TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-78459-1
Client Project/Site: Portland Harbor Pre-Remedial Design
Revision: 2

For:
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Attn: Amy Dahl

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Authorized for release by:
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Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
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REVISION 2: NOVEMBER 6, 2018

This revision was required in order to set the BEHP MDL to be consistent for all samples and QC in the job. On 6/29/2018 the MDLs were changed and updated in the LIMS based on new MDL verifications. This job arrived on the date that the MDLs were updated and some QC were performed in batches that contained the new MDL, while the sample contained the old MDL.

Also, please note - the reference spectra for Fluoranthene in the 8270D SIM PAH analysis is incorrect. A correct reference spectra has been added and is included in the report after the case narrative.

REVISION 1: OCTOBER 22, 2018

Per client request, 8270D SIM PAH results for sample PDI-SG-B432 (580-78459-3) are being reported from the 50x dilution, rather than the 500x as origianlly reported. The 500x data is reported as ND and the client requested the 50x be reported with flags for internal standard issues, rather than ND values at 500x. See added statement in the 8270D SIM PAH section of the narrative.

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

Three samples were received on 6/29/2018 1:05 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the cooler at receipt time was 5.23º

The following samples were activated for Grain Size by the client on 8/16/18: PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3). All other analyses are on hold.

The following samples were taken off hold for all remaining analyses and started on 09/11/2018: PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3).

A sample container was provided to be archived frozen at the TestAmerica Sacramento laboratory pending potential additional analyses.

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.

SEMIVOLATILE ORGANIC COMPOUNDS (GC-MS)

Job ID: 580-78459-1 (Continued)

Laboratory: TestAmerica Seattle (Continued)

Samples PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3) were analyzed for semivolatile organic compounds (GC-MS) in accordance with 8270D. The samples were prepared on 09/15/2018 and analyzed on 09/20/2018.

All samples were frozen were preserved by freezing within holding time upon receipt in Sacramento on 6/30/18. The samples were not frozen at the Seattle location, so frozen volume was provided by the Sacramento lab to the Seattle lab on 9/10/18; received in Seattle on 9/11/18 and placed in the freezer upon receipt in Seattle. Samples were removed from the freezer on 9/12/2018 and prepped for analysis. Therefore the samples are in hold and H-flags have been removed for the following samples: PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3).

Internal standard (ISTD) response for the following method blank and laboratory control sample were outside of acceptance limits: (LCS 580-284043/2-A) and (MB 580-284043/1-A). The QC were not re-analyzed because neither the target analyte or surrogate refer to this internal standard.

Bis(2-ethylhexyl) phthalate was detected in method blank MB 580-284043/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. This target analyte concentration was less than half the reporting limit (1/2RL); therefore, re-extraction and/or re-analysis of samples were not performed.

The opening CCV for analytical batch 284395 was 3% above %D criteria for surrogate Terphenyl-d14. Since all samples and batch QC were well above 3% of the lower %R limit for this surrogate, the small bias has not causing any of the data to be artificially passing due to the instrument bias. Therefore the data is qualified and reported. PDI-SG-B430 (580-78459-1), PDI-SG-B432 (580-78459-3), (CCVIS 580-284395/3), and (MB 580-284043/1-A)

The opening CCV for analytical batch 284567 was 1% above %D criteria for surrogate Terphenyl-d14. Since all samples and batch QC were well above 1% %R for this surrogate, the small bias has not causing any of the data to be artificially passing due to the instrument bias. Therefore the data is qualified and reported. (CCVIS 580-284567/3)

The following sample required a dilution due to the nature of the sample matrix: PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3). Elevated reporting limits (RLs) are provided.

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

SEMIVOLATILE ORGANIC COMPOUNDS - SELECTED ION MODE (SIM)

Samples PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3) were analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with SW846 8270D_SIM. The samples were prepared on 09/15/2018 and analyzed on 09/18/2018, 09/19/2018 and 09/21/2018.

All samples were frozen were preserved by freezing within holding time upon receipt in Sacramento on 6/30/18. The samples were not frozen at the Seattle location, so frozen volume was provided by the Sacramento lab to the Seattle lab on 9/10/18; received in Seattle on 9/11/18 and placed in the freezer upon receipt in Seattle. Samples were removed from the freezer on 9/13/2018 and prepped for analysis. Therefore the samples are in hold and H-flags have been removed for the following samples: PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3).

Terphenyl-d14 failed the surrogate recovery criteria low for PDI-SG-B432 (580-78459-3). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Due to sample matrix effect on the internal standard (ISTD) for Chrysene-d12 (204.91%R) and Perylene-d12 (237.08%R), a dilution wa required for the following sample: PDI-SG-B432 (580-78459-3). Per client request, sample data has been qualified and reported from the 50x diluted run for the following analytes because the 500x analysis was ND. Please note that these results may be biased low for the following analytes: Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(g,h,i,)perylene, Benzo(k)fluoranthene Chrysene, Dibenz(a,h)anthrancene, and Indeno(1,2,3-cd)pyrene.

The following samples were diluted due to the nature of the sample matrix: PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3). Elevated reporting limits (RLs) are provided.

Job ID: 580-78459-1 (Continued)

Laboratory: TestAmerica Seattle (Continued)

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

ORGANOTINS BY GC/MS

Samples PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3) were analyzed for organotins by GC/MS in accordance with the Krone Method. The samples were prepared on 09/15/2018 and analyzed on 09/22/2018.

All samples were frozen were preserved by freezing within holding time upon receipt in Sacramento on 6/30/18. The samples were not frozen at the Seattle location, so frozen volume was provided by the Sacramento lab to the Seattle lab on 9/10/18; received in Seattle on 9/11/18 and placed in the freezer upon receipt in Seattle. Samples were removed from the freezer on 9/12/2018 and prepped for analysis. Therefore the samples are in hold and H-flags have been removed for the following samples: PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3).

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

DIESEL AND EXTENDED RANGE ORGANICS

Samples PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3) were analyzed for diesel and extended range organics in accordance with Method NWTPH-Dx. The samples were prepared on 09/15/2018 and analyzed on 09/17/2018 and 09/18/2018.

All samples were frozen were preserved by freezing within holding time upon receipt in Sacramento on 6/30/18. The samples were not frozen at the Seattle location, so frozen volume was provided by the Sacramento lab to the Seattle lab on 9/10/18; received in Seattle on 9/11/18 and placed in the freezer upon receipt in Seattle. Samples were removed from the freezer on 9/13/2018 and prepped for analysis. Therefore the samples are in hold and H-flags have been removed for the following samples: PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3).

The %D of surrogate (o-Terphenyl) for CCV associated with batch 580-284139 was outside the upper control limits. All associated sample surrogate fell within acceptance criteria; therefore, the data have been reported. (CCV 580-284139/14), (CCV 580-284139/25) and (CCVRT 580-284139/3).

The following samples contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3).

The following sample was diluted to bring the concentration of target analytes within the calibration range: PDI-SG-B432 (580-78459-3). Elevated reporting limits (RLs) are provided.

METALS (ICPMS)

Samples PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3) were analyzed for Metals (ICPMS) in accordance with 6020A_LL. The samples were prepared on 08/23/2018 and analyzed on 08/24/2018.

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

TOTAL MERCURY

Samples PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3) were analyzed for total mercury in accordance with EPA SW-846 Method 7471A. The samples were prepared and analyzed on 08/22/2018.

The following samples were prepared outside of preparation holding time because the requested analysis was added after holding time expired: PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3).

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

TOTAL ORGANIC CARBON

Samples PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3) were analyzed for total organic carbon in accordance with EPA SW-846 Method 9060. The samples were analyzed on 09/18/2018.

All samples were frozen were preserved by freezing within holding time upon receipt in Sacramento on 6/30/18. The samples were not frozen at the Seattle location, so frozen volume was provided by the Sacramento lab to the Seattle lab on 9/10/18; received in Seattle on

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Laboratory: TestAmerica Seattle (Continued)

9/11/18 and placed in the freezer upon receipt in Seattle. Samples were removed from the freezer on 9/12/2018 and prepped for analysis. Therefore the samples are in hold and H-flags have been removed for the following samples: PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3).

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

PERCENT SOLIDS

Samples PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3) were analyzed for percent solids in accordance with ASTM D2216. The samples were analyzed on 09/07/2018.

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

TOTAL SOLIDS @ 70C

Samples PDI-SG-B430 (580-78459-1) and PDI-SG-B432 (580-78459-3) were analyzed for Total Solids @ 70C. The samples were analyzed on 07/05/2018.

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: 580-78459-1

Qualifiers

GC/MS Semi 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.
*	ISTD response or retention time outside acceptable limits
X	Surrogate is outside control limits
B	Compound was found in the blank and sample.

GC Semi 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
H	Sample was prepped or analyzed beyond the specified holding time
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-SG-B430

Date Collected: 06/28/18 14:18
Date Received: 06/29/18 13:05

Lab Sample ID: 580-78459-1
Matrix: Solid
Percent Solids: 47.5

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		51	4.6	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Acenaphthene	ND		51	6.2	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Acenaphthylene	ND		51	5.1	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Anthracene	**9.7**	**J**	51	6.2	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Benzo[a]anthracene	**15**	**J**	51	7.8	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Benzo[a]pyrene	ND		51	4.1	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Benzo[b]fluoranthene	**26**	**J**	51	6.1	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Benzo[g,h,i]perylene	ND		51	5.1	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Benzo[k]fluoranthene	**9.3**	**J**	51	6.2	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Chrysene	**23**	**J**	51	15	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Dibenz(a,h)anthracene	ND		51	7.4	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Fluoranthene	**51**		51	14	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Fluorene	ND		51	5.1	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Indeno[1,2,3-cd]pyrene	ND		51	6.2	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Naphthalene	**12**	**J**	51	8.2	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Phenanthrene	**30**	**J**	51	7.1	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25
Pyrene	**43**	**J**	51	10	ug/Kg	☼	09/15/18 08:40	09/18/18 23:49	25

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*71*		*57 - 120*	*09/15/18 08:40*	*09/18/18 23:49*	*25*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		1500	170	ug/Kg	☼	09/15/18 08:47	09/20/18 00:21	25

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14 (Surr)	*88*		*58 - 120*	*09/15/18 08:47*	*09/20/18 00:21*	*25*

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		150	39	ug/Kg	☼	09/15/18 09:00	09/22/18 20:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*54*		*10 - 113*	*09/15/18 09:00*	*09/22/18 20:17*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	**120**		97	24	mg/Kg	☼	09/15/18 08:55	09/17/18 23:43	1
Motor Oil (>C24-C36)	**470**		97	34	mg/Kg	☼	09/15/18 08:55	09/17/18 23:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*104*		*50 - 150*	*09/15/18 08:55*	*09/17/18 23:43*	*1*

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**4.0**		0.33	0.067	mg/Kg	☼	08/23/18 17:18	08/24/18 15:43	5
Cadmium	**0.13**	**J**	0.27	0.051	mg/Kg	☼	08/23/18 17:18	08/24/18 15:43	5
Copper	**32**		0.67	0.15	mg/Kg	☼	08/23/18 17:18	08/24/18 15:43	5
Lead	**13**		0.33	0.032	mg/Kg	☼	08/23/18 17:18	08/24/18 15:43	5
Zinc	**83**		3.3	1.1	mg/Kg	☼	08/23/18 17:18	08/24/18 15:43	5

Client Sample Results

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

TestAmerica Job ID: 580-78459-1

Client Sample ID: PDI-SG-B430
Date Collected: 06/28/18 14:18
Date Received: 06/29/18 13:05

Lab Sample ID: 580-78459-1
Matrix: Solid
Percent Solids: 47.5

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.038	J H	0.050	0.015	mg/Kg	☼	08/22/18 09:57	08/22/18 14:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	27000		2000	44	mg/Kg			09/18/18 13:35	1
Total Solids	47.5		0.1	0.1	%			09/07/18 16:11	1
Total Solids @ 70°C	49		0.10	0.10	%			07/05/18 13:11	1

Client Sample ID: PDI-SG-B432

Date Collected: 06/28/18 17:40
Date Received: 06/29/18 13:05

Lab Sample ID: 580-78459-3

Matrix: Solid
Percent Solids: 61.4

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		75	6.8	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Acenaphthene	ND		75	9.1	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Acenaphthylene	ND		75	7.5	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Anthracene	ND		75	9.1	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Benzo[a]anthracene	**11**	**J ***	75	11	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Benzo[a]pyrene	**20**	**J ***	75	6.0	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Benzo[b]fluoranthene	**19**	**J ***	75	8.9	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Benzo[g,h,i]perylene	**34**	**J ***	75	7.5	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Benzo[k]fluoranthene	ND	*	75	9.1	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Chrysene	**27**	**J ***	75	23	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Dibenz(a,h)anthracene	ND	*	75	11	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Fluoranthene	**30**	**J**	75	21	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Fluorene	ND		75	7.5	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Indeno[1,2,3-cd]pyrene	ND	*	75	9.1	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Naphthalene	**19**	**J**	75	12	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Phenanthrene	**17**	**J**	75	10	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50
Pyrene	**43**	**J**	75	15	ug/Kg	☼	09/15/18 08:40	09/19/18 00:15	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*33*	*X*	*57 - 120*	*09/15/18 08:40*	*09/19/18 00:15*	*50*

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	**970**	**J B**	1100	130	ug/Kg	☼	09/15/18 08:47	09/20/18 00:46	25

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14 (Surr)	*85*		*58 - 120*	*09/15/18 08:47*	*09/20/18 00:46*	*25*

Method: Organotins - Organotins, PSEP (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		110	29	ug/Kg	☼	09/15/18 09:00	09/22/18 20:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*69*		*10 - 113*	*09/15/18 09:00*	*09/22/18 20:43*	*1*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	**270**	**J**	810	200	mg/Kg	☼	09/15/18 08:55	09/18/18 00:27	10
Motor Oil (>C24-C36)	**1800**		810	290	mg/Kg	☼	09/15/18 08:55	09/18/18 00:27	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*92*		*50 - 150*	*09/15/18 08:55*	*09/18/18 00:27*	*10*

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**3.6**		0.27	0.055	mg/Kg	☼	08/23/18 17:18	08/24/18 15:47	5
Cadmium	**0.21**	**J**	0.22	0.042	mg/Kg	☼	08/23/18 17:18	08/24/18 15:47	5
Copper	**29**		0.55	0.12	mg/Kg	☼	08/23/18 17:18	08/24/18 15:47	5
Lead	**13**		0.27	0.026	mg/Kg	☼	08/23/18 17:18	08/24/18 15:47	5
Zinc	**110**		2.7	0.88	mg/Kg	☼	08/23/18 17:18	08/24/18 15:47	5

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

TestAmerica Job ID: 580-78459-1

Client Sample ID: PDI-SG-B432
Date Collected: 06/28/18 17:40
Date Received: 06/29/18 13:05

Lab Sample ID: 580-78459-3
Matrix: Solid
Percent Solids: 61.4

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.047	H	0.033	0.0099	mg/Kg	☼	08/22/18 09:57	08/22/18 14:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	30000		2000	44	mg/Kg			09/18/18 13:40	1
Total Solids	61.4		0.1	0.1	%			09/07/18 16:11	1
Total Solids @ 70°C	56		0.10	0.10	%			07/05/18 13:11	1

Method: 8270D - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-284043/1-A
Matrix: Solid
Analysis Batch: 284395

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284043

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	3.89	J	30	3.6	ug/Kg		09/15/18 08:47	09/19/18 17:23	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14 (Surr)	*107*		*58 - 120*	*09/15/18 08:47*	*09/19/18 17:23*	*1*

Lab Sample ID: LCS 580-284043/2-A
Matrix: Solid
Analysis Batch: 284567

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bis(2-ethylhexyl) phthalate	50.0	46.4		ug/Kg		93	59 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Terphenyl-d14 (Surr)	*113*		*58 - 120*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM)

Lab Sample ID: MB 580-284042/1-A
Matrix: Solid
Analysis Batch: 284269

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284042

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		1.0	0.090	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Acenaphthene	ND		1.0	0.12	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Acenaphthylene	ND		1.0	0.10	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Anthracene	ND		1.0	0.12	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Benzo[a]anthracene	ND		1.0	0.15	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Benzo[a]pyrene	ND		1.0	0.080	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Benzo[b]fluoranthene	ND		1.0	0.12	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Benzo[g,h,i]perylene	ND		1.0	0.10	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Benzo[k]fluoranthene	ND		1.0	0.12	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Chrysene	ND		1.0	0.30	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Dibenz(a,h)anthracene	ND		1.0	0.14	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Fluoranthene	ND		1.0	0.28	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Fluorene	ND		1.0	0.10	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Indeno[1,2,3-cd]pyrene	ND		1.0	0.12	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Naphthalene	ND		1.0	0.16	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Phenanthrene	ND		1.0	0.14	ug/Kg		09/15/18 08:40	09/18/18 16:04	1
Pyrene	ND		1.0	0.19	ug/Kg		09/15/18 08:40	09/18/18 16:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*88*		*57 - 120*	*09/15/18 08:40*	*09/18/18 16:04*	*1*

Method: 8270D SIM - Semivolatile Organic Compounds (GC/MS SIM) (Continued)

Lab Sample ID: LCS 580-284042/2-A
Matrix: Solid
Analysis Batch: 284269

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284042

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Methylnaphthalene	200	178		ug/Kg		89	68 - 120
Acenaphthene	200	178		ug/Kg		89	68 - 120
Acenaphthylene	200	187		ug/Kg		94	68 - 120
Anthracene	200	183		ug/Kg		92	73 - 125
Benzo[a]anthracene	200	189		ug/Kg		95	66 - 120
Benzo[a]pyrene	200	174		ug/Kg		87	72 - 124
Benzo[b]fluoranthene	200	192		ug/Kg		96	63 - 121
Benzo[g,h,i]perylene	200	199		ug/Kg		100	63 - 120
Benzo[k]fluoranthene	200	200		ug/Kg		100	63 - 123
Chrysene	200	176		ug/Kg		88	69 - 120
Dibenz(a,h)anthracene	200	194		ug/Kg		97	70 - 125
Fluoranthene	200	185		ug/Kg		92	74 - 125
Fluorene	200	181		ug/Kg		91	73 - 120
Indeno[1,2,3-cd]pyrene	200	183		ug/Kg		92	65 - 121
Naphthalene	200	158		ug/Kg		79	70 - 120
Phenanthrene	200	177		ug/Kg		88	73 - 120
Pyrene	200	182		ug/Kg		91	70 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Terphenyl-d14	*82*		*57 - 120*

Method: Organotins - Organotins, PSEP (GC/MS)

Lab Sample ID: MB 580-284045/1-A
Matrix: Solid
Analysis Batch: 284676

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284045

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		75	20	ug/Kg		09/15/18 09:00	09/22/18 18:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*52*		*10 - 113*	*09/15/18 09:00*	*09/22/18 18:04*	*1*

Lab Sample ID: LCS 580-284045/2-A
Matrix: Solid
Analysis Batch: 284676

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284045

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Tributyltin	71.8	46.9	J	ug/Kg		65	14 - 150

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*64*		*10 - 113*

Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Lab Sample ID: MB 580-284044/1-A
Matrix: Solid
Analysis Batch: 284139

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 284044

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		50	12	mg/Kg		09/15/18 08:55	09/17/18 16:24	1
Motor Oil (>C24-C36)	ND		50	18	mg/Kg		09/15/18 08:55	09/17/18 16:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*94*		*50 - 150*	*09/15/18 08:55*	*09/17/18 16:24*	*1*

Lab Sample ID: LCS 580-284044/2-A
Matrix: Solid
Analysis Batch: 284139

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 284044

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
#2 Diesel (C10-C24)			500	555		mg/Kg		111	70 - 125		
Motor Oil (>C24-C36)			500	545		mg/Kg		109	70 - 129		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
o-Terphenyl	*122*		*50 - 150*

Lab Sample ID: LCSD 580-284044/3-A
Matrix: Solid
Analysis Batch: 284139

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 284044

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)			500	598		mg/Kg		120	70 - 125	8	16
Motor Oil (>C24-C36)			500	585		mg/Kg		117	70 - 129	7	16

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
o-Terphenyl	*121*		*50 - 150*

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-282341/22-A
Matrix: Solid
Analysis Batch: 282750

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 282341

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.25	0.050	mg/Kg		08/23/18 17:18	08/24/18 14:19	5
Cadmium	ND		0.20	0.039	mg/Kg		08/23/18 17:18	08/24/18 14:19	5
Copper	ND		0.50	0.11	mg/Kg		08/23/18 17:18	08/24/18 14:19	5
Lead	ND		0.25	0.024	mg/Kg		08/23/18 17:18	08/24/18 14:19	5
Zinc	ND		2.5	0.81	mg/Kg		08/23/18 17:18	08/24/18 14:19	5

Lab Sample ID: LCS 580-282341/23-A
Matrix: Solid
Analysis Batch: 282750

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 282341

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic			200	199		mg/Kg		100	80 - 120		

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

Lab Sample ID: LCS 580-282341/23-A
Matrix: Solid
Analysis Batch: 282750

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 282341

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	5.00	5.21		mg/Kg		104	80 - 120
Copper	25.0	25.2		mg/Kg		101	80 - 120
Lead	50.0	47.6		mg/Kg		95	80 - 120
Zinc	200	195		mg/Kg		98	80 - 120

Lab Sample ID: LCSD 580-282341/24-A
Matrix: Solid
Analysis Batch: 282750

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 282341

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	200	196		mg/Kg		98	80 - 120	1	20
Cadmium	5.00	5.18		mg/Kg		104	80 - 120	1	20
Copper	25.0	24.8		mg/Kg		99	80 - 120	2	20
Lead	50.0	47.4		mg/Kg		95	80 - 120	1	20
Zinc	200	195		mg/Kg		97	80 - 120	0	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 580-282153/22-A
Matrix: Solid
Analysis Batch: 282255

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 282153

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.030	0.0090	mg/Kg		08/22/18 09:57	08/22/18 13:25	1

Lab Sample ID: LCS 580-282153/23-A
Matrix: Solid
Analysis Batch: 282255

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 282153

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.167	0.158		mg/Kg		95	80 - 120

Lab Sample ID: LCSD 580-282153/24-A
Matrix: Solid
Analysis Batch: 282255

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 282153

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.167	0.156		mg/Kg		94	80 - 120	2	20

Method: 9060_PSEP - TOC (Puget Sound)

Lab Sample ID: MB 580-284243/5
Matrix: Solid
Analysis Batch: 284243

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 - Duplicates	ND		2000	44	mg/Kg			09/18/18 12:32	1

Method: 9060_PSEP - TOC (Puget Sound) (Continued)

Lab Sample ID: LCS 580-284243/6
Matrix: Solid
Analysis Batch: 284243

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 - Duplicates			4270	3440		mg/Kg		80	68 - 149		

Lab Sample ID: LCSD 580-284243/7
Matrix: Solid
Analysis Batch: 284243

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
Total Organic Carbon - Duplicates			4270	3220		mg/Kg		76	68 - 149	6	32

Lab Chronicle

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

TestAmerica Job ID: 580-78459-1

Client Sample ID: PDI-SG-B430
Lab Sample ID: 580-78459-1
Date Collected: 06/28/18 14:18
Matrix: Solid
Date Received: 06/29/18 13:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	284243	09/18/18 13:35	A1K	TAL SEA
Total/NA	Analysis	D 2216		1	283499	09/07/18 16:11	JCM	TAL SEA
Total/NA	Analysis	Moisture 70C		1	283652	07/05/18 13:11	HJM	TAL SEA

Client Sample ID: PDI-SG-B430
Lab Sample ID: 580-78459-1
Date Collected: 06/28/18 14:18
Matrix: Solid
Date Received: 06/29/18 13:05
Percent Solids: 47.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			284043	09/15/18 08:47	DB	TAL SEA
Total/NA	Analysis	8270D		25	284395	09/20/18 00:21	ERZ	TAL SEA
Total/NA	Prep	3546			284042	09/15/18 08:40	BAH	TAL SEA
Total/NA	Analysis	8270D SIM		25	284269	09/18/18 23:49	W1T	TAL SEA
Total/NA	Prep	Organotin Prep			284045	09/15/18 09:00	KMS	TAL SEA
Total/NA	Analysis	Organotins		1	284676	09/22/18 20:17	ERZ	TAL SEA
Total/NA	Prep	3546			284044	09/15/18 08:55	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	284139	09/17/18 23:43	CJ	TAL SEA
Total/NA	Prep	3050B			282341	08/23/18 17:18	T1H	TAL SEA
Total/NA	Analysis	6020B		5	282750	08/24/18 15:43	FCW	TAL SEA
Total/NA	Prep	7471A			282153	08/22/18 09:57	T1H	TAL SEA
Total/NA	Analysis	7471A		1	282255	08/22/18 14:12	FCW	TAL SEA

Client Sample ID: PDI-SG-B432
Lab Sample ID: 580-78459-3
Date Collected: 06/28/18 17:40
Matrix: Solid
Date Received: 06/29/18 13:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	284243	09/18/18 13:40	A1K	TAL SEA
Total/NA	Analysis	D 2216		1	283499	09/07/18 16:11	JCM	TAL SEA
Total/NA	Analysis	Moisture 70C		1	283652	07/05/18 13:11	HJM	TAL SEA

Client Sample ID: PDI-SG-B432
Lab Sample ID: 580-78459-3
Date Collected: 06/28/18 17:40
Matrix: Solid
Date Received: 06/29/18 13:05
Percent Solids: 61.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			284043	09/15/18 08:47	DB	TAL SEA
Total/NA	Analysis	8270D		25	284395	09/20/18 00:46	ERZ	TAL SEA
Total/NA	Prep	3546			284042	09/15/18 08:40	BAH	TAL SEA
Total/NA	Analysis	8270D SIM		50	284269	09/19/18 00:15	W1T	TAL SEA
Total/NA	Prep	Organotin Prep			284045	09/15/18 09:00	KMS	TAL SEA
Total/NA	Analysis	Organotins		1	284676	09/22/18 20:43	ERZ	TAL SEA

Lab Chronicle

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

TestAmerica Job ID: 580-78459-1

Client Sample ID: PDI-SG-B432
Date Collected: 06/28/18 17:40
Date Received: 06/29/18 13:05

Lab Sample ID: 580-78459-3
Matrix: Solid
Percent Solids: 61.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			284044	09/15/18 08:55	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		10	284139	09/18/18 00:27	CJ	TAL SEA
Total/NA	Prep	3050B			282341	08/23/18 17:18	T1H	TAL SEA
Total/NA	Analysis	6020B		5	282750	08/24/18 15:47	FCW	TAL SEA
Total/NA	Prep	7471A			282153	08/22/18 09:57	T1H	TAL SEA
Total/NA	Analysis	7471A		1	282255	08/22/18 14:14	FCW	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: 580-78459-1
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	11-05-19
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: 580-78459-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-78459-1	PDI-SG-B430	Solid	06/28/18 14:18	06/29/18 13:05
580-78459-3	PDI-SG-B432	Solid	06/28/18 17:40	06/29/18 13:05

SURFACE SEDIMENT CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310 Fax: 253-922-5047**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010** **Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ 21 days ☒ Other _ASAP_____	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**6/29/2018** **Carrier: Courier**	COC No: 1 __1__ of __1__ COCs

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
Sample Type: D/U

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Krom/Unger	Sample Specific Notes:
PDI-SG-B430	6/28/2018	14:18	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B431	6/28/2018	16:16	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B432	6/28/2018	17:40	SS		MT	7		H	H	H	x	H	H	H	

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 ☒ Disposal By Lab ☒ Archive For **12** Months

Special Instructions/QC Requirements & Comments:
Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.
Separate reports for each lab.

5.2

Relinquished by:	Company: AECOM	Date/Time: 6/29/18 1250	Received by:	Company: M. E.	Date/Time: 6/29/18 1250
Relinquished by:	Company: M. E.	Date/Time: 6/29/18 1320	Received by:	Company: TARGET	Date/Time: 6/29/18 1320
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

580-78459 Chain of Custody

SURFACE SEDIMENT CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 **Ph: 253-922-2310 Fax: 253-922-5047**	**Project Contact: Amy Dahl / Chelsey Cook** **Tel: (206) 438-2261 / (206) 438-2010** **Analysis Turnaround Time** Calendar (C) or Work Days (W)	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**6/29/2018** **Carrier: Courier**	COC No: 1 1 of 1 COCs
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 Sample Type: D/U	☐ 21 days ☒ Other ASAP			

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 1668A	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury, NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Kron/Unger	Sample Specific Notes:
PDI-SG-B430	6/28/2018	14:18	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B431	6/28/2018	16:16	SS		MT	7		H	H	H	x	H	H	H	
PDI-SG-B432	6/28/2018	17:40	SS		MT	7		H	H	H	x	H	H	H	

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 ☒ Disposal By Lab ☒ Archive For 12 Months

Special Instructions/QC Requirements & Comments:
Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.
Separate reports for each lab.

5.2

Relinquished by:	Company: AECOM	Date/Time: 6/29/18 1250	Received by:	Company: M.E.	Date/Time: 6/29/18 1250
Relinquished by:	Company: M.E.	Date/Time: 6/29/18 1320	Received by:	Company: TARGET	Date/Time: 6/29/18 1320
Relinquished by:	Company: TARGET	Date/Time: 6/29/18 1700	Received by:	Company: TASEC	Date/Time: 6.30.18 1000

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-78459-1

Login Number: 78459
List Number: 1
Creator: O'Connell, Jason I

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	