TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-79792-1
Client Project/Site: Portland Harbor Pre-Remedial Design
Revision: 1

For:
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Attn: Amy Dahl

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Authorized for release by:
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Table of Contents

Job ID: 580-79792-1

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-79792-1

REVISION 1: **SEPTEMBER 28, 2018**
This revision was required because the Hardness was reported by an icorrect method.

This

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) resulting from a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are an unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes within the calibration range of the instrument or that reduces the interferences thereby enabling the quantification of target analytes.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
Six samples were received on 8/22/2018 2:45 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2º C.

Dissolved Ca and Mg were added to the samples per client request.

This report contains results of all analyses performed by TestAmerica Seattle.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples PDI-RB-PP-1820 (580-79792-2), PDI-WS-T05W-1808 (580-79792-3), PDI-WS-T05NAV-1808 (580-79792-4), PDI-WS-T05E-1808 (580-79792-5) and TRIP BLANK-T05 (580-79792-6) were analyzed for volatile organic compounds (GC-MS) in accordance with 8260C. The samples were analyzed on 08/24/2018, 08/25/2018 and 08/30/2018.

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

CHLORINATED HERBICIDES
Samples PDI-WS-T05-1808 (580-79792-1) and PDI-RB-PP-1820 (580-79792-2) were analyzed for chlorinated herbicides in accordance with EPA SW-846 8151A. The samples were prepared on 08/27/2018 and analyzed on 09/04/2018.

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

METALS (ICP) - DISSOLVED
Samples PDI-WS-T05-1808 (580-79792-1) and PDI-RB-PP-1820 (580-79792-2) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 08/28/2018 and analyzed on 08/31/2018.

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

Job ID: 580-79792-1 (Continued)

Laboratory: TestAmerica Seattle (Continued)

METALS (ICPMS) - DISSOLVED

Samples PDI-WS-T05-1808 (580-79792-1) and PDI-RB-PP-1820 (580-79792-2) were analyzed for metals (ICPMS) in accordance with 6020A_LL. The samples were prepared on 08/28/2018 and analyzed on 08/29/2018.

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

METALS (ICPMS) - TOTAL

Samples PDI-WS-T05-1808 (580-79792-1) and PDI-RB-PP-1820 (580-79792-2) were analyzed for Metals (ICPMS) in accordance with 6020A_LL. The samples were prepared on 08/24/2018 and analyzed on 08/29/2018.

Chromium and Zinc exceeded the RPD limit for the duplicate of sample PDI-WS-T05-1808DU (580-79792-1). The MS/MSD and associated LCS/LCSD recoveries and precision met acceptance limits.

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

HARDNESS

Samples PDI-WS-T05-1808 (580-79792-1) and PDI-RB-PP-1820 (580-79792-2) were analyzed for hardness in accordance with SM20 2340B The samples were analyzed on 08/27/2018.

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

TOTAL DISSOLVED SOLIDS

Sample PDI-WS-T05-1808 (580-79792-1) was analyzed for total dissolved solids in accordance with SM20 2540C. The samples were analyzed on 08/28/2018.

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

TOTAL SUSPENDED SOLIDS

Sample PDI-WS-T05-1808 (580-79792-1) was analyzed for total suspended solids in accordance with SM20 2540D. The samples were analyzed on 08/23/2018.

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

DISSOLVED ORGANIC CARBON

Samples PDI-WS-T05-1808 (580-79792-1) and PDI-RB-PP-1820 (580-79792-2) were analyzed for dissolved organic carbon in accordance with SM20 5310B. The samples were analyzed on 09/12/2018.

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

TOTAL ORGANIC CARBON

Samples PDI-WS-T05-1808 (580-79792-1) and PDI-RB-PP-1820 (580-79792-2) were analyzed for total organic carbon in accordance with SM 5310B. The samples were analyzed on 08/27/2018.

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

Definitions/Glossary

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79792-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F3	Duplicate RPD exceeds the control limit
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

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)

Client Sample ID: PDI-WS-T05-1808

Date Collected: 08/21/18 20:28
Date Received: 08/22/18 14:45

Lab Sample ID: 580-79792-1

Matrix: Water

Method: 8151A - Herbicides (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND		1.1	0.18	ug/L		08/27/18 15:08	09/04/18 16:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*108*		*44 - 145*	*08/27/18 15:08*	*09/04/18 16:43*	*1*

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**6.0**		1.1	0.16	mg/L		08/28/18 11:44	08/31/18 17:33	1
Magnesium	**2.3**		1.1	0.13	mg/L		08/28/18 11:44	08/31/18 17:33	1

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.80**	**J**	1.0	0.20	ug/L		08/24/18 18:09	08/29/18 12:41	1
Chromium	**5.2**		0.40	0.17	ug/L		08/24/18 18:09	08/29/18 12:41	1
Copper	**1.1**	**J**	2.0	0.60	ug/L		08/24/18 18:09	08/29/18 12:41	1
Zinc	**2.8**	**J**	7.0	1.9	ug/L		08/24/18 18:09	08/29/18 12:41	1

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**0.62**	**J**	1.0	0.20	ug/L		08/28/18 11:44	08/29/18 21:54	1
Chromium	**1.7**		0.40	0.17	ug/L		08/28/18 11:44	08/29/18 21:54	1
Copper	**3.4**		2.0	0.60	ug/L		08/28/18 11:44	08/29/18 21:54	1
Zinc	**5.1**	**J**	7.0	1.9	ug/L		08/28/18 11:44	08/29/18 21:54	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Hardness as calcium carbonate	**24**		1.1	1.1	mg/L			08/31/18 17:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**52**		10	10	mg/L			08/28/18 08:57	1
Total Suspended Solids	**5.8**		2.0	2.0	mg/L			08/23/18 14:19	1
Total Organic Carbon	**1.7**		1.0	0.19	mg/L			08/27/18 11:17	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	**1.8**		1.0	0.19	mg/L			09/12/18 15:47	1

Client Sample ID: PDI-RB-PP-1820
Date Collected: 08/20/18 16:00
Date Received: 08/22/18 14:45

Lab Sample ID: 580-79792-2
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	**0.85**	**J**	3.0	0.50	ug/L			08/24/18 23:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*104*		*80 - 122*		*08/24/18 23:23*	*1*
Trifluorotoluene (Surr)	*99*		*80 - 120*		*08/24/18 23:23*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 125*		*08/24/18 23:23*	*1*
Dibromofluoromethane (Surr)	*99*		*77 - 120*		*08/24/18 23:23*	*1*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 126*		*08/24/18 23:23*	*1*

Method: 8151A - Herbicides (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND		1.0	0.18	ug/L		08/27/18 15:08	09/04/18 17:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2,4-Dichlorophenylacetic acid	*106*		*44 - 145*	*08/27/18 15:08*	*09/04/18 17:08*	*1*

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.1	0.16	mg/L		08/28/18 11:44	08/31/18 17:36	1
Magnesium	ND		1.1	0.13	mg/L		08/28/18 11:44	08/31/18 17:36	1

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.20	ug/L		08/24/18 18:09	08/29/18 13:18	1
Chromium	**0.18**	**J**	0.40	0.17	ug/L		08/24/18 18:09	08/29/18 13:18	1
Copper	ND		2.0	0.60	ug/L		08/24/18 18:09	08/29/18 13:18	1
Zinc	ND		7.0	1.9	ug/L		08/24/18 18:09	08/29/18 13:18	1

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.20	ug/L		08/28/18 11:44	08/29/18 21:22	1
Chromium	**0.76**		0.40	0.17	ug/L		08/28/18 11:44	08/29/18 21:22	1
Copper	ND		2.0	0.60	ug/L		08/28/18 11:44	08/29/18 21:22	1
Zinc	**2.9**	**J**	7.0	1.9	ug/L		08/28/18 11:44	08/29/18 21:22	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Hardness as calcium carbonate	ND		1.1	1.1	mg/L			08/31/18 17:36	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	**0.72**	**J**	1.0	0.19	mg/L			08/27/18 11:17	1

General Chemistry - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	**0.73**	**J**	1.0	0.19	mg/L			09/12/18 15:47	1

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79792-1

Client Sample ID: PDI-WS-T05W-1808
Date Collected: 08/21/18 19:07
Date Received: 08/22/18 14:45

Lab Sample ID: 580-79792-3
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			08/24/18 23:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*105*		*80 - 122*		*08/24/18 23:50*	*1*
Trifluorotoluene (Surr)	*96*		*80 - 120*		*08/24/18 23:50*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 125*		*08/24/18 23:50*	*1*
Dibromofluoromethane (Surr)	*99*		*77 - 120*		*08/24/18 23:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 126*		*08/24/18 23:50*	*1*

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79792-1

Client Sample ID: PDI-WS-T05NAV-1808
Date Collected: 08/21/18 16:17
Date Received: 08/22/18 14:45

Lab Sample ID: 580-79792-4
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			08/25/18 00:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*105*		*80 - 122*		*08/25/18 00:15*	*1*
Trifluorotoluene (Surr)	*97*		*80 - 120*		*08/25/18 00:15*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 125*		*08/25/18 00:15*	*1*
Dibromofluoromethane (Surr)	*99*		*77 - 120*		*08/25/18 00:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 126*		*08/25/18 00:15*	*1*

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79792-1

Client Sample ID: PDI-WS-T05E-1808
Date Collected: 08/21/18 12:18
Date Received: 08/22/18 14:45

Lab Sample ID: 580-79792-5
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			08/30/18 20:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*80 - 122*		*08/30/18 20:54*	*1*
Trifluorotoluene (Surr)	*101*		*80 - 120*		*08/30/18 20:54*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 125*		*08/30/18 20:54*	*1*
Dibromofluoromethane (Surr)	*103*		*77 - 120*		*08/30/18 20:54*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 126*		*08/30/18 20:54*	*1*

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79792-1

Client Sample ID: TRIP BLANK-T05
Date Collected: 08/21/18 12:00
Date Received: 08/22/18 14:45

Lab Sample ID: 580-79792-6
Matrix: Water

Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			08/30/18 21:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*100*		*80 - 122*		*08/30/18 21:20*	*1*
Trifluorotoluene (Surr)	*101*		*80 - 120*		*08/30/18 21:20*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 125*		*08/30/18 21:20*	*1*
Dibromofluoromethane (Surr)	*101*		*77 - 120*		*08/30/18 21:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 126*		*08/30/18 21:20*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-282397/5
Matrix: Water
Analysis Batch: 282397

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			08/24/18 14:41	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*105*		*80 - 122*		*08/24/18 14:41*	*1*
Trifluorotoluene (Surr)	*97*		*80 - 120*		*08/24/18 14:41*	*1*
4-Bromofluorobenzene (Surr)	*100*		*80 - 125*		*08/24/18 14:41*	*1*
Dibromofluoromethane (Surr)	*102*		*77 - 120*		*08/24/18 14:41*	*1*
1,2-Dichloroethane-d4 (Surr)	*112*		*80 - 126*		*08/24/18 14:41*	*1*

Lab Sample ID: LCS 580-282397/6
Matrix: Water
Analysis Batch: 282397

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ethylbenzene			10.0	9.15		ug/L		91	75 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*104*		*80 - 122*
Trifluorotoluene (Surr)	*96*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 125*
Dibromofluoromethane (Surr)	*99*		*77 - 120*
1,2-Dichloroethane-d4 (Surr)	*109*		*80 - 126*

Lab Sample ID: LCSD 580-282397/7
Matrix: Water
Analysis Batch: 282397

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
Ethylbenzene			10.0	9.39		ug/L		94	75 - 120	3	14

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*107*		*80 - 122*
Trifluorotoluene (Surr)	*95*		*80 - 120*
4-Bromofluorobenzene (Surr)	*100*		*80 - 125*
Dibromofluoromethane (Surr)	*98*		*77 - 120*
1,2-Dichloroethane-d4 (Surr)	*109*		*80 - 126*

Lab Sample ID: MB 580-282854/5
Matrix: Water
Analysis Batch: 282854

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylbenzene	ND		3.0	0.50	ug/L			08/30/18 12:13	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*102*		*80 - 122*		*08/30/18 12:13*	*1*
Trifluorotoluene (Surr)	*103*		*80 - 120*		*08/30/18 12:13*	*1*

Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 580-282854/5
Matrix: Water
Analysis Batch: 282854

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

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		80 - 125		08/30/18 12:13	1
Dibromofluoromethane (Surr)	101		77 - 120		08/30/18 12:13	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 126		08/30/18 12:13	1

Lab Sample ID: LCS 580-282854/6
Matrix: Water
Analysis Batch: 282854

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Ethylbenzene	10.0	9.53		ug/L		95	75 - 120		

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Toluene-d8 (Surr)	105		80 - 122
Trifluorotoluene (Surr)	100		80 - 120
4-Bromofluorobenzene (Surr)	100		80 - 125
Dibromofluoromethane (Surr)	99		77 - 120
1,2-Dichloroethane-d4 (Surr)	94		80 - 126

Lab Sample ID: LCSD 580-282854/7
Matrix: Water
Analysis Batch: 282854

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
Ethylbenzene	10.0	9.42		ug/L		94	75 - 120	1	14

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Toluene-d8 (Surr)	101		80 - 122
Trifluorotoluene (Surr)	100		80 - 120
4-Bromofluorobenzene (Surr)	100		80 - 125
Dibromofluoromethane (Surr)	99		77 - 120
1,2-Dichloroethane-d4 (Surr)	97		80 - 126

Method: 8151A - Herbicides (GC/MS)

Lab Sample ID: MB 580-282582/1-A
Matrix: Water
Analysis Batch: 283156

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 282582

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
MCPP	ND		1.0	0.17	ug/L		08/27/18 15:00	09/04/18 15:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
2,4-Dichlorophenylacetic acid	98		44 - 145	08/27/18 15:00	09/04/18 15:25	1

Method: 8151A - Herbicides (GC/MS) (Continued)

Lab Sample ID: LCS 580-282582/2-A
Matrix: Water
Analysis Batch: 283156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 282582

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
MCPP			5.00	3.84		ug/L		77	61 - 135		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*103*		*44 - 145*

Lab Sample ID: LCSD 580-282582/3-A
Matrix: Water
Analysis Batch: 283156

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 282582

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
MCPP			5.00	4.92		ug/L		98	61 - 135	25	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
2,4-Dichlorophenylacetic acid	*105*		*44 - 145*

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 580-282639/22-A
Matrix: Water
Analysis Batch: 283117

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 282639

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		1.1	0.16	mg/L		08/28/18 11:44	08/31/18 17:23	1
Magnesium	ND		1.1	0.13	mg/L		08/28/18 11:44	08/31/18 17:23	1

Lab Sample ID: LCS 580-282639/23-A
Matrix: Water
Analysis Batch: 283117

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 282639

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Calcium			20.0	19.5		mg/L		97	80 - 120		
Magnesium			20.0	19.9		mg/L		99	80 - 120		

Lab Sample ID: LCSD 580-282639/24-A
Matrix: Water
Analysis Batch: 283117

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 282639

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium			20.0	19.6		mg/L		98	80 - 120	0	20
Magnesium			20.0	19.9		mg/L		99	80 - 120	0	20

Lab Sample ID: 580-79792-2 MS
Matrix: Water
Analysis Batch: 283117

Client Sample ID: PDI-RB-PP-1820
Prep Type: Dissolved
Prep Batch: 282639

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Calcium	ND		20.0	19.8		mg/L		99	75 - 125		
Magnesium	ND		20.0	20.0		mg/L		100	75 - 125		

Lab Sample ID: 580-79792-2 MSD
Matrix: Water
Analysis Batch: 283117

Client Sample ID: PDI-RB-PP-1820
Prep Type: Dissolved
Prep Batch: 282639

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Calcium	ND		20.0	19.3		mg/L		96	75 - 125	3	20
Magnesium	ND		20.0	19.5		mg/L		98	75 - 125	2	20

Lab Sample ID: 580-79792-2 DU
Matrix: Water
Analysis Batch: 283117

Client Sample ID: PDI-RB-PP-1820
Prep Type: Dissolved
Prep Batch: 282639

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Calcium	ND		ND		mg/L		NC	20
Magnesium	ND		ND		mg/L		NC	20

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-282446/12-A
Matrix: Water
Analysis Batch: 282804

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 282446

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.20	ug/L		08/24/18 18:09	08/29/18 12:28	1
Chromium	ND		0.40	0.17	ug/L		08/24/18 18:09	08/29/18 12:28	1
Copper	ND		2.0	0.60	ug/L		08/24/18 18:09	08/29/18 12:28	1
Zinc	ND		7.0	1.9	ug/L		08/24/18 18:09	08/29/18 12:28	1

Lab Sample ID: LCS 580-282446/13-A
Matrix: Water
Analysis Batch: 282804

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 282446

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	4000	4020		ug/L		100	80 - 120
Chromium	400	392		ug/L		98	80 - 120
Copper	500	511		ug/L		102	80 - 120
Zinc	4000	3980		ug/L		100	80 - 120

Lab Sample ID: LCSD 580-282446/14-A
Matrix: Water
Analysis Batch: 282804

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 282446

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	4000	4020		ug/L		100	80 - 120	0	20
Chromium	400	398		ug/L		99	80 - 120	1	20
Copper	500	508		ug/L		102	80 - 120	1	20
Zinc	4000	3980		ug/L		100	80 - 120	0	20

Lab Sample ID: 580-79792-1 MS
Matrix: Water
Analysis Batch: 282804

Client Sample ID: PDI-WS-T05-1808
Prep Type: Total Recoverable
Prep Batch: 282446

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	0.80	J	4000	4100		ug/L		102	80 - 120
Chromium	5.2		400	407		ug/L		100	80 - 120
Copper	1.1	J	500	515		ug/L		103	80 - 120

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 580-79792-1 MS
Matrix: Water
Analysis Batch: 282804

Client Sample ID: PDI-WS-T05-1808
Prep Type: Total Recoverable
Prep Batch: 282446

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Zinc	2.8	J	4000	4100		ug/L		102	80 - 120

Lab Sample ID: 580-79792-1 MSD
Matrix: Water
Analysis Batch: 282804

Client Sample ID: PDI-WS-T05-1808
Prep Type: Total Recoverable
Prep Batch: 282446

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	0.80	J	4000	3950		ug/L		99	80 - 120	4	20
Chromium	5.2		400	401		ug/L		99	80 - 120	1	20
Copper	1.1	J	500	501		ug/L		100	80 - 120	3	20
Zinc	2.8	J	4000	3920		ug/L		98	80 - 120	4	20

Lab Sample ID: 580-79792-1 DU
Matrix: Water
Analysis Batch: 282804

Client Sample ID: PDI-WS-T05-1808
Prep Type: Total Recoverable
Prep Batch: 282446

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	0.80	J	0.746	J	ug/L		7	20
Chromium	5.2		0.426	F3	ug/L		170	20
Copper	1.1	J	0.940	J	ug/L		12	20
Zinc	2.8	J	2.08	J F5	ug/L		30	20

Lab Sample ID: MB 580-282639/22-A
Matrix: Water
Analysis Batch: 282840

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 282639

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		1.0	0.20	ug/L		08/28/18 11:44	08/29/18 21:11	1
Chromium	ND		0.40	0.17	ug/L		08/28/18 11:44	08/29/18 21:11	1
Copper	ND		2.0	0.60	ug/L		08/28/18 11:44	08/29/18 21:11	1
Zinc	ND		7.0	1.9	ug/L		08/28/18 11:44	08/29/18 21:11	1

Lab Sample ID: LCS 580-282639/23-A
Matrix: Water
Analysis Batch: 282840

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 282639

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	4000	4060		ug/L		101	80 - 120
Chromium	400	408		ug/L		102	80 - 120
Copper	500	516		ug/L		103	80 - 120
Zinc	4000	3950		ug/L		99	80 - 120

Lab Sample ID: LCSD 580-282639/24-A
Matrix: Water
Analysis Batch: 282840

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 282639

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	4000	4050		ug/L		101	80 - 120	0	20
Chromium	400	406		ug/L		101	80 - 120	1	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 580-282639/24-A
Matrix: Water
Analysis Batch: 282840

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 282639

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Copper			500	506		ug/L		101	80 - 120	2	20
Zinc			4000	3920		ug/L		98	80 - 120	1	20

Lab Sample ID: 580-79792-2 MS
Matrix: Water
Analysis Batch: 282840

Client Sample ID: PDI-RB-PP-1820
Prep Type: Dissolved
Prep Batch: 282639

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	ND		4000	4180		ug/L		105	80 - 120
Chromium	0.76		400	433		ug/L		108	80 - 120
Copper	ND		500	533		ug/L		107	80 - 120
Zinc	2.9	J	4000	4150		ug/L		104	80 - 120

Lab Sample ID: 580-79792-2 MSD
Matrix: Water
Analysis Batch: 282840

Client Sample ID: PDI-RB-PP-1820
Prep Type: Dissolved
Prep Batch: 282639

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	ND		4000	4290		ug/L		107	80 - 120	2	20
Chromium	0.76		400	438		ug/L		109	80 - 120	1	20
Copper	ND		500	546		ug/L		109	80 - 120	2	20
Zinc	2.9	J	4000	4230		ug/L		106	80 - 120	2	20

Lab Sample ID: 580-79792-2 DU
Matrix: Water
Analysis Batch: 282840

Client Sample ID: PDI-RB-PP-1820
Prep Type: Dissolved
Prep Batch: 282639

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	ND		ND		ug/L		NC	20
Chromium	0.76		0.747		ug/L		2	20
Copper	ND		ND		ug/L		NC	20
Zinc	2.9	J	2.39	J	ug/L		18	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 580-282608/1
Matrix: Water
Analysis Batch: 282608

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	ND		10	10	mg/L			08/28/18 08:57	1

Lab Sample ID: LCS 580-282608/2
Matrix: Water
Analysis Batch: 282608

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Dissolved Solids			1000	968		mg/L		97	80 - 120

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: 580-79792-1 DU
Matrix: Water
Analysis Batch: 282608

Client Sample ID: PDI-WS-T05-1808
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	52			44.0		mg/L				17	20

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

Lab Sample ID: MB 580-282316/1
Matrix: Water
Analysis Batch: 282316

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		2.0	2.0	mg/L			08/23/18 14:19	1

Lab Sample ID: LCS 580-282316/2
Matrix: Water
Analysis Batch: 282316

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			27.6	32.8		mg/L		119	70.6 - 120		

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 580-282597/3
Matrix: Water
Analysis Batch: 282597

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0	0.19	mg/L			08/27/18 11:17	1

Lab Sample ID: LCS 580-282597/4
Matrix: Water
Analysis Batch: 282597

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Organic Carbon			10.0	10.6		mg/L		106	85 - 115		

Method: SM 5310B - Organic Carbon, Dissolved (DOC)

Lab Sample ID: MB 580-283900/3
Matrix: Water
Analysis Batch: 283900

Client Sample ID: Method Blank
Prep Type: Dissolved

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Organic Carbon	ND		1.0	0.19	mg/L			09/12/18 15:47	1

Method: SM 5310B - Organic Carbon, Dissolved (DOC) (Continued)

Lab Sample ID: LCS 580-283900/4
Matrix: Water
Analysis Batch: 283900

Client Sample ID: Lab Control Sample
Prep Type: Dissolved

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Dissolved Organic Carbon			10.0	9.59		mg/L		96	85 - 115		

Lab Sample ID: 580-79792-1 MS
Matrix: Water
Analysis Batch: 283900

Client Sample ID: PDI-WS-T05-1808
Prep Type: Dissolved

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Dissolved Organic Carbon	1.8		10.0	11.8		mg/L		100	85 - 115		

Lab Sample ID: 580-79792-1 MSD
Matrix: Water
Analysis Batch: 283900

Client Sample ID: PDI-WS-T05-1808
Prep Type: Dissolved

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dissolved Organic Carbon	1.8		10.0	12.2		mg/L		104	85 - 115	4	20

Lab Sample ID: 580-79792-1 DU
Matrix: Water
Analysis Batch: 283900

Client Sample ID: PDI-WS-T05-1808
Prep Type: Dissolved

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Dissolved Organic Carbon	1.8			1.88		mg/L				3	20

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79792-1

Client Sample ID: PDI-WS-T05-1808

Lab Sample ID: 580-79792-1

Date Collected: 08/21/18 20:28

Matrix: Water

Date Received: 08/22/18 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	8151A			282582	08/27/18 15:08	JSM	TAL SEA
Total/NA	Analysis	8151A		1	283156	09/04/18 16:43	ERZ	TAL SEA
Dissolved	Prep	3005A			282639	08/28/18 11:44	T1H	TAL SEA
Dissolved	Analysis	6010C		1	283117	08/31/18 17:33	HJM	TAL SEA
Dissolved	Prep	3005A			282639	08/28/18 11:44	T1H	TAL SEA
Dissolved	Analysis	6020B		1	282840	08/29/18 21:54	FCW	TAL SEA
Total Recoverable	Prep	3005A			282446	08/24/18 18:09	T1H	TAL SEA
Total Recoverable	Analysis	6020B		1	282804	08/29/18 12:41	FCW	TAL SEA
Dissolved	Analysis	SM 2340B		1	285242	08/31/18 17:33	SPP	TAL SEA
Total/NA	Analysis	SM 2540C		1	282608	08/28/18 08:57	R1K	TAL SEA
Total/NA	Analysis	SM 2540D		1	282316	08/23/18 14:19	TTN	TAL SEA
Dissolved	Analysis	SM 5310B		1	283900	09/12/18 15:47	TTN	TAL SEA
Total/NA	Analysis	SM 5310B		1	282597	08/27/18 11:17	TTN	TAL SEA

Client Sample ID: PDI-RB-PP-1820

Lab Sample ID: 580-79792-2

Date Collected: 08/20/18 16:00

Matrix: Water

Date Received: 08/22/18 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	282397	08/24/18 23:23	TL1	TAL SEA
Total/NA	Prep	8151A			282582	08/27/18 15:08	JSM	TAL SEA
Total/NA	Analysis	8151A		1	283156	09/04/18 17:08	ERZ	TAL SEA
Dissolved	Prep	3005A			282639	08/28/18 11:44	T1H	TAL SEA
Dissolved	Analysis	6010C		1	283117	08/31/18 17:36	HJM	TAL SEA
Dissolved	Prep	3005A			282639	08/28/18 11:44	T1H	TAL SEA
Dissolved	Analysis	6020B		1	282840	08/29/18 21:22	FCW	TAL SEA
Total Recoverable	Prep	3005A			282446	08/24/18 18:09	T1H	TAL SEA
Total Recoverable	Analysis	6020B		1	282804	08/29/18 13:18	FCW	TAL SEA
Dissolved	Analysis	SM 2340B		1	285242	08/31/18 17:36	SPP	TAL SEA
Dissolved	Analysis	SM 5310B		1	283900	09/12/18 15:47	TTN	TAL SEA
Total/NA	Analysis	SM 5310B		1	282597	08/27/18 11:17	TTN	TAL SEA

Client Sample ID: PDI-WS-T05W-1808

Lab Sample ID: 580-79792-3

Date Collected: 08/21/18 19:07

Matrix: Water

Date Received: 08/22/18 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	282397	08/24/18 23:50	TL1	TAL SEA

Lab Chronicle

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79792-1

Client Sample ID: PDI-WS-T05NAV-1808

Lab Sample ID: 580-79792-4
Date Collected: 08/21/18 16:17
Matrix: Water
Date Received: 08/22/18 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	282397	08/25/18 00:15	TL1	TAL SEA

Client Sample ID: PDI-WS-T05E-1808

Lab Sample ID: 580-79792-5
Date Collected: 08/21/18 12:18
Matrix: Water
Date Received: 08/22/18 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	282854	08/30/18 20:54	W1T	TAL SEA

Client Sample ID: TRIP BLANK-T05

Lab Sample ID: 580-79792-6
Date Collected: 08/21/18 12:00
Matrix: Water
Date Received: 08/22/18 14:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	282854	08/30/18 21:20	W1T	TAL SEA

Laboratory References:

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: AECOM
TestAmerica Job ID: 580-79792-1
Project/Site: Portland Harbor Pre-Remedial Design

Laboratory: TestAmerica Seattle

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 (UST)	State Program	10	17-024	01-19-19
ANAB	DoD ELAP		L2236	01-19-19
ANAB	ISO/IEC 17025		L2236	01-19-19
California	State Program	9	2901	11-05-18
Montana (UST)	State Program	8	N/A	04-30-20
Nevada	State Program	9	WA000502019-1	07-31-19
Oregon	NELAP	10	WA100007	11-05-18
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

Sample Summary

Client: AECOM
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79792-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79792-1	PDI-WS-T05-1808	Water	08/21/18 20:28	08/22/18 14:45
580-79792-2	PDI-RB-PP-1820	Water	08/20/18 16:00	08/22/18 14:45
580-79792-3	PDI-WS-T05W-1808	Water	08/21/18 19:07	08/22/18 14:45
580-79792-4	PDI-WS-T05NAV-1808	Water	08/21/18 16:17	08/22/18 14:45
580-79792-5	PDI-WS-T05E-1808	Water	08/21/18 12:18	08/22/18 14:45
580-79792-6	TRIP BLANK-T05	Water	08/21/18 12:00	08/22/18 14:45

580-79792 Chain of Custody

SURFACE WATER
CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph:** 253-922-2310 F 253-922-5047	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010**	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**8/22/2018** COC No: 1 **Carrier: Courier** 1 of 1 pages
Client Contact AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288 Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling Portland, OR Project #: 60566335 Study: Surface Water	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ [x] 21 days [ ] Other _____		

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	Ethylbenzene, EPA 8260C	MCPP, EPA Method 8151A	Metals (Total), EPA Method 6020B-LL	Total Suspended Solids, Standard Method 2540D	Total Dissolved Solids, Standard Method 2540C	Total Organic Carbon, SM5310B	Metals (Dissolved) + Hardness as CaCO3, EPA Method 6020B-LL	Dissolved Organic Carbon, SM5310B	Sample Specific Notes:
PDI-WS-T 05-1808	8/21/18	2028	W		MT	8			X	X	X	X	X	X	X	
~~PDI-WS-T~~ RB PP-1820	8/20/18	1600	W		NM	9		X	X	X			X	X	X	
PDI-WS-T 05W-1808	8/21/18	1907	W		MT	3		X								
PDI-WS-T 05NAV-1808	8/21/18	1617	W		MT	3		X								
PDI-WS-T 05E-1808	8/21/18	1218	W		MT	2		X								
~~PDI-WS-T~~ TRIP BLANK-TOS	8/21/18	1200	W		MT	3		X								
PDI-WS-T -																
PDI-WS-T -																
PDI-WS-T -																
PDI-WS-T -																
PDI-WS-T -																
PDI-WS-T -																

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column

Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid

Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Sample Disposal
[ ] Return To Client [X] Disposal By Lab [X] Archive For 12 Months

Special Instructions/QC Requirements & Comments:

3.2

Relinquished by:	Company: AECOM	Date/Time: 8/22/18 1412	Received by:	Company: M.E.	Date/Time: 8/22/18 1412
Relinquished by:	Company: M.E.	Date/Time: 8/22/18 1445	Received by:	Company: TAPOR	Date/Time: 8/22/18 1445
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

580-79792 Chain of Custody

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Client Contact
AECOM
1111 3rd Ave Suite 1600
Seattle, WA 98101
Phone: (206) 438-2700 Fax: 1+(866) 495-5288
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling
Portland, OR
Project #: 60566335 Study: Surface Water

Analysis Turnaround Time
Calendar (C) or Work Days (W) _____
[x] 21 days
[ ] Other _____

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PDI-WS-~~T~~ PP-1820	8/20/18	1600	W		NM	9		X	X	X			X	X	X	
PDI-WS-T 05W-1808	8/21/18	1907	W		MT	3		X								
PDI-WS-T 05NAV-1808	8/21/18	1617	W		MT	3		X								
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Special Instructions/QC Requirements & Comments:

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Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	AECOM	8/22/18 1412		M.E.	8/22/18 1412
	M.E.	8/22/18 1445		TAEOR	8/22/18 1445
	TAEOR	8/22/18 1700		SEM TA	8.23.18 0935

IR5 = 1.8/1.8 W/CS,

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79792-1

Login Number: 79792
List Number: 1
Creator: Antonson, Angeline D

List Source: TestAmerica Seattle

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.	True	
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.	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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	