540C/E160.1) (R)	TSS (160.2 (SM2540D)) (A)	Total Dissolved Metals (E200.7) Al, As, B, Be, Cr, Fe, Ni, V, Zn, Hardness as CaCO3 (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Tl (R/A)	Gross Alpha(E900.0), Gross Beta(E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, CS-137 (E901.0 or E901.1) (R)	Chronic Toxicity - Selenastrum (EPA-821-R-02-013) (R)	Cyanide (SM4500-CN-E / E335.2) (R)	Priority Pollutants-Pesticides+PCBs (E608) (A)	Total Recoverable Metals Mercury (E245.1) (R)	Total Dissolved Metals Mercury (E245.1) (R)	Comments
Outfall 009	Outfall009_20180322_Comp	3/22/2018	WM	500 mL Poly	3	HNO_3	85	Yes	X												
			WM	1 L Glass Amber	2	None	110	No		X											
			WM	500 mL Poly	6	None	135	Yes			X										48 hours Holding Time NO3 & NO2
			WM	500 mL Poly	1	None	155	No				X									
			WM	1 L Poly	1	None	185	No					X								
			WM	500 mL Poly	3	NaOH	220	Yes								X					
			WM	2.5 Gal Cube	3	None	225	Yes													Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.
			WM	1 L Glass Amber	3	None	230	Yes							X						
			WM	1 Gal Cube	1	None	235	No								X					Only test if first or second rain events of the year
			WM	1 L Glass Amber	6	None	250	Yes										X			
			~~WM~~	~~borosilicate vials~~	~~3~~	~~HNO_3~~	~~315~~	~~Yes~~	Take from bottle										X		Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
	Outfall009_20180322_Comp_F	3/22/2018	WM	1 L Poly	3	None	195	Yes						X							Filter and preserve w/in 24hrs of receipt at lab
			WM	borosilicate vials	3	None	320	Yes											X		Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
	Outfall009_20180322_Comp_Extra	3/22/2018	WM	1 L Glass Amber	2	None	110	No		H											Hold
			WM	500 mL Poly	2	None	135	No			H										Hold
			WM	1 L Glass Amber	2	None	250	No										H			Hold

Legend: R = Routine, A = Annual

Relinquished By	Date/Time	Company	Received By	Date/Time
[signature]	3-22-18/1830	Haley & Aldrich	[signature]	17:30 / 3-22-18
[signature]	3-22-18/2000	DCS	[signature]	
			[signature]	3/22/18 2000

Turn-around time: (Check)
24 Hour: _____ 72 Hour: _____ 10 Day: __X__
48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check)
Intact: _____ On Ice: _____
Store samples for 6 months.

Data Requirements: (Check)
No Level IV: _____ All Level IV: __X__

1.8/2.3
1.6/2.1
3.1/3.6
3.0/3.5

1.6/2.1

1R66

440-206741 Chain of Custody

3/22

CHAIN OF CUSTODY FORM

Client Name/Address:	Project:	ANALYSIS REQUIRED
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108	Boeing-SSFL NPDES Permit 2018 Annual Outfall [003-007, 009, 010] Outfall 009 Comp	A A A A A
Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055	Project Manager: Katherine Miller 520.289.8606, 520.904.8944 (cell)	
TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc , its subsidiaries and affiliates, and TestAmerica Laboratories Inc.	Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)	
Sampler:		

Sample Description	Sample I.D.	Sampling Date/Time		Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Priority Pollutants-SVOCs (E625)	Asbestos (EPA100.2)	Chlorpyrifos, Diazinon (E525.2)	Cr (VI), Total (E218.6)	Comments
Outfall 009	Outfall009_20180322_Comp	3/22/2018	a	WM	1 L Glass Amber	6	None	175	Yes	X				
			d	WM	1L Poly	1	None	270	No		X			Only at Outfall 008, 009
			b	WM	1 L Glass Amber	6	HCl	275	Yes			X		Extract within 24-Hours of sampling
			c	WM	500 mL Poly	3	None	260	Yes				X	
	Outfall009_20180322_Comp_Extra	3/22/2018	g	WM	1 L Glass Amber	2	None	175	No	H				Hold
			e	WM	1 L Glass Amber	2	HCl	275	No			H		Hold

Legend: R = Routine, A = Annual

Relinquished By	Date/Time	Company	Received By	Date/Time
[signature]	3-22 (6/1730	Haley & Aldrich	[signature]	3-22-18 / 17:30
[signature]	3-22-18/2000	DCS	[signature]	3/22/18 2000
Relinquished By	Date/Time	Company	Received By	Date/Time

Turn-around time: (Check)
24 Hour: _____ 72 Hour: _____ 10 Day: ___X___
48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check)
Intact: _____ On Ice: _____

Store samples for 6 months.

Data Requirements: (Check)
No Level IV: _____ AR Level IV: ___X___

Test America

CHAIN OF CUSTODY FORM

Client Name/Address:	Project:
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108	Boeing-SSFL NPDES Permit 2018 Annual Outfall [003-007, 009, 010] Outfall 009 Comp
Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055	
TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.	Project Manager: Katherine Miller 520.289.8606, 520.904.6844 (cell)
Sampler:	Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)

Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	ANALYSIS REQUIRED: Total Recoverable Metals (E200.7): Al, As, B, Be, Cr, Fe, Ni, V, Zn, Hardness as CaCO3 (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Tl (R/A)	TCDD (and all congeners) (E1613B) (R)	Cl-, F-, SO4, NO3+NO2-N, Perchlorate (E300) (R/A)	TDS (SM2540C/E160.1) (R)	TSS (160.2 (SM2540D)) (A)	Total Dissolved Metals (E200.7) Al, As, B, Be, Cr, Fe, Ni, V, Zn, Hardness as CaCO3 (E200.8): Ag, Cd, Cu, Pb, Sb, Se, Tl (R/A)	Gross Alpha(E900.0), Gross Beta(E900.0), Tritium (H-3) (E906.0), Sr-90 (E905.0), Total Combined Radium 226 (E903.0 or E903.1) & Radium 228 (E904.0), Uranium (E908.0), K-40, Cs-137 (E901.0 or E901.1) (R)	Chronic Toxicity - Selenastrum (EPA-821-R-02-013) (R)	Cyanide (SM4500-CN-E / E335.2) (R)	Priority Pollutants-Pesticides+PCBs (E608) (A)	Total Recoverable Metals Mercury (E245.1) (R)	Total Dissolved Metals- Mercury (E245.1) (R)	Comments
Outfall 009	Outfall009_20180322_Comp	3/22/2018 15:30 DB	WM	500 mL Poly	3	HNO_3	85	Yes	X													
			WM	1 L Glass Amber	2	None	110	No		X												
			WM	500 mL Poly	6	None	135	Yes			X											48 hours Holding Time NOS & NO2
			WM	500 mL Poly	1	None	155	No				X										
			WM	1 L Poly	1	None	185	No					X									
			WM	500 mL Poly	3	NaOH	220	Yes										X				
			WM	2.5 Gal Cube	3	None	225	Yes														Unfiltered and unpreserved analysis. Separate RAD onto another workorder. Analyze duplicate, not MS/MSD.
			WM	1 L Glass Amber	3	None	230	Yes							X							
			WM	1 Gal Cube	1 3x	None	235	No								X						Only test if first or second rain events of the year
			WM	1 L Glass Amber	6	None	250	Yes										X				
			~~WM~~	~~borosilicate vials~~	~~3~~	~~HNO_3~~	~~315~~	~~Yes~~	Take from bottle										X			Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
	Outfall009_20180322_Comp_F DB	3/22/2018 15:30	WM	1 L Poly	3	None	195	Yes						X								Filter and preserve w/in 24hrs of receipt at lab
			WM	borosilicate vials	3 3x	None	320	Yes												X		Sample receiving DO NOT OPEN BAG. Bag to be opened in Mercury Prep using clean procedures.
	Outfall009_20180322_Comp_Extra DB	3/22/2018 15:30	WM	1 L Glass Amber	2	None	110	No		H												Hold
			WM	500 mL Poly	2	None	135	No			H											Hold
			WM	1 L Glass Amber	2	None	250	No										H				Hold

Legend: R = Routine, A = Annual

Relinquished By	Date/Time	Company	Received By	Date/Time
	3-22-18/1830	Haley & Aldrich		1730 / 3-22-18
Relinquished By	Date/Time	Company	Received By	Date/Time
	3-22-18 / 2000	DCS		
Relinquished By	Date/Time	Company	Received By	Date/Time
				3/22/18 2000

Turn-around time: (Check)
24 Hour: _____ 72 Hour: _____ 10 Day: __X__
48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check)
Intact: _____ On Ice: _____
Store samples for 6 months.

Data Requirements: (Check)
No Level IV: _____ All Level IV: __X__

1.8 / 2.3
1.6 / 2.1
3.1 / 3.6
3.0 / 3.5

1.6 / 2.1

IR6

1/6 3/22

440-206741 Chain of Custody

Test America

CHAIN OF CUSTODY FORM

Client Name/Address:	Project:
Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108	Boeing-SSFL NPDES Permit 2018 Annual Outfall [003-007, 009, 010] Outfall 009 Comp
Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055	
TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc , its subsidiaries and affiliates, and TestAmerica Laboratories Inc.	Project Manager: Katherine Miller 520.289.8606, 520.904.6944 (cell)
Sampler:	Field Manager: Mark Dominick 978.234.5033, 818.599.0702 (cell)

									ANALYSIS REQUIRED																							
									A	A	A	A	A																			
Sample Description	Sample I.D.	Sampling Date/Time	Sample Matrix	Container Type	# of Cont.	Preservative	Bottle #	MS/MSD	Priority Pollutants-SVOCs (E625)	Asbestos (EPA100.2)	Chlorpyrifos, Diazinon (E525.2)	Cr (VI), Total (E218.6)																			Comments
Outfall 009	Outfall009_20180322_Comp	3/22/2018 15:30 DB	WM	1 L Glass Amber	6	None	175	Yes	X																						
			WM	1L Poly	1	None	270	No		X																					Only at Outfall 008, 009
			WM	1 L Glass Amber	6	HCl	275	Yes			X																				Extract within 24-Hours of sampling
			WM	500 mL Poly	3	None	260	Yes				X																			
	Outfall009_20180322_Comp_Extra	3/22/2018 15:30 DB	WM	1 L Glass Amber	2	None	175	No	H																						Hold
			WM	1 L Glass Amber	2	HCl	275	No			H																				Hold

Legend: R = Routine, A = Annual

Relinquished By	Date/Time	Company	Received By	Date/Time
[signature]	3-22-18/1730	Haley & Aldrich	[signature]	3-22-18/17:30
[signature]	3-22-18/2000	DCS	[signature]	3/22/18 2000
Relinquished By	Date/Time	Company	Received By	Date/Time

Turn-around time: (Check)
24 Hour: _____ 72 Hour: _____ 10 Day: __X__
48 Hour: _____ 5 Day: _____ Normal: _____

Sample Integrity: (Check)
Intact: _____ On Ice: _____
Store samples for 6 months.

Data Requirements: (Check)
No Level IV: _____ All Level IV: __X__

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)
Client Contact: Shipping/Receiving
Company: TestAmerica Laboratories, Inc.
Address: 13715 Rider Trail North,
City: Earth City
State, Zip: MO, 63045
Phone: 314-298-8566(Tel) 314-298-8757(Fax)
Email:
Project Name: Boeing NPDES SSFL outfalls
Site:

Sampler:
Phone:
Due Date Requested: 4/3/2018
TAT Requested (days):
PO #:
WO #:
Project #: 44009879
SSOW#:

Lab PM: Patel, Urvashi
E-Mail: urvashi.patel@testamericainc.com
Carrier Tracking No(s):
State of Origin: California
Accreditations Required (See note): State Program - California

COC No: 440-120454.1
Page: Page 1 of 1
Job #: 440-206741-1

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	901.1_Cs/FIII_Geo_0 K-40 and Cesium-137	A01R_U/ExtChrom_Actin Total Uranium	900.0/Evaporation Gross Alpha/Beta	903.0/PrecSep_21 Radium-226	904.0/PrecSep_0 Radium-228	905_Sr90/PrecSep_7 Strontium-90	906.0/LSC_Dist_Susp Tritium	Total Number of containers	Special Instructions/Note:
			Preservation Code:												
Outfall009_20180322_Comp (440-206741-1)	3/22/18	00:01 Pacific		Water			X	X	X	X	X	X	X	1	Boeing SSFL; DO NOT FILTER; use prep date from preservation
Outfall009_20180322_Comp (440-206741-1MS)	3/22/18	00:01 Pacific	MS	Water			X	X	X	X	X	X	X	1	Boeing SSFL; DO NOT FILTER; use prep date from preservation
Outfall009_20180322_Comp (440-206741-1MSD)	3/22/18	00:01 Pacific	MSD	Water			X	X	X	X	X	X	X	1	Boeing SSFL; DO NOT FILTER; use prep date from preservation

440-206741 Chain of Custody

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
Special Instructions/QC Requirements:

Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:	
Relinquished by:	Date/Time: 3/23/18 0700	Company: AW	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 3.24.18 0850	Company TAST
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-206741-3

Login Number: 206741
List Number: 1
Creator: Garcia, Veronica G

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-206741-3

Login Number: 206741
List Number: 2
Creator: Clarke, Jill C

List Source: TestAmerica St. Louis
List Creation: 03/24/18 09:55 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.2, 0.6
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-3

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
440-206741-1	Outfall009_20180322_Comp	92.9
440-206741-1 MS	Outfall009_20180322_Comp	91.7
440-206741-1 MSD	Outfall009_20180322_Comp	92.9
460-152183-F-1-M DU	Duplicate	98.5
LCS 160-357667/1-A	Lab Control Sample	98.8
MB 160-357667/19-A	Method Blank	109

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
440-206741-1	Outfall009_20180322_Comp	92.9	89.3
440-206741-1 MS	Outfall009_20180322_Comp	91.7	88.6
440-206741-1 MSD	Outfall009_20180322_Comp	92.9	87.5
460-152183-F-1-N DU	Duplicate	98.5	90.5
LCS 160-357670/1-A	Lab Control Sample	98.8	89.3
MB 160-357670/19-A	Method Blank	109	89.3

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

Method: 905 - Strontium-90 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Sr Carrier (40-110)	Y Carrier (40-110)
440-206741-1	Outfall009_20180322_Comp	73.9	97.6
440-206741-1 MS	Outfall009_20180322_Comp	76.8	96.4
440-206741-1 MSD	Outfall009_20180322_Comp	80.9	95.7
LCS 160-357832/1-A	Lab Control Sample	83.2	94.2
MB 160-357832/11-A	Method Blank	85.8	100

Tracer/Carrier Legend

Sr Carrier = Sr Carrier
Y Carrier = Y Carrier

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	ranium-23 (30-110)
440-206741-1	Outfall009_20180322_Comp	64.4

Tracer/Carrier Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual Outfall 009 Comp

TestAmerica Job ID: 440-206741-3

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)							
Lab Sample ID	Client Sample ID	ranium-23 (30-110)							
440-206741-1 MS	Outfall009_20180322_Comp	64.3							
440-206741-1 MSD	Outfall009_20180322_Comp	65.0							
LCS 160-358015/2-A	Lab Control Sample	93.5							
MB 160-358015/1-A	Method Blank	96.5							

Tracer/Carrier Legend

Uranium-232 = Uranium-232

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

S: 440-206741 Field Sheet

Job:_____

Tracking # 4176 2740 8608 SO / PO / FO

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes:_____

Therm. ID: AK-2 / AK-3 / AK-4 / AK-5 / HACCP / Other_____

Ice X Wet X Gel _____ Other _____

Cooler Custody Seal: Seal

Sample Custody Seal: _____

Cooler ID: 1 of 2

Temp: Observed 2.1c

From: Temp Blank ☐ Sample ☒

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☒
CoC is complete w/o discrepancies?	☒	☐	☐
Samples received within holding time?	☒	☐	☐
Sample preservatives verified?	☐	☐	☒
Cooler compromised/tampered with?	☐	☒	☐
Samples compromised/tampered with?	☐	☒	☐
Samples w/o discrepancies?	☒	☐	☐
Sample containers have legible labels?	☒	☐	☐
Containers are not broken or leaking?	☒	☐	☐
Sample date/times are provided.	☒	☐	☐
Appropriate containers are used?	☒	☐	☐
Sample bottles are completely filled?	☒	☐	☐
Zero headspace?*	☐	☐	☒
Multiphasic samples are not present?	☒	☐	☐
Sample temp OK?	☒	☐	☐
Sample out of temp?	☐	☒	☐

Initials: DH Date: 3/24/18 Time 910

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

3D

DATA VALIDATION REPORT

Boeing SSFL Arroyo Simi

SAMPLE DELIVERY GROUP: 440-206645-1

Prepared for

Haley & Aldrich

April 3, 2018

MEC^X, Inc.
8864 Interchange Drive
Houston, Texas 77054

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TABLE OF CONTENTS

TABLES

I. INTRODUCTION

Task Order Title: Boeing SSFL Arroyo Simi

Contract: 40458-078 and 40458-083

MEC^X Project No.: 1272.003D.01 002

Sample Delivery Group: 440-206645-1

Project Manager: K. Miller

Matrix: Water

QC Level: IV

No. of Samples: 1

No. of Reanalyses/Dilutions: 0

Laboratory: TestAmerica - Irvine

TABLE 1 - SAMPLE IDENTIFICATION

Sample Name	Lab Sample Name	Matrix	Collection	Method
Arroyo_Simi_20180322_Grab	440-206645-1	Water	3/22/2018 8:15:00 AM	200.8, 218.6, 245.1, 608, SM2340B, SM9221F, SM2540D

II. SAMPLE MANAGEMENT

According to the case narrative, sample condition upon receipt form and the chain-of-custody (COC) provided by the laboratory for sample delivery group (SDG) 440-206645-1:

- The laboratory received the sample in this sample delivery group (SDG) on ice and within the temperature limits of less than 6 degrees Celsius (°C) and greater than 0°C.
- The laboratory received the sample containers intact and properly preserved, as applicable.
- Field and laboratory personnel signed and dated the COC.
- According to the sample receipt form, custody seals were absent.
- Methods 245.1 and 218.6 were added to the requested analyses per client request. These analyses, while not listed on the original COC, were reported in SDG 440-206645-4 and were reviewed for this report.
- Per client request, Method 608 for full-list pesticides was added to this revision of the original data validation report.

TABLE 2 - DATA QUALIFIER REFERENCE

Qualifier	Organics	Inorganics
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For dioxins or PCB congeners, the associated value is the quantitation limit or the estimated detection limit.	The analyte was analyzed for, but was not detected above the reported sample quantitation limit. For perchlorate, the associated value is the sample detection limit or the quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may inaccurate or imprecise.
N	The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification."	Not applicable.
NJ	The analyte has been "tentatively identified" or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.	Not applicable.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.	The data are unusable. The sample results are rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TABLE 3 - REASON CODE REFERENCE

Reason Code	Organic	Inorganic
H	Holding time was exceeded.	Holding time was exceeded.
S	Surrogate recovery was outside control limits.	Not applicable.
C	Calibration percent relative standard deviation (%RSD) or percent deviation (%D) were noncompliant, or coefficient of determination (r^2) was <0.990.	Correlation coefficient (r) was <0.995.
R	Calibration relative response factor (RRF) was <0.05.	Percent recovery (%R) for calibration was outside control limits.
B	The analyte was detected in an associated blank as well as in the sample.	The analyte was detected in an associated blank as well as in the sample.
L	Laboratory control sample (LCS) or /LCS duplicate (LCSD) %R was outside the control limits.	LCS or LCSD %R was outside the control limits.
L1	LCS/LCSD relative percent difference (RPD) was outside the control limit.	LCS/LCSD RPD was outside the control limit.
Q	Matrix spike/matrix spike duplicate (MS/MSD) %R was outside control limits.	MS or MSD %R was outside the control limit.
Q1	MS/MSD RPD was outside the control limit.	MS/MSD RPD was outside the control limit.
E	Result was reported as an estimated maximum possible concentration (EMPC).	Laboratory duplicate RPD was outside the control limit.
I	Internal standard recovery was outside control limits.	Inductively coupled plasma (ICP) interference check standard (ICSA/ICSAB) result was outside control limits.
I1	Not applicable.	ICP mass spectrometer (ICPMS) internal standard recovery was outside control limits.
A	Not applicable.	Serial dilution %D was outside control limits.
M	Tuning (BFB or DFTPP) was not compliant.	ICPMS tune was not compliant.
T	The analyte was detected in an associated trip blank as well as in the sample.	Not applicable.
+	False positive – reported compound was not present.	False positive – reported compound was not present.
-	False negative – compound was present but not reported.	False negative – compound was present but not reported.

Reason Code	Organic	Inorganic
F	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.	The analyte was detected in an associated field blank (FB) or equipment blank (EB) as well as in the sample.
F1	Field duplicate RPD was outside the control limit.	Field duplicate RPD was outside the control limit.
$	The reviewer corrected the reported result and/or other information.	The reviewer corrected the reported result and/or other information.
D	The analysis was not used because another more technically sound analysis was available.	The analysis was not used because another more technically sound analysis was available.
P	Instrument performance not compliant.	Post digestion spike recovery was outside of control limits.
DNQ	The reported result is above the method detection limit but is less than the reporting limit.	The reported result is above the method detection limit but is less than the reporting limit.
*II, *III	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.	Other problems identified in the data are described in Section II, "Sample Management," or Section III, "Method Analyses." The number following the asterisk (*) will indicate the report section where a description of the problem can be found.

III. EPA METHODS 200.8, 245.1 AND 2340B — METALS, MERCURY AND HARDNESS

Marcia Hilchey of MEC^X reviewed the SDG on April 3 and April 18, 2018.

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Metals (DVP-5, Rev. 2), EPA Methods 200.8, 245.1, Standard Methods for the Examination of Water and Wastewater 2340B,* and the *National Functional Guidelines for Inorganic Data Review* (2014).

III.1. HOLDING TIMES

The analytical holding times, 28 days for mercury and six months for the metals, were met.

III.2. MS TUNING AND CALIBRATION

ICPMS mass calibrations were within 0.1 atomic mass units of the true value and the %RSDs were ≤5%.

QAPP calibration criteria were met. A blank and one standard were used for calibration of all ICP-AES target analytes. A blank and 4 standards were used for calibration of all ICP-MS target analytes. A blank and 5 standards were used for calibration of mercury. The initial calibration r values for ICPMS and CVAA were ≥0.995. CRQL recoveries were within the laboratory control limits of 50-150%. ICV and CCV recoveries were within NFG control limits of 90-110%.

III.3. QUALITY CONTROL SAMPLES

III.3.1. *METHOD BLANKS*

There were no target analyte detections in the calibration blanks or method blanks with the following exceptions. Mercury was reported in the initial calibration blank (-0.159 µg/L), bracketing continuing calibration blank (-0.135 µg/L) and method blank (-0.134 µg/L) at negative concentrations greater than the absolute value of the MDL. The sample result for mercury was nondetect and was qualified as estimated (UJ).

III.3.2. *INTERFERENCE CHECK SAMPLES:*

ICP-MS ICSAB recoveries were within the control limits of 80-120% or ±2x the reporting limit, whichever is greater. All of the interferents were present in the site samples at concentrations less than half that of the ICSA, therefore, the sample was not assessed for matrix interference.

III.3.3. *LABORATORY CONTROL SAMPLES*

Laboratory control sample recoveries were within the method control limits of 85-115%.

III.3.4. *LABORATORY DUPLICATES:*

Laboratory duplicate analyses were not performed on the sample in this SDG.

III.3.5. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analyses were performed on the sample in this SDG for Methods 200.7 (supporting Method 2340B) and 245.1. Results were not assessed when the parent sample concentration exceeded the spike amount by 4×. Recoveries and RPDs were within the method control limits of 70-130% and ≤20%, respectively. MS/MSD analyses were not performed on the sample in this SDG for Method 200.8.

III.4. SERIAL DILUTION

No serial dilution analyses were reported.

III.1. INTERNAL STANDARDS PERFORMANCE

Sample internal standard recoveries for ICPMS were within 60-125% of the calibration blank.

III.2. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Calculations were verified and the reported sample results were verified against the raw data. No transcription errors or calculation errors were noted. Detects between the MDL and the RL were qualified as estimated (J) and coded with DNQ to comply with the NPDES permit. Nondetects are valid to the MDL.

III.3. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below:

III.3.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

Field blank or equipment blank samples were not identified for this SDG.

III.3.2. *FIELD DUPLICATES*

There were no field duplicate samples identified for this SDG.

IV. EPA METHOD 608 – PESTICIDES

L. Calvin of MEC^X reviewed the SDG on April 18, 2018

The sample listed in Table 1 for this analysis was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for Organochlorine Pesticides/PCBs by GC (DVP-4, Rev. 1), EPA Method 608*, and the *National Functional Guidelines for Superfund Organic Methods Data Review* (2014).

IV.1. HOLDING TIMES

Extraction and analytical holding times were met. The sample was extracted within seven days of collection and analyzed within 40 days of extraction.

IV.2. CALIBRATION

The initial calibration %RSDs were within the control limits of ≤10% or r^2 ≥0.990. The initial calibration verification (ICV) and continuing calibration verification (CCV) %Ds were within the control limit of ≤15%.

IV.3. QUALITY CONTROL SAMPLES

IV.3.1. *METHOD BLANKS*

Target compounds were not detected in method blank.

IV.3.2. *LABORATORY CONTROL SAMPLES*

LCS/LCSD recoveries and RPDs were within the laboratory control limits.

IV.3.3. *SURROGATE RECOVERY*

The surrogate recovery for TCMX was within the laboratory control limits of 10-150% in the site sample.

IV.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analyses were not performed on the sample in this SDG. MEC^X evaluated method accuracy and precision based on the LCS/LCSD results.

IV.4. FIELD QC SAMPLES

MEC^X evaluated field QC samples, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site samples. Findings associated with field QC samples are summarized below.

IV.4.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

Field blank or equipment blank samples were not identified for this SDG.

IV.4.2. *FIELD DUPLICATES*

Field duplicate samples were not identified in this SDG.

IV.5. COMPOUND IDENTIFICATION

Compound identification was verified. Review of the sample chromatograms and retention times indicated no issues with target compound identification. The laboratory analyzed for 20 pesticides by Method 608.

IV.6. COMPOUND QUANTIFICATION AND REPORTED DETECTION LIMITS

Compound quantification was verified. The reporting limits were supported by the low point of the initial calibration and the laboratory MDLs. Reported nondetects are valid to the reporting limit. The intercolumn RPD for the Endosulfan I detect in the sample was <40%. The sample did not require dilution.

IV.7. SYSTEM PERFORMANCE

Review of the raw data indicated no issues with system performance.

V. METHODS SM 2540D, E218.6 AND SM 9221F— TOTAL SUSPENDED SOLIDS (TSS), HEXAVALENT CHROMIUM AND E. COLI

Marcia Hilchey of MEC^X reviewed the SDG on April 3 and April 18, 2018.

The sample listed in Table 1 for these analyses was validated based on the guidelines outlined in the *MEC^X Data Validation Procedure for General Minerals (DVP-6, Rev. 1), EPA Method 218.6, Standard Methods for the Examination of Water and Wastewater 2540D and 9221F,* and the *National Functional Guidelines for Inorganic Superfund Data Review* (2014).

V.1. HOLDING TIMES

The analytical holding times, 7 days for TSS and 30 hours for E. Coli by Method 9221F as stated in the QAPP and 8 hours as requested on the CoC, were met. The analytical holding time for hexavalent chromium, 24 hours from collection, was not met. The analysis was added to the COC past the HT

requirement, and the sample was analyzed 23 days after collection. The result for hexavalent chromium was qualified as estimated with a potential negative bias (J-).

V.2. CALIBRATION

The analytical balance was properly calibrated. Biological controls were acceptable. Initial calibration requirements were met for hexavalent chromium. Initial and continuing calibration (CCV) and low level CCV recoveries for hexavalent chromium were within laboratory control limits.

V.3. QUALITY CONTROL SAMPLES

V.3.1. *METHOD BLANKS*

The TSS and hexavalent chromium method blanks had no detects. The negative biological control sample was acceptable. The calibration blanks for hexavalent chromium had no detects.

V.3.2. *LABORATORY CONTROL SAMPLES*

Laboratory control sample recoveries for TSS and hexavalent chromium were within the laboratory control limits. The presumptive test was analyzed with the positive detects for the target bacteria.

V.3.3. *LABORATORY DUPLICATES*

Laboratory duplicate analyses were not performed on the sample in this SDG.

V.3.4. *MATRIX SPIKE/MATRIX SPIKE DUPLICATE*

MS/MSD analyses were not performed on the sample in this SDG.

V.4. SAMPLE RESULT VERIFICATION

Calculations were verified and the reported sample results were verified against the raw data. No transcription errors or calculation errors were noted.

V.5. FIELD QC SAMPLES

MEC^X evaluated field QC samples were evaluated, and if necessary, qualified based on method blanks and other laboratory QC results affecting the usability of the field QC data. MEC^X used the remaining detects to evaluate the associated site sample. Findings associated with field QC samples are summarized below.

V.5.1. *FIELD BLANKS AND EQUIPMENT BLANKS*

Field blank or equipment blank samples were not identified for this SDG.

V.5.2. *FIELD DUPLICATES*

Field duplicate samples were not identified in this SDG.

Validated Sample Result Forms: 4402066451

Analysis Method E200.8

Sample Name Arroyo_Simi_20180322_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/22/2018 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-206645-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Antimony	T	7440-36-0	0.95	2.0	0.50	ug/L	J,DX	J	DNQ
Arsenic	T	7440-38-2	2.0	1.0	0.50	ug/L			
Beryllium	T	7440-41-7		0.50	0.25	ug/L	U	U	
Cadmium	T	7440-43-9	0.29	1.0	0.25	ug/L	J,DX	J	DNQ
Chromium	T	7440-47-3	5.8	2.0	0.50	ug/L			
Copper	T	7440-50-8	9.9	2.0	0.50	ug/L			
Lead	T	7439-92-1	1.7	1.0	0.50	ug/L			
Nickel	T	7440-02-0	5.7	2.0	0.50	ug/L			
Selenium	T	7782-49-2	1.5	2.0	0.50	ug/L	J,DX	J	DNQ
Silver	T	7440-22-4		1.0	0.50	ug/L	U	U	
Thallium	T	7440-28-0		1.0	0.50	ug/L	U	U	
Zinc	T	7440-66-6	45	20	2.5	ug/L			

Analysis Method E608

Sample Name Arroyo_Simi_20180322_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/22/2018 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-206645-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
4,4'-DDD	N	72-54-8		0.0051	0.0041	ug/L	U	U	
4,4'-DDE	N	72-55-9		0.0051	0.0031	ug/L	U	U	
4,4'-DDT	N	50-29-3		0.010	0.0041	ug/L	U	U	
Aldrin	N	309-00-2		0.0051	0.0015	ug/L	U	U	
alpha-BHC	N	319-84-6		0.0051	0.0026	ug/L	U	U	
beta-BHC	N	319-85-7		0.010	0.0041	ug/L	U	U	
Chlordane	N	57-74-9		0.10	0.082	ug/L	U	U	
delta-BHC	N	319-86-8		0.0051	0.0036	ug/L	U	U	
Dieldrin	N	60-57-1		0.0051	0.0020	ug/L	U	U	
Endosulfan I	N	959-98-8	0.042	0.0051	0.0031	ug/L			
Endosulfan II	N	33213-65-9		0.0051	0.0020	ug/L	U	U	
Endosulfan sulfate	N	1031-07-8		0.010	0.0031	ug/L	U	U	
Endrin	N	72-20-8		0.0051	0.0020	ug/L	U	U	
Endrin aldehyde	N	7421-93-4		0.010	0.0020	ug/L	U	U	
Endrin ketone	N	53494-70-5		0.010	0.0071	ug/L	U	U	
gamma-BHC (Lindane)	N	58-89-9		0.010	0.0031	ug/L	U	U	

Analysis Method E608

Heptachlor	N	76-44-8	0.010	0.0031	ug/L	U	U
Heptachlor epoxide	N	1024-57-3	0.0051	0.0026	ug/L	U	U
Methoxychlor	N	72-43-5	0.0051	0.0036	ug/L	U	U
Toxaphene	N	8001-35-2	0.51	0.26	ug/L	U	U

Analysis Method SM2340

Sample Name Arroyo_Simi_20180322_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/22/2018 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-206645-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Hardness as CaCO3	T	HARDNESSCACO3	120	0.33	0.17	mg/L			

Analysis Method SM2540D

Sample Name Arroyo_Simi_20180322_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/22/2018 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-206645-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Total Suspended Solids (TSS)	N	TSS	63	5.0	2.5	mg/L			

Analysis Method SM9221F

Sample Name Arroyo_Simi_20180322_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/22/2018 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-206645-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Escherichia coli	N	ECOLI	11000	1.8	1.8	mpn/100			

Validated Sample Result Forms: 4402066454

Analysis Method E218.6

Sample Name Arroyo_Simi_20180322_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/22/2018 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-206645-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Chromium VI (Hexavalent)	T	18540-29-9	0.62	1.0	0.25	ug/L	J,DXBU	J-	H

Analysis Method E245.1

Sample Name Arroyo_Simi_20180322_Grab **Matrix Type:** WS **Result Type:** TRG

Sample Date: 3/22/2018 8:15:00 AM **Validation Level:** 8

Lab Sample Name: 440-206645-1

Analyte	Fraction:	CAS No	Result Value	RL	MDL	Result Units	Lab Qualifier	Validation Qualifier	Validation Notes
Mercury	T	7439-97-6		0.20	0.10	ug/L	U	UJ	B

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-206645-1
Client Project/Site: Annual 5 Year Arroyo Simi-Frontier Park
Revision: 1

For:
Haley & Aldrich, Inc.
400 E Van Buren St.
Suite 545
Phoenix, Arizona 85004

Attn: Katherine Miller

Authorized for release by:
4/16/2018 12:15:18 PM

Urvashi Patel, Manager of Project Management
(949)261-1022
urvashi.patel@testamericainc.com

I certify under penalty of perjury that the information contained in this report and all attachments was produced in accordance with the indicated methods and laboratory standard operating procedures, except as noted, and are complete and accurate to the best of my knowledge and belief. Subcontract laboratory reports that are attached have been evaluated for completeness and quality control acceptability.

Urvashi Patel
Manager of Project Management
4/16/2018 12:15:18 PM

Table of Contents

Sample Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual 5 Year Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-206645-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-206645-1	Arroyo_Simi_20180322_Grab	Water	03/22/18 08:15	03/22/18 15:15

Job ID: 440-206645-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-206645-1

Comments
Subcontract analysis moved to job-2.
Report revised to included PP Pest list from original analytical run.

Receipt
The samples were received on 3/22/2018 3:15 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 0.2º C, 2.6º C and 3.3º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC/MS Semi VOA
Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-466272 and analytical batch 440-466864 were outside control limits. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) 625: The matrix spike / matrix spike duplicate (MS/MSD) precision for preparation batch 440-466272 and analytical batch 440-466864 was outside control limits. Sample matrix interference is suspected.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

GC Semi VOA
Method(s) 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-466023 and analytical batch 440-466579.The laboratory control sample (LCS) was performed in duplicate to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
Method(s) 200.7 Rev 4.4: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 440-466285 and analytical batch 440-466523 were outside control limits for Calcium. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Biology
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract non-Sister
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method(s) 3510C, 608: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 440-466023.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample ID: Arroyo_Simi_20180322_Grab
Date Collected: 03/22/18 08:15
Date Received: 03/22/18 15:15

Lab Sample ID: 440-206645-1
Matrix: Water

Method: 624 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			03/26/18 11:34	1
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			03/23/18 15:26	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Acrolein	ND		5.0	2.5	ug/L			03/23/18 15:26	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Acrylonitrile	ND		2.0	1.0	ug/L			03/23/18 15:26	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			03/26/18 11:34	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/26/18 11:34	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/26/18 11:34	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			03/26/18 11:34	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Benzene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Bromoform	ND		1.0	0.40	ug/L			03/26/18 11:34	1
Bromomethane	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Chlorobenzene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Dibromochloromethane	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Chloroethane	ND		1.0	0.40	ug/L			03/26/18 11:34	1
Chloroform	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Chloromethane	ND		0.50	0.25	ug/L			03/26/18 11:34	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Bromodichloromethane	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Ethylbenzene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Methylene Chloride	ND		2.0	0.88	ug/L			03/26/18 11:34	1
Tetrachloroethene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Toluene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Vinyl chloride	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Trichloroethene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/26/18 11:34	1
Naphthalene	ND		1.0	0.40	ug/L			03/26/18 11:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*80 - 128*		*03/23/18 15:26*	*1*
Dibromofluoromethane (Surr)	*103*		*76 - 132*		*03/23/18 15:26*	*1*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*03/23/18 15:26*	*1*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*03/26/18 11:34*	*1*
Dibromofluoromethane (Surr)	*96*		*76 - 132*		*03/26/18 11:34*	*1*
Toluene-d8 (Surr)	*103*		*80 - 128*		*03/26/18 11:34*	*1*

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
Acenaphthylene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
Anthracene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
Benzidine	ND		10.5	5.26	ug/L		03/27/18 09:48	03/29/18 16:26	1

Client: Haley & Aldrich, Inc.
Project/Site: Annual 5 Year Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-206645-1

Client Sample ID: Arroyo_Simi_20180322_Grab
Date Collected: 03/22/18 08:15
Date Received: 03/22/18 15:15

Lab Sample ID: 440-206645-1
Matrix: Water

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]anthracene	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
Benzo[b]fluoranthene	ND		2.11	1.05	ug/L		03/27/18 09:48	03/29/18 16:26	1
Benzo[k]fluoranthene	ND		0.526	0.263	ug/L		03/27/18 09:48	03/29/18 16:26	1
Benzo[a]pyrene	ND		2.11	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
Bis(2-chloroethoxy)methane	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
Bis(2-chloroethyl)ether	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
Bis(2-ethylhexyl) phthalate	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
4-Bromophenyl phenyl ether	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
Butyl benzyl phthalate	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
4-Chloro-3-methylphenol	ND		2.11	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
2-Chloronaphthalene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
2-Chlorophenol	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
4-Chlorophenyl phenyl ether	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
Chrysene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
Dibenz(a,h)anthracene	ND		0.526	0.263	ug/L		03/27/18 09:48	03/29/18 16:26	1
Di-n-butyl phthalate	ND		2.11	1.05	ug/L		03/27/18 09:48	03/29/18 16:26	1
1,2-Dichlorobenzene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
1,3-Dichlorobenzene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
1,4-Dichlorobenzene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
3,3'-Dichlorobenzidine	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
2,4-Dichlorophenol	ND		2.11	1.05	ug/L		03/27/18 09:48	03/29/18 16:26	1
Diethyl phthalate	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
2,4-Dimethylphenol	ND		2.11	1.05	ug/L		03/27/18 09:48	03/29/18 16:26	1
Dimethyl phthalate	ND		0.526	0.263	ug/L		03/27/18 09:48	03/29/18 16:26	1
4,6-Dinitro-2-methylphenol	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
2,4-Dinitrophenol	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
2,4-Dinitrotoluene	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
2,6-Dinitrotoluene	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
Di-n-octyl phthalate	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
Fluoranthene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
Fluorene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
Hexachlorobenzene	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
Hexachlorobutadiene	ND		2.11	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
Hexachloroethane	ND		3.16	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
Hexachlorocyclopentadiene	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
Indeno[1,2,3-cd]pyrene	ND		2.11	1.05	ug/L		03/27/18 09:48	03/29/18 16:26	1
Isophorone	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
Naphthalene	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
Nitrobenzene	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
2-Nitrophenol	ND		2.11	1.05	ug/L		03/27/18 09:48	03/29/18 16:26	1
4-Nitrophenol	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
N-Nitrosodimethylamine	ND		2.11	1.05	ug/L		03/27/18 09:48	03/29/18 16:26	1
N-Nitrosodiphenylamine	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
N-Nitrosodi-n-propylamine	ND		2.11	1.05	ug/L		03/27/18 09:48	03/29/18 16:26	1
Pentachlorophenol	ND		2.11	1.05	ug/L		03/27/18 09:48	03/29/18 16:26	1
Phenanthrene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1
Phenol	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
Pyrene	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1

Client Sample ID: Arroyo_Simi_20180322_Grab
Date Collected: 03/22/18 08:15
Date Received: 03/22/18 15:15

Lab Sample ID: 440-206645-1
Matrix: Water

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2,4-Trichlorobenzene	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
2,4,6-Trichlorophenol	ND		1.05	0.526	ug/L		03/27/18 09:48	03/29/18 16:26	1
Benzo[g,h,i]perylene	ND		5.26	2.11	ug/L		03/27/18 09:48	03/29/18 16:26	1
bis (2-chloroisopropyl) ether	ND		0.526	0.211	ug/L		03/27/18 09:48	03/29/18 16:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*73*		*50 - 120*	*03/27/18 09:48*	*03/29/18 16:26*	*1*
2-Fluorophenol	*75*		*30 - 120*	*03/27/18 09:48*	*03/29/18 16:26*	*1*
2,4,6-Tribromophenol	*94*		*40 - 120*	*03/27/18 09:48*	*03/29/18 16:26*	*1*
Nitrobenzene-d5	*79*		*45 - 120*	*03/27/18 09:48*	*03/29/18 16:26*	*1*
Terphenyl-d14	*88*		*37 - 144*	*03/27/18 09:48*	*03/29/18 16:26*	*1*
Phenol-d6	*38*		*35 - 120*	*03/27/18 09:48*	*03/29/18 16:26*	*1*

Method: 608 - Organochlorine Pesticides in Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.10	0.082	ug/L		03/26/18 11:53	03/28/18 11:39	1
Dieldrin	ND		0.0051	0.0020	ug/L		03/26/18 11:53	03/28/18 11:39	1
Toxaphene	ND		0.51	0.26	ug/L		03/26/18 11:53	03/28/18 11:39	1
4,4'-DDD	ND		0.0051	0.0041	ug/L		03/26/18 11:53	03/28/18 11:39	1
4,4'-DDE	ND		0.0051	0.0031	ug/L		03/26/18 11:53	03/28/18 11:39	1
4,4'-DDT	ND		0.010	0.0041	ug/L		03/26/18 11:53	03/28/18 11:39	1
Endrin ketone	ND		0.010	0.0071	ug/L		03/26/18 11:53	03/28/18 11:39	1
alpha-BHC	ND		0.0051	0.0026	ug/L		03/26/18 11:53	03/28/18 11:39	1
gamma-BHC (Lindane)	ND		0.010	0.0031	ug/L		03/26/18 11:53	03/28/18 11:39	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		03/26/18 11:53	03/28/18 11:39	1
delta-BHC	ND		0.0051	0.0036	ug/L		03/26/18 11:53	03/28/18 11:39	1
Aldrin	ND		0.0051	0.0015	ug/L		03/26/18 11:53	03/28/18 11:39	1
Endosulfan sulfate	ND		0.010	0.0031	ug/L		03/26/18 11:53	03/28/18 11:39	1
Endosulfan I	**0.042**		0.0051	0.0031	ug/L		03/26/18 11:53	03/28/18 11:39	1
Endrin	ND		0.0051	0.0020	ug/L		03/26/18 11:53	03/28/18 11:39	1
Endosulfan II	ND		0.0051	0.0020	ug/L		03/26/18 11:53	03/28/18 11:39	1
beta-BHC	ND		0.010	0.0041	ug/L		03/26/18 11:53	03/28/18 11:39	1
Heptachlor	ND		0.010	0.0031	ug/L		03/26/18 11:53	03/28/18 11:39	1
Methoxychlor	ND		0.0051	0.0036	ug/L		03/26/18 11:53	03/28/18 11:39	1
Heptachlor epoxide	ND		0.0051	0.0026	ug/L		03/26/18 11:53	03/28/18 11:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*70*		*10 - 150*	*03/26/18 11:53*	*03/28/18 11:39*	*1*

Method: 200.8 - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	**0.29**	**J,DX**	1.0	0.25	ug/L		03/27/18 10:40	03/27/18 19:34	1
Copper	**9.9**		2.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:34	1
Lead	**1.7**		1.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:34	1
Antimony	**0.95**	**J,DX**	2.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:34	1
Selenium	**1.5**	**J,DX**	2.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:34	1
Thallium	ND		1.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:34	1
Beryllium	ND		0.50	0.25	ug/L		03/27/18 10:40	03/27/18 19:34	1
Nickel	**5.7**		2.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:34	1
Silver	ND		1.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:34	1

Client: Haley & Aldrich, Inc.
Project/Site: Annual 5 Year Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-206645-1

Client Sample ID: Arroyo_Simi_20180322_Grab — **Lab Sample ID: 440-206645-1**
Date Collected: 03/22/18 08:15 — **Matrix: Water**
Date Received: 03/22/18 15:15

Method: 200.8 - Metals (ICP/MS) - Total Recoverable (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	2.0		1.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:34	1
Zinc	45		20	2.5	ug/L		03/27/18 10:40	03/27/18 19:34	1
Chromium	5.8		2.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:34	1

Method: SM 2340B - Total Hardness (as CaCO3) by calculation - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Hardness, as CaCO3	120		0.33	0.17	mg/L			03/29/18 15:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	63		5.0	2.5	mg/L			03/28/18 18:04	1
Cyanide, Total	ND		5.0	2.5	ug/L		03/23/18 10:40	03/24/18 09:57	1

Method: SM 9221F - E.Coli (Multiple-Tube Fermentation; EC-MUG)

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Escherichia coli	11000		1.8	1.8	MPN/100mL			03/22/18 15:45	1

Method Summary

Client: Haley & Aldrich, Inc.
Project/Site: Annual 5 Year Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-206645-1

Method	Method Description	Protocol	Laboratory
624	Volatile Organic Compounds (GC/MS)	40CFR136A	TAL IRV
625	Semivolatile Organic Compounds (GC/MS)	EPA	TAL IRV
608	Organochlorine Pesticides in Water	40CFR136A	TAL IRV
200.8	Metals (ICP/MS)	EPA	TAL IRV
SM 2340B	Total Hardness (as CaCO3) by calculation	SM	TAL IRV
SM 2540D	Solids, Total Suspended (TSS)	SM	TAL IRV
SM 4500 CN E	Cyanide, Total (Low Level)	SM	TAL IRV
SM 9221F	E.Coli (Multiple-Tube Fermentation; EC-MUG)	SM	TAL IRV

Protocol References:

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.
EPA = US Environmental Protection Agency
SM = "Standard Methods For The Examination Of Water And Wastewater",

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Lab Chronicle

Client: Haley & Aldrich, Inc.
Project/Site: Annual 5 Year Arroyo Simi-Frontier Park

TestAmerica Job ID: 440-206645-1

Client Sample ID: Arroyo_Simi_20180322_Grab
Date Collected: 03/22/18 08:15
Date Received: 03/22/18 15:15

Lab Sample ID: 440-206645-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	624		1	10 mL	10 mL	465948	03/26/18 11:34	RM	TAL IRV
Total/NA	Analysis	624		1	10 mL	10 mL	465505	03/23/18 15:26	WC	TAL IRV
Total/NA	Prep	625			950 mL	2.0 mL	466272	03/27/18 09:48	JS1	TAL IRV
Total/NA	Analysis	625		1			466864	03/29/18 16:26	DF	TAL IRV
Total/NA	Prep	608			980 mL	2 mL	466023	03/26/18 11:53	L1A	TAL IRV
Total/NA	Analysis	608		1			466579	03/28/18 11:39	IVA	TAL IRV
Total Recoverable	Prep	200.2			25 mL	25 mL	466289	03/27/18 10:40	MN1	TAL IRV
Total Recoverable	Analysis	200.8		1			466563	03/27/18 19:34	B1H	TAL IRV
Total Recoverable	Analysis	SM 2340B		1			466436	03/29/18 15:10	A1S	TAL IRV
Total/NA	Analysis	SM 2540D		1	200 mL	1000 mL	466721	03/28/18 18:04	XL	TAL IRV
Total/NA	Prep	Distill/CN			50 mL	50 mL	465583	03/23/18 10:40	KMY	TAL IRV
Total/NA	Analysis	SM 4500 CN E		1			465829	03/24/18 09:57	KMY	TAL IRV
Total/NA	Analysis	SM 9221F		1	100 mL	100 mL	466353		CMM	TAL IRV
							(Start)	03/22/18 15:45		
							(End)	03/25/18 14:12		

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Method: 624 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-465505/5
Matrix: Water
Analysis Batch: 465505

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Chloroethyl vinyl ether	ND		2.0	1.0	ug/L			03/23/18 08:38	1
Acrolein	ND		5.0	2.5	ug/L			03/23/18 08:38	1
Acrylonitrile	ND		2.0	1.0	ug/L			03/23/18 08:38	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*103*		*80 - 128*		*03/23/18 08:38*	*1*
Dibromofluoromethane (Surr)	*100*		*76 - 132*		*03/23/18 08:38*	*1*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*03/23/18 08:38*	*1*

Lab Sample ID: LCS 440-465505/6
Matrix: Water
Analysis Batch: 465505

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	25.0	17.3		ug/L		69	37 - 150
Acrolein	25.0	21.6		ug/L		87	10 - 145
Acrylonitrile	250	208		ug/L		83	48 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*80 - 128*
Dibromofluoromethane (Surr)	*98*		*76 - 132*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*

Lab Sample ID: LCSD 440-465505/8
Matrix: Water
Analysis Batch: 465505

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	25.0	18.2		ug/L		73	37 - 150	5	25
Acrolein	25.0	25.0		ug/L		100	10 - 145	14	30
Acrylonitrile	250	226		ug/L		90	48 - 140	8	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*102*		*80 - 128*
Dibromofluoromethane (Surr)	*100*		*76 - 132*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*

Lab Sample ID: 440-206688-A-1 MS
Matrix: Water
Analysis Batch: 465505

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Chloroethyl vinyl ether	ND		25.0	17.2		ug/L		69	10 - 140
Acrolein	ND		25.0	24.7		ug/L		99	10 - 147
Acrylonitrile	ND		250	210		ug/L		84	38 - 144

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-206688-A-1 MS
Matrix: Water
Analysis Batch: 465505

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	*101*		*80 - 128*
Dibromofluoromethane (Surr)	*103*		*76 - 132*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*

Lab Sample ID: 440-206688-A-1 MSD
Matrix: Water
Analysis Batch: 465505

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
2-Chloroethyl vinyl ether	ND		25.0	16.4		ug/L		65	10 - 140	5	25
Acrolein	ND		25.0	20.3		ug/L		81	10 - 147	20	40
Acrylonitrile	ND		250	191		ug/L		77	38 - 144	9	40

Surrogate	MSD %Recovery	MSD Qualifier	Limits
Toluene-d8 (Surr)	*101*		*80 - 128*
Dibromofluoromethane (Surr)	*103*		*76 - 132*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*

Lab Sample ID: MB 440-465948/5
Matrix: Water
Analysis Batch: 465948

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		0.50	0.25	ug/L			03/26/18 08:29	1
1,1,2,2-Tetrachloroethane	ND		0.50	0.25	ug/L			03/26/18 08:29	1
1,1,2-Trichloroethane	ND		0.50	0.25	ug/L			03/26/18 08:29	1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND		2.0	0.50	ug/L			03/26/18 08:29	1
1,1-Dichloroethane	ND		0.50	0.25	ug/L			03/26/18 08:29	1
1,1-Dichloroethene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
1,2-Dichlorobenzene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
1,2-Dichloroethane	ND		0.50	0.25	ug/L			03/26/18 08:29	1
1,2-Dichloropropane	ND		0.50	0.25	ug/L			03/26/18 08:29	1
1,3-Dichlorobenzene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
1,4-Dichlorobenzene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Benzene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Bromoform	ND		1.0	0.40	ug/L			03/26/18 08:29	1
Bromomethane	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Carbon tetrachloride	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Chlorobenzene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Dibromochloromethane	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Chloroethane	ND		1.0	0.40	ug/L			03/26/18 08:29	1
Chloroform	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Chloromethane	ND		0.50	0.25	ug/L			03/26/18 08:29	1
cis-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Bromodichloromethane	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Ethylbenzene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Methylene Chloride	ND		2.0	0.88	ug/L			03/26/18 08:29	1
Tetrachloroethene	ND		0.50	0.25	ug/L			03/26/18 08:29	1

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-465948/5
Matrix: Water
Analysis Batch: 465948

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Toluene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
trans-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
trans-1,3-Dichloropropene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Vinyl chloride	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Trichloroethene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
cis-1,2-Dichloroethene	ND		0.50	0.25	ug/L			03/26/18 08:29	1
Naphthalene	ND		1.0	0.40	ug/L			03/26/18 08:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*		*03/26/18 08:29*	*1*
Dibromofluoromethane (Surr)	*98*		*76 - 132*		*03/26/18 08:29*	*1*
Toluene-d8 (Surr)	*102*		*80 - 128*		*03/26/18 08:29*	*1*

Lab Sample ID: LCS 440-465948/6
Matrix: Water
Analysis Batch: 465948

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	25.0	25.1		ug/L		100	70 - 130
1,1,2,2-Tetrachloroethane	25.0	24.8		ug/L		99	63 - 130
1,1,2-Trichloroethane	25.0	27.0		ug/L		108	70 - 130
1,1-Dichloroethane	25.0	24.7		ug/L		99	64 - 130
1,1-Dichloroethene	25.0	23.8		ug/L		95	70 - 130
1,2-Dichlorobenzene	25.0	27.2		ug/L		109	70 - 130
1,2-Dichloroethane	25.0	25.9		ug/L		103	57 - 138
1,2-Dichloropropane	25.0	25.6		ug/L		102	67 - 130
1,3-Dichlorobenzene	25.0	26.7		ug/L		107	70 - 130
1,4-Dichlorobenzene	25.0	26.8		ug/L		107	70 - 130
Benzene	25.0	25.7		ug/L		103	68 - 130
Bromoform	25.0	26.1		ug/L		104	60 - 148
Bromomethane	25.0	21.5		ug/L		86	64 - 139
Carbon tetrachloride	25.0	26.2		ug/L		105	60 - 150
Chlorobenzene	25.0	25.7		ug/L		103	70 - 130
Dibromochloromethane	25.0	27.3		ug/L		109	69 - 145
Chloroethane	25.0	22.4		ug/L		90	64 - 135
Chloroform	25.0	24.7		ug/L		99	70 - 130
Chloromethane	25.0	20.9		ug/L		84	47 - 140
cis-1,3-Dichloropropene	25.0	26.2		ug/L		105	70 - 133
Bromodichloromethane	25.0	25.9		ug/L		104	70 - 132
Ethylbenzene	25.0	27.0		ug/L		108	70 - 130
Methylene Chloride	25.0	22.7		ug/L		91	52 - 130
Tetrachloroethene	25.0	27.2		ug/L		109	70 - 130
Toluene	25.0	27.0		ug/L		108	70 - 130
trans-1,2-Dichloroethene	25.0	24.2		ug/L		97	70 - 130
trans-1,3-Dichloropropene	25.0	25.3		ug/L		101	70 - 132
Vinyl chloride	25.0	23.0		ug/L		92	59 - 133
Trichloroethene	25.0	26.6		ug/L		107	70 - 130
cis-1,2-Dichloroethene	25.0	24.6		ug/L		99	70 - 133

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-465948/6
Matrix: Water
Analysis Batch: 465948

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Naphthalene	25.0	28.4		ug/L		114	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*76 - 132*
Toluene-d8 (Surr)	*100*		*80 - 128*

Lab Sample ID: 320-37266-C-1 MS
Matrix: Water
Analysis Batch: 465948

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	ND		25.0	25.6		ug/L		102	70 - 130
1,1,2,2-Tetrachloroethane	ND		25.0	26.5		ug/L		106	63 - 130
1,1,2-Trichloroethane	ND		25.0	27.9		ug/L		112	70 - 130
1,1-Dichloroethane	ND		25.0	25.1		ug/L		100	65 - 130
1,1-Dichloroethene	ND		25.0	23.2		ug/L		93	70 - 130
1,2-Dichlorobenzene	ND		25.0	27.8		ug/L		111	70 - 130
1,2-Dichloroethane	ND		25.0	25.9		ug/L		103	56 - 146
1,2-Dichloropropane	ND		25.0	25.3		ug/L		101	69 - 130
1,3-Dichlorobenzene	ND		25.0	27.7		ug/L		111	70 - 130
1,4-Dichlorobenzene	ND		25.0	27.6		ug/L		110	70 - 130
Benzene	ND		25.0	25.4		ug/L		102	66 - 130
Bromoform	ND		25.0	27.0		ug/L		108	59 - 150
Bromomethane	ND		25.0	21.6		ug/L		86	62 - 131
Carbon tetrachloride	ND		25.0	26.6		ug/L		106	60 - 150
Chlorobenzene	ND		25.0	26.2		ug/L		105	70 - 130
Dibromochloromethane	ND		25.0	27.6		ug/L		110	70 - 148
Chloroethane	ND		25.0	22.4		ug/L		89	68 - 130
Chloroform	ND		25.0	24.9		ug/L		100	70 - 130
Chloromethane	ND		25.0	20.9		ug/L		84	39 - 144
cis-1,3-Dichloropropene	ND		25.0	26.4		ug/L		106	70 - 133
Bromodichloromethane	ND		25.0	25.8		ug/L		103	70 - 138
Ethylbenzene	ND		25.0	27.4		ug/L		109	70 - 130
Methylene Chloride	ND		25.0	21.3		ug/L		85	52 - 130
Tetrachloroethene	ND		25.0	27.8		ug/L		111	70 - 137
Toluene	ND		25.0	27.9		ug/L		112	70 - 130
trans-1,2-Dichloroethene	ND		25.0	24.9		ug/L		100	70 - 130
trans-1,3-Dichloropropene	ND		25.0	25.8		ug/L		103	70 - 138
Vinyl chloride	ND		25.0	22.9		ug/L		92	50 - 137
Trichloroethene	ND		25.0	26.6		ug/L		107	70 - 130
cis-1,2-Dichloroethene	ND		25.0	24.3		ug/L		97	70 - 130
Naphthalene	ND		25.0	28.6		ug/L		114	60 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*76 - 132*

Method: 624 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 320-37266-C-1 MS
Matrix: Water
Analysis Batch: 465948

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
Toluene-d8 (Surr)	*101*		*80 - 128*

Lab Sample ID: 320-37266-C-1 MSD
Matrix: Water
Analysis Batch: 465948

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1,1-Trichloroethane	ND		25.0	25.7		ug/L		103	70 - 130	0	20
1,1,2,2-Tetrachloroethane	ND		25.0	26.5		ug/L		106	63 - 130	0	30
1,1,2-Trichloroethane	ND		25.0	27.3		ug/L		109	70 - 130	2	25
1,1-Dichloroethane	ND		25.0	25.6		ug/L		102	65 - 130	2	20
1,1-Dichloroethene	ND		25.0	24.1		ug/L		96	70 - 130	4	20
1,2-Dichlorobenzene	ND		25.0	28.5		ug/L		114	70 - 130	2	20
1,2-Dichloroethane	ND		25.0	26.1		ug/L		104	56 - 146	1	20
1,2-Dichloropropane	ND		25.0	26.3		ug/L		105	69 - 130	4	20
1,3-Dichlorobenzene	ND		25.0	28.0		ug/L		112	70 - 130	1	20
1,4-Dichlorobenzene	ND		25.0	28.2		ug/L		113	70 - 130	2	20
Benzene	ND		25.0	26.1		ug/L		104	66 - 130	3	20
Bromoform	ND		25.0	26.7		ug/L		107	59 - 150	1	25
Bromomethane	ND		25.0	22.4		ug/L		90	62 - 131	4	25
Carbon tetrachloride	ND		25.0	26.6		ug/L		106	60 - 150	0	25
Chlorobenzene	ND		25.0	25.3		ug/L		101	70 - 130	4	20
Dibromochloromethane	ND		25.0	27.2		ug/L		109	70 - 148	2	25
Chloroethane	ND		25.0	22.3		ug/L		89	68 - 130	0	25
Chloroform	ND		25.0	25.9		ug/L		104	70 - 130	4	20
Chloromethane	ND		25.0	21.4		ug/L		85	39 - 144	2	25
cis-1,3-Dichloropropene	ND		25.0	26.2		ug/L		105	70 - 133	1	20
Bromodichloromethane	ND		25.0	26.5		ug/L		106	70 - 138	3	20
Ethylbenzene	ND		25.0	26.9		ug/L		107	70 - 130	2	20
Methylene Chloride	ND		25.0	21.6		ug/L		86	52 - 130	1	20
Tetrachloroethene	ND		25.0	27.3		ug/L		109	70 - 137	2	20
Toluene	ND		25.0	27.5		ug/L		110	70 - 130	2	20
trans-1,2-Dichloroethene	ND		25.0	25.7		ug/L		103	70 - 130	3	20
trans-1,3-Dichloropropene	ND		25.0	25.2		ug/L		101	70 - 138	3	25
Vinyl chloride	ND		25.0	23.4		ug/L		94	50 - 137	2	30
Trichloroethene	ND		25.0	27.7		ug/L		111	70 - 130	4	20
cis-1,2-Dichloroethene	ND		25.0	25.8		ug/L		103	70 - 130	6	20
Naphthalene	ND		25.0	29.5		ug/L		118	60 - 140	3	30

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*76 - 132*
Toluene-d8 (Surr)	*96*		*80 - 128*

Method: 625 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-466272/1-A
Matrix: Water
Analysis Batch: 466864

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 466272

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Acenaphthylene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Anthracene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzidine	ND		10.1	5.05	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzo[a]anthracene	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzo[b]fluoranthene	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzo[k]fluoranthene	ND		0.505	0.253	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzo[a]pyrene	ND		2.02	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Bis(2-chloroethoxy)methane	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Bis(2-chloroethyl)ether	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Bis(2-ethylhexyl) phthalate	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
4-Bromophenyl phenyl ether	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Butyl benzyl phthalate	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
4-Chloro-3-methylphenol	ND		2.02	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
2-Chloronaphthalene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
2-Chlorophenol	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
4-Chlorophenyl phenyl ether	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Chrysene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Dibenz(a,h)anthracene	ND		0.505	0.253	ug/L		03/27/18 09:48	03/29/18 12:03	1
Di-n-butyl phthalate	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
1,2-Dichlorobenzene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
1,3-Dichlorobenzene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
1,4-Dichlorobenzene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
3,3'-Dichlorobenzidine	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,4-Dichlorophenol	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Diethyl phthalate	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,4-Dimethylphenol	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Dimethyl phthalate	ND		0.505	0.253	ug/L		03/27/18 09:48	03/29/18 12:03	1
4,6-Dinitro-2-methylphenol	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,4-Dinitrophenol	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,4-Dinitrotoluene	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,6-Dinitrotoluene	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
Di-n-octyl phthalate	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
1,2-Diphenylhydrazine(as Azobenzene)	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Fluoranthene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Fluorene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Hexachlorobenzene	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Hexachlorobutadiene	ND		2.02	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Hexachloroethane	ND		3.03	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Hexachlorocyclopentadiene	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
Indeno[1,2,3-cd]pyrene	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Isophorone	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Naphthalene	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Nitrobenzene	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
2-Nitrophenol	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
4-Nitrophenol	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
N-Nitrosodimethylamine	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-466272/1-A
Matrix: Water
Analysis Batch: 466864

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 466272

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-Nitrosodiphenylamine	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
N-Nitrosodi-n-propylamine	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Pentachlorophenol	ND		2.02	1.01	ug/L		03/27/18 09:48	03/29/18 12:03	1
Phenanthrene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
Phenol	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Pyrene	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1
1,2,4-Trichlorobenzene	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
2,4,6-Trichlorophenol	ND		1.01	0.505	ug/L		03/27/18 09:48	03/29/18 12:03	1
Benzo[g,h,i]perylene	ND		5.05	2.02	ug/L		03/27/18 09:48	03/29/18 12:03	1
bis (2-chloroisopropyl) ether	ND		0.505	0.202	ug/L		03/27/18 09:48	03/29/18 12:03	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl	*71*		*50 - 120*	*03/27/18 09:48*	*03/29/18 12:03*	*1*
2-Fluorophenol	*66*		*30 - 120*	*03/27/18 09:48*	*03/29/18 12:03*	*1*
2,4,6-Tribromophenol	*95*		*40 - 120*	*03/27/18 09:48*	*03/29/18 12:03*	*1*
Nitrobenzene-d5	*74*		*45 - 120*	*03/27/18 09:48*	*03/29/18 12:03*	*1*
Terphenyl-d14	*83*		*37 - 144*	*03/27/18 09:48*	*03/29/18 12:03*	*1*
Phenol-d6	*71*		*35 - 120*	*03/27/18 09:48*	*03/29/18 12:03*	*1*

Lab Sample ID: LCS 440-466272/2-A
Matrix: Water
Analysis Batch: 466864

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 466272

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	10.2	8.031		ug/L		79	47 - 145
Acenaphthylene	10.2	7.949		ug/L		78	33 - 145
Anthracene	10.2	8.037		ug/L		79	27 - 133
Benzidine	10.2	ND		ug/L		33	5 - 66
Benzo[a]anthracene	10.2	8.265		ug/L		81	33 - 143
Benzo[b]fluoranthene	10.2	8.071		ug/L		79	24 - 150
Benzo[k]fluoranthene	10.2	8.234		ug/L		81	11 - 150
Benzo[a]pyrene	10.2	8.051		ug/L		79	17 - 150
Bis(2-chloroethoxy)methane	10.2	7.948		ug/L		78	33 - 150
Bis(2-chloroethyl)ether	10.2	8.040		ug/L		79	12 - 150
Bis(2-ethylhexyl) phthalate	10.2	8.614		ug/L		85	10 - 150
4-Bromophenyl phenyl ether	10.2	7.758		ug/L		76	53 - 127
Butyl benzyl phthalate	10.2	8.578		ug/L		84	10 - 150
4-Chloro-3-methylphenol	10.2	8.551		ug/L		84	22 - 147
2-Chloronaphthalene	10.2	7.858		ug/L		77	60 - 118
2-Chlorophenol	10.2	7.397		ug/L		73	23 - 134
4-Chlorophenyl phenyl ether	10.2	7.862		ug/L		77	25 - 150
Chrysene	10.2	8.188		ug/L		81	17 - 150
Dibenz(a,h)anthracene	10.2	7.596		ug/L		75	10 - 150
Di-n-butyl phthalate	10.2	8.540		ug/L		84	10 - 118
1,2-Dichlorobenzene	10.2	7.083		ug/L		70	32 - 129
1,3-Dichlorobenzene	10.2	6.868		ug/L		68	10 - 150
1,4-Dichlorobenzene	10.2	6.990		ug/L		69	20 - 124
3,3'-Dichlorobenzidine	10.2	7.083		ug/L		70	10 - 150

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-466272/2-A
Matrix: Water
Analysis Batch: 466864

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 466272

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2,4-Dichlorophenol	10.2	7.801		ug/L		77	39 - 135
Diethyl phthalate	10.2	8.136		ug/L		80	10 - 114
2,4-Dimethylphenol	10.2	7.566		ug/L		75	32 - 119
Dimethyl phthalate	10.2	7.954		ug/L		78	10 - 112
4,6-Dinitro-2-methylphenol	20.3	15.44		ug/L		76	10 - 150
2,4-Dinitrophenol	20.3	13.90		ug/L		68	50 - 150
2,4-Dinitrotoluene	10.2	7.950		ug/L		78	39 - 139
2,6-Dinitrotoluene	10.2	8.066		ug/L		79	50 - 150
Di-n-octyl phthalate	10.2	8.989		ug/L		89	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	10.3	7.646		ug/L		75	47 - 116
Fluoranthene	10.2	8.634		ug/L		85	26 - 137
Fluorene	10.2	7.974		ug/L		79	59 - 121
Hexachlorobenzene	10.2	8.139		ug/L		80	10 - 150
Hexachlorobutadiene	10.2	6.205		ug/L		61	24 - 116
Hexachloroethane	10.2	6.210		ug/L		61	40 - 113
Hexachlorocyclopentadiene	10.2	3.903	J,DX	ug/L		38	10 - 67
Indeno[1,2,3-cd]pyrene	10.2	8.113		ug/L		80	10 - 150
Isophorone	10.2	8.559		ug/L		84	21 - 150
Naphthalene	10.2	7.377		ug/L		73	21 - 133
Nitrobenzene	10.2	7.602		ug/L		75	35 - 150
2-Nitrophenol	10.2	7.443		ug/L		73	29 - 150
4-Nitrophenol	20.3	14.35		ug/L		71	10 - 132
N-Nitrosodimethylamine	10.2	8.272		ug/L		81	26 - 117
N-Nitrosodiphenylamine	10.2	7.673		ug/L		76	54 - 110
N-Nitrosodi-n-propylamine	10.2	8.247		ug/L		81	10 - 150
Pentachlorophenol	20.3	14.13		ug/L		70	14 - 150
Phenanthrene	10.2	8.169		ug/L		80	54 - 120
Phenol	10.2	7.026		ug/L		69	10 - 112
Pyrene	10.2	8.160		ug/L		80	52 - 115
1,2,4-Trichlorobenzene	10.2	7.170		ug/L		71	44 - 142
2,4,6-Trichlorophenol	10.2	8.278		ug/L		82	37 - 144
Benzo[g,h,i]perylene	10.2	7.599		ug/L		75	10 - 150
bis (2-chloroisopropyl) ether	10.2	7.265		ug/L		72	47 - 103

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl	*77*		*50 - 120*
2-Fluorophenol	*67*		*30 - 120*
2,4,6-Tribromophenol	*86*		*40 - 120*
Nitrobenzene-d5	*75*		*45 - 120*
Terphenyl-d14	*79*		*37 - 144*
Phenol-d6	*74*		*35 - 120*

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-206741-L-1-B MSD
Matrix: Water
Analysis Batch: 466864

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 466272

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Acenaphthene	ND		9.62	6.859		ug/L		71	47 - 145	11	25
Acenaphthylene	ND		9.62	2.778	LN BA	ug/L		29	33 - 145	32	25
Anthracene	ND		9.62	5.557		ug/L		58	27 - 133	8	25
Benzidine	ND		9.62	ND	LN	ug/L		0	30 - 160	NC	35
Benzo[a]anthracene	ND		9.62	6.822		ug/L		71	33 - 143	14	20
Benzo[b]fluoranthene	ND		9.62	8.092		ug/L		84	24 - 150	17	25
Benzo[k]fluoranthene	ND		9.62	7.614		ug/L		79	11 - 150	20	30
Benzo[a]pyrene	ND		9.62	4.242	BA	ug/L		44	17 - 150	33	25
Bis(2-chloroethoxy)methane	ND		9.62	0.3898	J,DX LN BA	ug/L		4	33 - 150	64	25
Bis(2-chloroethyl)ether	ND		9.62	7.190		ug/L		75	12 - 150	5	25
Bis(2-ethylhexyl) phthalate	ND		9.62	7.671		ug/L		80	10 - 150	17	25
4-Bromophenyl phenyl ether	ND		9.62	7.247		ug/L		75	53 - 127	11	25
Butyl benzyl phthalate	ND		9.62	4.422	J,DX BA	ug/L		46	10 - 150	59	25
4-Chloro-3-methylphenol	ND		9.62	7.766		ug/L		81	22 - 147	12	25
2-Chloronaphthalene	ND		9.62	7.116		ug/L		74	60 - 118	7	20
2-Chlorophenol	ND		9.62	6.505		ug/L		68	23 - 134	10	25
4-Chlorophenyl phenyl ether	ND		9.62	7.711		ug/L		80	25 - 150	7	25
Chrysene	ND		9.62	6.961		ug/L		72	17 - 150	14	25
Dibenz(a,h)anthracene	ND		9.62	6.106		ug/L		64	10 - 150	17	30
Di-n-butyl phthalate	ND		9.62	7.834		ug/L		81	10 - 118	12	25
1,2-Dichlorobenzene	ND		9.62	6.506		ug/L		68	32 - 129	3	25
1,3-Dichlorobenzene	ND		9.62	6.199		ug/L		64	10 - 150	4	25
1,4-Dichlorobenzene	ND		9.62	6.276		ug/L		65	20 - 124	5	25
3,3'-Dichlorobenzidine	ND		9.62	ND	LN	ug/L		0	10 - 150	NC	25
2,4-Dichlorophenol	ND		9.62	6.908		ug/L		72	39 - 135	12	25
Diethyl phthalate	ND		9.62	7.616		ug/L		79	10 - 114	11	30
2,4-Dimethylphenol	ND		9.62	6.869		ug/L		71	32 - 119	10	25
Dimethyl phthalate	ND		9.62	7.357		ug/L		77	10 - 112	9	30
4,6-Dinitro-2-methylphenol	ND		19.2	14.18		ug/L		74	10 - 150	10	25
2,4-Dinitrophenol	ND		19.2	13.45		ug/L		70	50 - 150	13	25
2,4-Dinitrotoluene	ND		9.62	7.447		ug/L		77	39 - 139	12	25
2,6-Dinitrotoluene	ND		9.62	7.602		ug/L		79	50 - 150	9	20
Di-n-octyl phthalate	ND		9.62	8.001		ug/L		83	10 - 146	13	20
1,2-Diphenylhydrazine(as Azobenzene)	ND		9.71	1.132	LN BA	ug/L		12	60 - 120	32	25
Fluoranthene	ND		9.62	7.797		ug/L		81	26 - 137	12	25
Fluorene	ND		9.62	7.485		ug/L		78	59 - 121	8	25
Hexachlorobenzene	ND		9.62	7.366		ug/L		77	10 - 150	9	25
Hexachlorobutadiene	ND		9.62	6.376		ug/L		66	24 - 116	3	25
Hexachloroethane	ND		9.62	5.922		ug/L		62	40 - 113	1	25
Hexachlorocyclopentadiene	ND		9.62	3.791	J,DX	ug/L		39	25 - 120	4	30
Indeno[1,2,3-cd]pyrene	ND		9.62	5.768		ug/L		60	10 - 150	22	30
Isophorone	ND		9.62	7.567		ug/L		79	21 - 150	9	25
Naphthalene	ND		9.62	6.580		ug/L		68	21 - 133	8	25
Nitrobenzene	ND		9.62	6.635		ug/L		69	35 - 150	8	25
2-Nitrophenol	ND		9.62	6.629		ug/L		69	29 - 150	10	25
4-Nitrophenol	ND		19.2	13.71		ug/L		71	10 - 132	13	30

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-206741-L-1-B MSD
Matrix: Water
Analysis Batch: 466864

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 466272

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
N-Nitrosodimethylamine	ND		9.62	7.451		ug/L		77	12 - 123	0	35
N-Nitrosodiphenylamine	ND		9.62	2.702	LN BA	ug/L		28	60 - 120	32	25
N-Nitrosodi-n-propylamine	ND		9.62	7.129		ug/L		74	10 - 150	7	25
Pentachlorophenol	ND		19.2	13.48		ug/L		70	14 - 150	13	25
Phenanthrene	ND		9.62	7.313		ug/L		76	54 - 120	10	25
Phenol	ND		9.62	5.856		ug/L		61	10 - 112	9	25
Pyrene	ND		9.62	6.399		ug/L		67	52 - 115	20	25
1,2,4-Trichlorobenzene	ND		9.62	6.552		ug/L		68	44 - 142	7	20
2,4,6-Trichlorophenol	ND		9.62	7.398		ug/L		77	37 - 144	11	30
Benzo[g,h,i]perylene	ND		9.62	4.957		ug/L		52	10 - 150	30	30
bis (2-chloroisopropyl) ether	ND		9.62	6.165		ug/L		64	45 - 120	7	25

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
2-Fluorobiphenyl	*71*		*50 - 120*
2-Fluorophenol	*62*		*30 - 120*
2,4,6-Tribromophenol	*84*		*40 - 120*
Nitrobenzene-d5	*67*		*45 - 120*
Terphenyl-d14	*79*		*37 - 144*
Phenol-d6	*54*		*35 - 120*

Lab Sample ID: 440-206741-M-1-M MS
Matrix: Water
Analysis Batch: 466864

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 466272

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Acenaphthene	ND		9.71	7.630		ug/L		79	47 - 145
Acenaphthylene	ND		9.71	3.848		ug/L		40	33 - 145
Anthracene	ND		9.71	6.008		ug/L		62	27 - 133
Benzidine	ND		9.71	ND	LN	ug/L		0	30 - 160
Benzo[a]anthracene	ND		9.71	7.868		ug/L		81	33 - 143
Benzo[b]fluoranthene	ND		9.71	9.597		ug/L		99	24 - 150
Benzo[k]fluoranthene	ND		9.71	9.334		ug/L		96	11 - 150
Benzo[a]pyrene	ND		9.71	5.917		ug/L		61	17 - 150
Bis(2-chloroethoxy)methane	ND		9.71	0.7542	LN	ug/L		8	33 - 150
Bis(2-chloroethyl)ether	ND		9.71	6.855		ug/L		71	12 - 150
Bis(2-ethylhexyl) phthalate	ND		9.71	9.068		ug/L		93	10 - 150
4-Bromophenyl phenyl ether	ND		9.71	8.050		ug/L		83	53 - 127
Butyl benzyl phthalate	ND		9.71	8.121		ug/L		84	10 - 150
4-Chloro-3-methylphenol	ND		9.71	8.763		ug/L		90	22 - 147
2-Chloronaphthalene	ND		9.71	7.638		ug/L		79	60 - 118
2-Chlorophenol	ND		9.71	7.168		ug/L		74	23 - 134
4-Chlorophenyl phenyl ether	ND		9.71	8.231		ug/L		85	25 - 150
Chrysene	ND		9.71	7.978		ug/L		82	17 - 150
Dibenz(a,h)anthracene	ND		9.71	7.217		ug/L		74	10 - 150
Di-n-butyl phthalate	ND		9.71	8.849		ug/L		91	10 - 118
1,2-Dichlorobenzene	ND		9.71	6.679		ug/L		69	32 - 129
1,3-Dichlorobenzene	ND		9.71	6.470		ug/L		67	10 - 150
1,4-Dichlorobenzene	ND		9.71	6.592		ug/L		68	20 - 124

Method: 625 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-206741-M-1-M MS
Matrix: Water
Analysis Batch: 466864

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 466272

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
3,3'-Dichlorobenzidine	ND		9.71	ND	LN	ug/L		0	10 - 150
2,4-Dichlorophenol	ND		9.71	7.750		ug/L		80	39 - 135
Diethyl phthalate	ND		9.71	8.532		ug/L		88	10 - 114
2,4-Dimethylphenol	ND		9.71	7.614		ug/L		78	32 - 119
Dimethyl phthalate	ND		9.71	8.086		ug/L		83	10 - 112
4,6-Dinitro-2-methylphenol	ND		19.4	15.65		ug/L		81	10 - 150
2,4-Dinitrophenol	ND		19.4	15.33		ug/L		79	50 - 150
2,4-Dinitrotoluene	ND		9.71	8.376		ug/L		86	39 - 139
2,6-Dinitrotoluene	ND		9.71	8.322		ug/L		86	50 - 150
Di-n-octyl phthalate	ND		9.71	9.142		ug/L		94	10 - 146
1,2-Diphenylhydrazine(as Azobenzene)	ND		9.81	0.8200	J,DX LN	ug/L		8	60 - 120
Fluoranthene	ND		9.71	8.754		ug/L		90	26 - 137
Fluorene	ND		9.71	8.131		ug/L		84	59 - 121
Hexachlorobenzene	ND		9.71	8.042		ug/L		83	10 - 150
Hexachlorobutadiene	ND		9.71	6.583		ug/L		68	24 - 116
Hexachloroethane	ND		9.71	6.006		ug/L		62	40 - 113
Hexachlorocyclopentadiene	ND		9.71	3.630	J,DX	ug/L		37	25 - 120
Indeno[1,2,3-cd]pyrene	ND		9.71	7.167		ug/L		74	10 - 150
Isophorone	ND		9.71	8.242		ug/L		85	21 - 150
Naphthalene	ND		9.71	7.147		ug/L		74	21 - 133
Nitrobenzene	ND		9.71	7.179		ug/L		74	35 - 150
2-Nitrophenol	ND		9.71	7.337		ug/L		76	29 - 150
4-Nitrophenol	ND		19.4	15.54		ug/L		80	10 - 132
N-Nitrosodimethylamine	ND		9.71	7.460		ug/L		77	12 - 123
N-Nitrosodiphenylamine	ND		9.71	3.731	LN	ug/L		38	60 - 120
N-Nitrosodi-n-propylamine	ND		9.71	7.681		ug/L		79	10 - 150
Pentachlorophenol	ND		19.4	15.29		ug/L		79	14 - 150
Phenanthrene	ND		9.71	8.076		ug/L		83	54 - 120
Phenol	ND		9.71	6.438		ug/L		66	10 - 112
Pyrene	ND		9.71	7.844		ug/L		81	52 - 115
1,2,4-Trichlorobenzene	ND		9.71	7.041		ug/L		73	44 - 142
2,4,6-Trichlorophenol	ND		9.71	8.235		ug/L		85	37 - 144
Benzo[g,h,i]perylene	ND		9.71	6.686		ug/L		69	10 - 150
bis (2-chloroisopropyl) ether	ND		9.71	6.582		ug/L		68	45 - 120

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
2-Fluorobiphenyl	*77*		*50 - 120*
2-Fluorophenol	*67*		*30 - 120*
2,4,6-Tribromophenol	*92*		*40 - 120*
Nitrobenzene-d5	*74*		*45 - 120*
Terphenyl-d14	*93*		*37 - 144*
Phenol-d6	*64*		*35 - 120*

Method: 608 - Organochlorine Pesticides in Water

Lab Sample ID: MB 440-466023/1-A
Matrix: Water
Analysis Batch: 466579

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 466023

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chlordane (technical)	ND		0.10	0.080	ug/L		03/26/18 11:53	03/28/18 10:55	1
Dieldrin	ND		0.0050	0.0020	ug/L		03/26/18 11:53	03/28/18 10:55	1
Toxaphene	ND		0.50	0.25	ug/L		03/26/18 11:53	03/28/18 10:55	1
4,4'-DDD	ND		0.0050	0.0040	ug/L		03/26/18 11:53	03/28/18 10:55	1
4,4'-DDE	ND		0.0050	0.0030	ug/L		03/26/18 11:53	03/28/18 10:55	1
4,4'-DDT	ND		0.010	0.0040	ug/L		03/26/18 11:53	03/28/18 10:55	1
Endrin ketone	ND		0.010	0.0070	ug/L		03/26/18 11:53	03/28/18 10:55	1
alpha-BHC	ND		0.0050	0.0025	ug/L		03/26/18 11:53	03/28/18 10:55	1
gamma-BHC (Lindane)	ND		0.010	0.0030	ug/L		03/26/18 11:53	03/28/18 10:55	1
Endrin aldehyde	ND		0.010	0.0020	ug/L		03/26/18 11:53	03/28/18 10:55	1
delta-BHC	ND		0.0050	0.0035	ug/L		03/26/18 11:53	03/28/18 10:55	1
Aldrin	ND		0.0050	0.0015	ug/L		03/26/18 11:53	03/28/18 10:55	1
Endosulfan sulfate	ND		0.010	0.0030	ug/L		03/26/18 11:53	03/28/18 10:55	1
Endosulfan I	ND		0.0050	0.0030	ug/L		03/26/18 11:53	03/28/18 10:55	1
Endrin	ND		0.0050	0.0020	ug/L		03/26/18 11:53	03/28/18 10:55	1
Endosulfan II	ND		0.0050	0.0020	ug/L		03/26/18 11:53	03/28/18 10:55	1
beta-BHC	ND		0.010	0.0040	ug/L		03/26/18 11:53	03/28/18 10:55	1
Heptachlor	ND		0.010	0.0030	ug/L		03/26/18 11:53	03/28/18 10:55	1
Methoxychlor	ND		0.0050	0.0035	ug/L		03/26/18 11:53	03/28/18 10:55	1
Heptachlor epoxide	ND		0.0050	0.0025	ug/L		03/26/18 11:53	03/28/18 10:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tetrachloro-m-xylene	*70*		*10 - 150*	*03/26/18 11:53*	*03/28/18 10:55*	*1*

Lab Sample ID: LCS 440-466023/2-A
Matrix: Water
Analysis Batch: 466579

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 466023

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dieldrin	0.200	0.200		ug/L		100	36 - 146
4,4'-DDD	0.200	0.208		ug/L		104	31 - 141
4,4'-DDE	0.200	0.195		ug/L		98	30 - 145
4,4'-DDT	0.200	0.214		ug/L		107	25 - 150
Endrin ketone	0.200	0.202		ug/L		101	52 - 115
alpha-BHC	0.200	0.180		ug/L		90	37 - 134
gamma-BHC (Lindane)	0.200	0.190		ug/L		95	32 - 127
Endrin aldehyde	0.200	0.182		ug/L		91	47 - 115
delta-BHC	0.200	0.184		ug/L		92	19 - 140
Aldrin	0.200	0.176		ug/L		88	42 - 122
Endosulfan sulfate	0.200	0.199		ug/L		100	26 - 144
Endosulfan I	0.200	0.195		ug/L		97	45 - 150
Endrin	0.200	0.195		ug/L		97	30 - 147
Endosulfan II	0.200	0.197		ug/L		99	10 - 150
beta-BHC	0.200	0.179		ug/L		90	17 - 147
Heptachlor	0.200	0.188		ug/L		94	34 - 115
Methoxychlor	0.200	0.207		ug/L		103	55 - 115
Heptachlor epoxide	0.200	0.191		ug/L		95	37 - 142

Method: 608 - Organochlorine Pesticides in Water (Continued)

Lab Sample ID: LCS 440-466023/2-A
Matrix: Water
Analysis Batch: 466579

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 466023

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tetrachloro-m-xylene	*87*		*10 - 150*

Lab Sample ID: LCSD 440-466023/3-A
Matrix: Water
Analysis Batch: 466579

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 466023

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dieldrin			0.200	0.196		ug/L		98	36 - 146	2	35
4,4'-DDD			0.200	0.204		ug/L		102	31 - 141	2	35
4,4'-DDE			0.200	0.189		ug/L		94	30 - 145	3	35
4,4'-DDT			0.200	0.203		ug/L		102	25 - 150	5	35
Endrin ketone			0.200	0.197		ug/L		99	52 - 115	2	35
alpha-BHC			0.200	0.168		ug/L		84	37 - 134	7	35
gamma-BHC (Lindane)			0.200	0.189		ug/L		94	32 - 127	1	35
Endrin aldehyde			0.200	0.173		ug/L		86	47 - 115	5	35
delta-BHC			0.200	0.204		ug/L		102	19 - 140	10	35
Aldrin			0.200	0.172		ug/L		86	42 - 122	2	35
Endosulfan sulfate			0.200	0.196		ug/L		98	26 - 144	2	35
Endosulfan I			0.200	0.189		ug/L		95	45 - 150	3	35
Endrin			0.200	0.188		ug/L		94	30 - 147	3	35
Endosulfan II			0.200	0.178		ug/L		89	10 - 150	10	35
beta-BHC			0.200	0.177		ug/L		89	17 - 147	1	35
Heptachlor			0.200	0.186		ug/L		93	34 - 115	1	35
Methoxychlor			0.200	0.172		ug/L		86	55 - 115	19	35
Heptachlor epoxide			0.200	0.187		ug/L		93	37 - 142	2	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Tetrachloro-m-xylene	*82*		*10 - 150*

Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 440-466289/1-A
Matrix: Water
Analysis Batch: 466563

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 466289

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cadmium	ND		1.0	0.25	ug/L		03/27/18 10:40	03/27/18 19:19	1
Copper	ND		2.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:19	1
Lead	ND		1.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:19	1
Antimony	ND		2.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:19	1
Selenium	ND		2.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:19	1
Thallium	ND		1.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:19	1
Beryllium	ND		0.50	0.25	ug/L		03/27/18 10:40	03/27/18 19:19	1
Nickel	ND		2.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:19	1
Silver	ND		1.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:19	1
Arsenic	ND		1.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:19	1
Zinc	ND		20	2.5	ug/L		03/27/18 10:40	03/27/18 19:19	1

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-466289/1-A
Matrix: Water
Analysis Batch: 466563

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 466289

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chromium	ND		2.0	0.50	ug/L		03/27/18 10:40	03/27/18 19:19	1

Lab Sample ID: LCS 440-466289/2-A
Matrix: Water
Analysis Batch: 466563

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 466289

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	80.0	84.5		ug/L		106	85 - 115
Copper	80.0	83.3		ug/L		104	85 - 115
Lead	80.0	88.9		ug/L		111	85 - 115
Antimony	80.0	85.8		ug/L		107	85 - 115
Selenium	80.0	87.0		ug/L		109	85 - 115
Thallium	80.0	81.1		ug/L		101	85 - 115
Beryllium	80.0	85.7		ug/L		107	85 - 115
Nickel	80.0	82.6		ug/L		103	85 - 115
Silver	80.0	82.1		ug/L		103	85 - 115
Arsenic	80.0	84.3		ug/L		105	85 - 115
Zinc	80.0	86.7		ug/L		108	85 - 115
Chromium	80.0	83.0		ug/L		104	85 - 115

Lab Sample ID: 440-206292-I-1-C MS
Matrix: Water
Analysis Batch: 466563

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 466289

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	ND		80.0	76.5		ug/L		96	70 - 130
Copper	9.6		80.0	80.2		ug/L		88	70 - 130
Lead	ND		80.0	79.2		ug/L		99	70 - 130
Antimony	ND		80.0	82.2		ug/L		103	70 - 130
Selenium	0.72	J,DX	80.0	75.9		ug/L		94	70 - 130
Thallium	ND		80.0	74.0		ug/L		93	70 - 130
Beryllium	ND		80.0	80.8		ug/L		101	70 - 130
Nickel	1.6	J,DX	80.0	75.2		ug/L		92	70 - 130
Silver	ND		80.0	75.1		ug/L		94	70 - 130
Arsenic	0.84	J,DX	80.0	81.7		ug/L		101	70 - 130
Zinc	2.8	J,DX	80.0	77.2		ug/L		93	70 - 130
Chromium	1.1	J,DX	80.0	78.1		ug/L		96	70 - 130

Lab Sample ID: 440-206292-I-1-D MSD
Matrix: Water
Analysis Batch: 466563

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 466289

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cadmium	ND		80.0	79.0		ug/L		99	70 - 130	3	20
Copper	9.6		80.0	82.4		ug/L		91	70 - 130	3	20
Lead	ND		80.0	81.0		ug/L		101	70 - 130	2	20
Antimony	ND		80.0	83.4		ug/L		104	70 - 130	1	20
Selenium	0.72	J,DX	80.0	77.8		ug/L		96	70 - 130	2	20
Thallium	ND		80.0	75.0		ug/L		94	70 - 130	1	20

Method: 200.8 - Metals (ICP/MS) (Continued)

Lab Sample ID: 440-206292-I-1-D MSD
Matrix: Water
Analysis Batch: 466563

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 466289

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Beryllium	ND		80.0	79.5		ug/L		99	70 - 130	2	20
Nickel	1.6	J,DX	80.0	77.9		ug/L		95	70 - 130	3	20
Silver	ND		80.0	76.7		ug/L		96	70 - 130	2	20
Arsenic	0.84	J,DX	80.0	82.3		ug/L		102	70 - 130	1	20
Zinc	2.8	J,DX	80.0	81.4		ug/L		98	70 - 130	5	20
Chromium	1.1	J,DX	80.0	79.9		ug/L		98	70 - 130	2	20

Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-466721/1
Matrix: Water
Analysis Batch: 466721

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		1.0	0.50	mg/L			03/28/18 18:04	1

Lab Sample ID: LCS 440-466721/2
Matrix: Water
Analysis Batch: 466721

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Suspended Solids	1000	995		mg/L		100	85 - 115

Lab Sample ID: 440-206870-G-2 DU
Matrix: Water
Analysis Batch: 466721

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Total Suspended Solids	120		120		mg/L		2	10

Method: SM 4500 CN E - Cyanide, Total (Low Level)

Lab Sample ID: MB 440-465583/1-A
Matrix: Water
Analysis Batch: 465829

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 465583

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		5.0	2.5	ug/L		03/23/18 10:40	03/24/18 09:55	1

Lab Sample ID: LCS 440-465583/2-A
Matrix: Water
Analysis Batch: 465829

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 465583

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cyanide, Total	100	105		ug/L		105	90 - 110

Method: SM 4500 CN E - Cyanide, Total (Low Level) (Continued)

Lab Sample ID: 440-206348-I-1-B MS
Matrix: Water
Analysis Batch: 465829

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 465583

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Cyanide, Total	ND		100	80.1		ug/L		80	70 - 115		

Lab Sample ID: 440-206348-I-1-C MSD
Matrix: Water
Analysis Batch: 465829

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 465583

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Cyanide, Total	ND		100	83.4		ug/L		83	70 - 115	4	15

GC/MS VOA

Analysis Batch: 465505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total/NA	Water	624	
MB 440-465505/5	Method Blank	Total/NA	Water	624	
LCS 440-465505/6	Lab Control Sample	Total/NA	Water	624	
LCSD 440-465505/8	Lab Control Sample Dup	Total/NA	Water	624	
440-206688-A-1 MS	Matrix Spike	Total/NA	Water	624	
440-206688-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

Analysis Batch: 465948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total/NA	Water	624	
MB 440-465948/5	Method Blank	Total/NA	Water	624	
LCS 440-465948/6	Lab Control Sample	Total/NA	Water	624	
320-37266-C-1 MS	Matrix Spike	Total/NA	Water	624	
320-37266-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	624	

GC/MS Semi VOA

Prep Batch: 466272

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total/NA	Water	625	
MB 440-466272/1-A	Method Blank	Total/NA	Water	625	
LCS 440-466272/2-A	Lab Control Sample	Total/NA	Water	625	
440-206741-L-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	
440-206741-M-1-M MS	Matrix Spike	Total/NA	Water	625	

Analysis Batch: 466864

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total/NA	Water	625	466272
MB 440-466272/1-A	Method Blank	Total/NA	Water	625	466272
LCS 440-466272/2-A	Lab Control Sample	Total/NA	Water	625	466272
440-206741-L-1-B MSD	Matrix Spike Duplicate	Total/NA	Water	625	466272
440-206741-M-1-M MS	Matrix Spike	Total/NA	Water	625	466272

GC Semi VOA

Prep Batch: 466023

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total/NA	Water	608	
MB 440-466023/1-A	Method Blank	Total/NA	Water	608	
LCS 440-466023/2-A	Lab Control Sample	Total/NA	Water	608	
LCSD 440-466023/3-A	Lab Control Sample Dup	Total/NA	Water	608	

Analysis Batch: 466579

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total/NA	Water	608	466023
MB 440-466023/1-A	Method Blank	Total/NA	Water	608	466023
LCS 440-466023/2-A	Lab Control Sample	Total/NA	Water	608	466023
LCSD 440-466023/3-A	Lab Control Sample Dup	Total/NA	Water	608	466023

Metals

Prep Batch: 466289

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total Recoverable	Water	200.2	
MB 440-466289/1-A	Method Blank	Total Recoverable	Water	200.2	
LCS 440-466289/2-A	Lab Control Sample	Total Recoverable	Water	200.2	
440-206292-I-1-C MS	Matrix Spike	Total Recoverable	Water	200.2	
440-206292-I-1-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.2	

Analysis Batch: 466436

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total Recoverable	Water	SM 2340B	

Analysis Batch: 466563

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total Recoverable	Water	200.8	466289
MB 440-466289/1-A	Method Blank	Total Recoverable	Water	200.8	466289
LCS 440-466289/2-A	Lab Control Sample	Total Recoverable	Water	200.8	466289
440-206292-I-1-C MS	Matrix Spike	Total Recoverable	Water	200.8	466289
440-206292-I-1-D MSD	Matrix Spike Duplicate	Total Recoverable	Water	200.8	466289

General Chemistry

Prep Batch: 465583

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total/NA	Water	Distill/CN	
MB 440-465583/1-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 440-465583/2-A	Lab Control Sample	Total/NA	Water	Distill/CN	
440-206348-I-1-B MS	Matrix Spike	Total/NA	Water	Distill/CN	
440-206348-I-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	Distill/CN	

Analysis Batch: 465829

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total/NA	Water	SM 4500 CN E	465583
MB 440-465583/1-A	Method Blank	Total/NA	Water	SM 4500 CN E	465583
LCS 440-465583/2-A	Lab Control Sample	Total/NA	Water	SM 4500 CN E	465583
440-206348-I-1-B MS	Matrix Spike	Total/NA	Water	SM 4500 CN E	465583
440-206348-I-1-C MSD	Matrix Spike Duplicate	Total/NA	Water	SM 4500 CN E	465583

Analysis Batch: 466721

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total/NA	Water	SM 2540D	
MB 440-466721/1	Method Blank	Total/NA	Water	SM 2540D	
LCS 440-466721/2	Lab Control Sample	Total/NA	Water	SM 2540D	
440-206870-G-2 DU	Duplicate	Total/NA	Water	SM 2540D	

Biology

Analysis Batch: 466353

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-206645-1	Arroyo_Simi_20180322_Grab	Total/NA	Water	SM 9221F	

Qualifiers

GC/MS Semi VOA

Qualifier	Qualifier Description
BA	Relative percent difference out of control
LN	MS and/or MSD below acceptance limits. See Blank Spike (LCS)
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Metals

Qualifier	Qualifier Description
J,DX	Estimated value; value < lowest standard (MQL), but >than MDL

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Accreditation/Certification Summary

Client: Haley & Aldrich, Inc. TestAmerica Job ID: 440-206645-1
Project/Site: Annual 5 Year Arroyo Simi-Frontier Park

Laboratory: TestAmerica Irvine

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	CA ELAP 2706	06-30-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
608	608	Water	Endrin ketone
608	608	Water	Methoxychlor
624		Water	1,1,2-Trichloro-1,2,2-trifluoroethane
624		Water	cis-1,2-Dichloroethene
624		Water	Naphthalene
625	625	Water	1,2-Diphenylhydrazine(as Azobenzene)

Patel, Urvashi

From: Miller, Katherine <KMiller@haleyaldrich.com>
Sent: Wednesday, March 28, 2018 3:14 PM
To: Patel, Urvashi
Subject: 440-206645-1 Arroyo Simi

Importance: High

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Red Category

-External Email-

HI Urvashi,

Please analyze the asbestos for 440-206645-1 Arroyo Simi.

Thanks,
Katherine

Katherine Miller
Project Manager

Haley Aldrich, Inc.
600 South Meyer Ave. | Suite 100
Tucson, AZ 85701

T: (520) 289.8606
C: (520) 904.6944

www.haleyaldrich.com

Patel, Urvashi

From: Miller, Katherine <KMiller@haleyaldrich.com>
Sent: Friday, April 13, 2018 12:07 PM
To: Patel, Urvashi
Cc: Nguyen, Jocelyn
Subject: RE: 206645 RUSH request

-External Email-

Yes, those are the correct list below. We were sampling the 5 year Arroyo Simi requirements, not annual hence the additions.

Katherine Miller
HALEY & ALDRICH
Tel: 520.289.8606

From: Patel, Urvashi <Urvashi.Patel@testamericainc.com>
Sent: Friday, April 13, 2018 12:05 PM
To: Miller, Katherine <KMiller@haleyaldrich.com>
Cc: Nguyen, Jocelyn <Jocelyn.Nguyen@testamericainc.com>
Subject: RE: 206645 RUSH request

Hi Katherine
Does the PP list include the analytes below? Please confirm and I'll ask if we can report from the original run. I had not made any changes to the project and the 608Pest for Arroyo only listed the short list.

	Aldrin	309-00-2
	alpha-BHC	319-84-6
	beta-BHC	319-85-7
	Chlordane (technical)	12789-03-6
	delta-BHC	319-86-8
	Dieldrin	60-57-1
	Endosulfan I	959-98-8
	Endosulfan II	33213-65-9
	Endosulfan sulfate	1031-07-8
	Endrin	72-20-8
	Endrin aldehyde	7421-93-4
	Endrin ketone	53494-70-5
	gamma-BHC (Lindane)	58-89-9
	Heptachlor	76-44-8
	Heptachlor epoxide	1024-57-3
	Methoxychlor	72-43-5
	Toxaphene	8001-35-2
	4,4'-DDD	72-54-8
	4,4'-DDE	72-55-9
	4,4'-DDT	50-29-3
	Chlordane (n.o.s.)	57-74-9
	Tetrachloro-m-xylene	877-09-8
	DCB Decachlorobiphenyl (Surr)	2051-24-3

I'll add the CrVI (218.6) Mercury (245.1) to this job.

Thank you,

URVASHI PATEL
Manager of Project Management

Test America
THE LEADER IN ENVIRONMENTAL TESTING

17461 Derian Ave, Suite #100
Irvine, CA 92614
TEL 949-261-1022 | FAX 949-260-3297
DIRECT 949-260-3269
CELL 949-333-9055

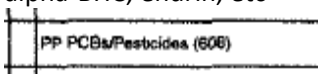
www.testamericainc.com

From: Miller, Katherine [mailto:KMiller@haleyaldrich.com]
Sent: Friday, April 13, 2018 11:44 AM
To: Patel, Urvashi
Cc: Nguyen, Jocelyn
Subject: 206645 RUSH request
Importance: High

-External Email-

Urvashi,

The lab report for Arroyo Simi didn't include the full priority pollutant list requested on the COC. Please add aldrin, alpha-BHC, endrin, etc



Also, could the lab analyze hexavalent chromium and mercury with the remaining volume? Please put on rush.

Katherine

Katherine Miller
Project Manager

Haley Aldrich, Inc.
600 South Meyer Ave. | Suite 100
Tucson, AZ 85701

T: (520) 289.8606
C: (520) 904.6944

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CHAIN OF CUSTODY FORM

Client Name/Address: Haley & Aldrich 5333 Mission Center Rd Suite 300 San Diego, CA 92108	**Project:** Boeing-SSFL NPDES Permit 2015 **Annual 5 Year Arroyo Simi-Frontier Park** **Dry Weather**
Test America Contact: Urvashi Patel 17461 Derian Ave Suite #100 Irvine CA 92614 Tel 949-260-3269 Cell 949-333-9055	**Project Manager:** Katherine Miller 520.289 8606, 520.904 6944 (cell)
TestAmerica's services under this CoC shall be performed in accordance with the T&Cs within Blanket Service Agreement# 2015-18-TestAmerica by and between Haley & Aldrich, Inc., its subsidiaries and affiliates, and TestAmerica Laboratories Inc.	
Sampler: Daniel Gurr/Roy Barajas	**Field Manager:** Mark Dominick 978.234.5033, 818.599.0702 (cell)

Field Readings	Meter serial #
Field Readings: (Include units) 0915	WY127RS9L
Time of Readings:	
pH 7.65 pH unit	
Temp 12.97 °F	
Velocity 0.1 ft/sec	
Field readings QC	
Checked by:	
Date/Time: 3-22-18/0915	

Sample Description	Sample I D	Sampling Date/Time	Sample Matrix	Container Type	# of Cont	Preservative	Bottle #	MS/MSD	Hardness as CaCO3, Recoverable (SM2340B)	PP PCBs/Pesticides (608)	Chlorpyrifos, Diazinon (E525.2)	TSS (Method 160.2 (SM2540D))	TCDD (and all congeners) (E1613B)	Asbestos	E coli (SM9221)		PP Metals (200.7/200.8)	PP SVOCs (625)	PP VOCs (624)	Cyanide		Comments
			WS	250 mL Poly	1	HNO_3	100	No	X													
			WS	1L Glass Amber	2	None	65	No		X												
			WS	1L Glass Amber	2	HCl	15	No			X											Extract within 36-hours of sampling
			WS	1L Poly	1	None	185	No				X										
			WS	1L Glass Amber	2	None	65	No					X									
	Arroyo_Simi_20180322_Grab	3/22/2018/0815	WS	125 mL Poly	3	$Na_2S_2O_3$	10								X							Deliver to lab ASAP 8 hr hold time Need 1x, 5, 10x dilutions
Arroyo Simi			WS	1 L Poly	1	None								H								
			WS	250 mL Poly	1	HNO_3	100										X					
			WS	1L Glass Amber	2	None	65											X				
			WS	VOAs	3	None	55												X			
			WS	VOAs	3	HCl	40												X			
			WS	250 mL Poly	1	NaOH	220													X		
	Arroyo_Simi_20180322_Grab_Extra	3/22/2018/0815	WS	1L Glass Amber	2	None	110						H									Hold
			WS	1L Glass Amber	2	HCl	275				H											Hold
			WS	1L Glass Amber	2	None	285			H												Hold

Relinquished By	**Date/Time:**	**Company**	**Received By**	**Date/Time**	
Daniel Gurr	3-22-18/1300	Haley & Aldrich	Timothy Lee	3/22/18/1pm	Timothy Lee
Relinquished By	**Date/Time.**	**Company:**	**Received By**	**Date/Time.**	
	3-22-18/3:16			3/22/18 1515	
Relinquished By	**Date/Time**	**Company:**	**Received By**	**Date/Time**	

Turn-around time (Check)
24 Hour: ____ 72 Hour: ____ 10 Day: X
48 Hour: ____ 5 Day: ____ Normal ____

Sample Integrity (Check)
Intact ____ On Ice ____
Store samples for 6 months

Data Requirements (Check)
No Level IV ____ All Level IV X

0.7/0.2 3.8/3.3-5.0

3.1/2.6

440-206645 Chain of Custody

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Patel, Urvashi	Carrier Tracking No(s):	COC No: 440-120429.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: urvashi.patel@testamericainc.com	State of Origin: California	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - California		Job #: 440-206645-1
Address: 880 Riverside Parkway,	Due Date Requested: 4/3/2018			
City: West Sacramento	TAT Requested (days):			
State, Zip: CA, 95605				
Phone: 916-373-5600(Tel) 916-372-1059(Fax)	PO #:			
Email:	WO #:			
Project Name: Boeing NPDES SSFL outfalls	Project #: 44009879			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	1613B/1613B_Sox_Sep_P Standard List w/ Totals	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
Arroyo_Simi_20180322_Grab (440-206645-1)	3/22/18	08:15 Pacific		Water			X	2	See QAS, Boeing_w/u to zero; Use Boeing glassware.

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1		3/23/18 0700	FAPN		3/24/18 910	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 2.1c

Ver: 09/20/2016

Login Sample Receipt Checklist

Client: Haley & Aldrich, Inc.

Job Number: 440-206645-1

Login Number: 206645
List Number: 1
Creator: Soderblom, Tim

List Source: TestAmerica Irvine

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	Not present
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Sacramento

440-206645 Field Sheet

J.

Tracking # 4176 2740 8828 Seal SO / PO / FO

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations. File in the job folder with the COC.

Notes:

Therm. ID: AK-2 / AK-3 / AK-4 / AK-5 / HACCP / Other____

Ice X Wet X Gel ____ Other ____

Cooler Custody Seal: Seal

Sample Custody Seal: ____

Cooler ID: 1 of 2

Temp: Observed 2.1c

From: Temp Blank ☐ Sample ☐

NCM Filed: Yes ☐ No ☐

	Yes	No	NA
Perchlorate has headspace?	☐	☐	☐
CoC is complete w/o discrepancies?	☐	☐	☐
Samples received within holding time?	☐	☐	☐
Sample preservatives verified?	☐	☐	☐
Cooler compromised/tampered with?	☐	☐	☐
Samples compromised/tampered with?	☐	☐	☐
Samples w/o discrepancies?	☐	☐	☐
Sample containers have legible labels?	☐	☐	☐
Containers are not broken or leaking?	☐	☐	☐
Sample date/times are provided.	☐	☐	☐
Appropriate containers are used?	☐	☐	☐
Sample bottles are completely filled?	☐	☐	☐
Zero headspace?*	☐	☐	☐
Multiphasic samples are not present?	☐	☐	☐
Sample temp OK?	☐	☐	☐
Sample out of temp?	☐	☐	☐

Initials: DH Date: 3/24/18 Time 910

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

39