TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-80635-1
Client Project/Site: Portland Harbor Pre-Remedial Design

For:
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Attn: Amy Dahl

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Authorized for release by:
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Job ID: 580-80635-1

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-80635-1

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

Four samples were received on 9/27/2018 12:55 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were -11.0º C and 3.3º C.

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

Containers of the following samples were received from the Portland service center on dry ice at -10.0°C in the Seattle lab and were placed in CSU-19 at 10:10 on 9/28/18: PDI-SG-B436 (580-80635-1), PDI-SG-B474 (580-80635-2), PDI-SG-B480 (580-80635-3) and PDI-SG-B481 (580-80635-4).

The Chain of Custody (COC) indicates an additional container was provided for the following sample and assumed to be for Atterberg Limits. However, the COC indicates Atterberg (on hold) for sample 2. The client requested the additional container be added to PDI-SG-B436 (580-80635-1) and Atterberg limits be added and placed on hold.

The following samples were canceled for on hold Atterberg Limits by the client on 10/2/18. PDI-SG-B436 (580-80635-1), PDI-SG-B474 (580-80635-2), PDI-SG-B480 (580-80635-3) and PDI-SG-B481 (580-80635-4).

The following samples were activated for all on hold analysis by the client on 10/10/18: PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4).

This report contains results of all analyses performed by TestAmerica Seattle, except Grain Size, which was reported under separate cover.

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)

Samples PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were analyzed for semivolatile organic compounds (GC-MS) in accordance with 8270D. The samples were prepared on 10/14/2018 and analyzed on 10/18/2018 and 10/19/2018.

Samples PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were frozen upon receipt and thawed prior to extraction. Samples were removed from freezer on 10/11/18 at 19:00 and thawed.

Job ID: 580-80635-1 (Continued)

Laboratory: TestAmerica Seattle (Continued)

Bis(2-ethylhexyl) phthalate failed the recovery criteria low for the MS of sample PDI-SG-B436MS (580-80635-1) in batch 580-286907.
Bis(2-ethylhexyl) phthalate failed the recovery criteria low for the MSD of sample PDI-SG-B436MSD (580-80635-1) in batch 580-286907.
Bis(2-ethylhexyl) phthalate exceeded the RPD limit. The associated LCS recoveries met acceptance limits.

Samples PDI-SG-B436 (580-80635-1)[50X] and PDI-SG-B481 (580-80635-4)[50X] required dilution prior to analysis due to the nature of the sample matrix. The reporting limits have been adjusted accordingly.

No additional 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-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were analyzed for semivolatile organic compounds - Selected Ion Mode (SIM) in accordance with SW846 8270D_SIM. The samples were prepared on 10/12/2018 and analyzed on 10/17/2018.

Samples PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were frozen upon receipt and thawed prior to extraction. Samples were removed from freezer on 10/11/18 at 19:00 and thawed.

Anthracene failed the recovery criteria high for LCS 580-286335/2-A. This is not indicative of a systematic control problem because these were random marginal exceedances. Qualified results have been reported.

Samples PDI-SG-B436 (580-80635-1)[25X] and PDI-SG-B481 (580-80635-4)[25X] required dilution prior to analysis due to the nature of the sample matrix. The reporting limits have been adjusted accordingly.

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-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were analyzed for Organotins by GC/MS in accordance with the Krone Method. The samples were prepared on 10/12/2018 and analyzed on 10/15/2018.

Samples PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were frozen to maintain holding time. Samples were thawed for Organotins on 10-11-18 at 19:00.

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-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were analyzed for diesel and extended range organics in accordance with Method NWTPH-Dx. The samples were prepared on 10/12/2018 and analyzed on 10/14/2018.

Samples PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were frozen in hold. Samples were removed from freezer on 10/11/18 at 19:00 and thawed.

Motor Oil (>C24-C36) exceeded the RPD limit for the duplicate of sample PDI-SG-B481 DU (580-80635-4 DU). Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory control sample duplicate (LCS/LCSD) precision was within acceptance limits.

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-B436 (580-80635-1), PDI-SG-B481 (580-80635-4) and PDI-SG-B481 DU (580-80635-4 DU).

Samples PDI-SG-B436 (580-80635-1)[3X] and PDI-SG-B481 (580-80635-4)[10X] required dilution prior to analysis due to the nature of the sample matrix. The reporting limits have been adjusted accordingly.

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

METALS (ICPMS)

Job ID: 580-80635-1 (Continued)

Laboratory: TestAmerica Seattle (Continued)

Samples PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were analyzed for Metals (ICPMS) in accordance with 6020A_LL. The samples were prepared on 10/16/2018 and analyzed on 10/17/2018.

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

TOTAL MERCURY

Samples PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were analyzed for total mercury in accordance with EPA SW-846 Method 7471A. The samples were prepared and analyzed on 10/15/2018.

The following samples were prepared outside of preparation holding time due to client requesting analysis after holding time expired: PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4).

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-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were analyzed for total organic carbon in accordance with EPA SW-846 Method 9060. The samples were analyzed on 10/14/2018.

Samples PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4 were frozen in hold and kept frozen upon receipt. Samples were removed from freezer on 10/11/18 at 19:00 and thawed.

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

PERCENT SOLIDS

Samples PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were analyzed for percent solids in accordance with ASTM D2216. The samples were analyzed on 10/11/2018.

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

TOTAL SOLIDS @ 70C

Samples PDI-SG-B436 (580-80635-1) and PDI-SG-B481 (580-80635-4) were analyzed for Total Solids @ 70C. The samples were analyzed on 10/12/2018.

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

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.
*	LCS or LCSD is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

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.
F3	Duplicate RPD exceeds the control limit

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.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time

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-B436
Date Collected: 08/16/18 11:40
Date Received: 09/27/18 12:55

Lab Sample ID: 580-80635-1
Matrix: Solid
Percent Solids: 53.0

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		47	4.2	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Acenaphthene	**9.5**	**J**	47	5.6	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Acenaphthylene	ND		47	4.7	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Anthracene	ND	*	47	5.6	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Benzo[a]anthracene	**43**	**J**	47	7.2	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Benzo[a]pyrene	**37**	**J**	47	3.8	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Benzo[b]fluoranthene	**60**		47	5.6	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Benzo[g,h,i]perylene	**35**	**J**	47	4.7	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Benzo[k]fluoranthene	**23**	**J**	47	5.6	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Chrysene	**46**	**J**	47	14	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Dibenz(a,h)anthracene	ND		47	6.8	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Fluoranthene	**130**		47	13	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Fluorene	**19**	**J**	47	4.7	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Indeno[1,2,3-cd]pyrene	**35**	**J**	47	5.6	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Naphthalene	**25**	**J**	47	7.5	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Phenanthrene	**130**		47	6.5	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25
Pyrene	**110**		47	9.1	ug/Kg	☼	10/12/18 10:39	10/17/18 16:21	25

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*76*		*57 - 120*	*10/12/18 10:39*	*10/17/18 16:21*	*25*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	**1100**	**J F2**	2800	330	ug/Kg	☼	10/14/18 11:28	10/18/18 23:13	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14 (Surr)	*87*		*58 - 120*	*10/14/18 11:28*	*10/18/18 23:13*	*50*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		140	37	ug/Kg	☼	10/12/18 09:39	10/15/18 21:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*26*		*10 - 113*	*10/12/18 09:39*	*10/15/18 21:56*	*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)	**95**	**J**	260	65	mg/Kg	☼	10/12/18 10:48	10/14/18 22:41	3
Motor Oil (>C24-C36)	**630**		260	92	mg/Kg	☼	10/12/18 10:48	10/14/18 22:41	3

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*94*		*50 - 150*	*10/12/18 10:48*	*10/14/18 22:41*	*3*

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**3.7**		0.31	0.061	mg/Kg	☼	10/16/18 11:18	10/17/18 12:31	5
Cadmium	**0.21**	**J**	0.25	0.047	mg/Kg	☼	10/16/18 11:18	10/17/18 12:31	5
Copper	**37**		0.61	0.13	mg/Kg	☼	10/16/18 11:18	10/17/18 12:31	5
Lead	**17**		0.31	0.029	mg/Kg	☼	10/16/18 11:18	10/17/18 12:31	5
Zinc	**120**		3.1	0.99	mg/Kg	☼	10/16/18 11:18	10/17/18 12:31	5

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

TestAmerica Job ID: 580-80635-1

Client Sample ID: PDI-SG-B436
Date Collected: 08/16/18 11:40
Date Received: 09/27/18 12:55

Lab Sample ID: 580-80635-1
Matrix: Solid
Percent Solids: 53.0

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.067	H	0.043	0.013	mg/Kg	☼	10/15/18 11:40	10/15/18 18:07	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	25000		2000	44	mg/Kg			10/14/18 17:41	1
Total Solids	53.0		0.1	0.1	%			10/11/18 09:09	1
Total Solids @ 70°C	55	H	0.10	0.10	%			10/12/18 16:56	1

Client Sample ID: PDI-SG-B481

Date Collected: 07/27/18 13:30
Date Received: 09/27/18 12:55

Lab Sample ID: 580-80635-4

Matrix: Solid
Percent Solids: 55.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		42	3.8	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Acenaphthene	ND		42	5.1	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Acenaphthylene	ND		42	4.2	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Anthracene	ND	*	42	5.1	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Benzo[a]anthracene	**23**	**J**	42	6.5	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Benzo[a]pyrene	**22**	**J**	42	3.4	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Benzo[b]fluoranthene	**40**	**J**	42	5.0	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Benzo[g,h,i]perylene	**20**	**J**	42	4.2	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Benzo[k]fluoranthene	**14**	**J**	42	5.1	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Chrysene	**25**	**J**	42	13	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Dibenz(a,h)anthracene	ND		42	6.1	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Fluoranthene	**43**		42	12	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Fluorene	ND		42	4.2	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Indeno[1,2,3-cd]pyrene	**18**	**J**	42	5.1	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Naphthalene	ND		42	6.8	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Phenanthrene	**35**	**J**	42	5.9	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25
Pyrene	**31**	**J**	42	8.2	ug/Kg	☼	10/12/18 10:39	10/17/18 16:46	25

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*80*		*57 - 120*	*10/12/18 10:39*	*10/17/18 16:46*	*25*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		2700	320	ug/Kg	☼	10/14/18 11:28	10/19/18 00:29	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14 (Surr)	*78*		*58 - 120*	*10/14/18 11:28*	*10/19/18 00:29*	*50*

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		140	35	ug/Kg	☼	10/12/18 09:39	10/15/18 22:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*26*		*10 - 113*	*10/12/18 09:39*	*10/15/18 22:22*	*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)	**360**	**J**	850	210	mg/Kg	☼	10/12/18 10:48	10/14/18 23:02	10
Motor Oil (>C24-C36)	**1700**		850	300	mg/Kg	☼	10/12/18 10:48	10/14/18 23:02	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*84*		*50 - 150*	*10/12/18 10:48*	*10/14/18 23:02*	*10*

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**3.9**		0.28	0.056	mg/Kg	☼	10/16/18 11:18	10/17/18 12:27	5
Cadmium	**0.15**	**J**	0.22	0.043	mg/Kg	☼	10/16/18 11:18	10/17/18 12:27	5
Copper	**33**		0.56	0.12	mg/Kg	☼	10/16/18 11:18	10/17/18 12:27	5
Lead	**10**		0.28	0.027	mg/Kg	☼	10/16/18 11:18	10/17/18 12:27	5
Zinc	**97**		2.8	0.90	mg/Kg	☼	10/16/18 11:18	10/17/18 12:27	5

Client Sample Results

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

TestAmerica Job ID: 580-80635-1

Client Sample ID: PDI-SG-B481
Date Collected: 07/27/18 13:30
Date Received: 09/27/18 12:55

Lab Sample ID: 580-80635-4
Matrix: Solid
Percent Solids: 55.1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.052	H	0.045	0.013	mg/Kg	☼	10/15/18 11:40	10/15/18 18:10	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	41000		2000	44	mg/Kg			10/14/18 17:46	1
Total Solids	55.1		0.1	0.1	%			10/11/18 09:09	1
Total Solids @ 70°C	57	H	0.10	0.10	%			10/12/18 16:56	1

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

Lab Sample ID: MB 580-286469/1-A
Matrix: Solid
Analysis Batch: 286907

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 286469

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		30	3.6	ug/Kg		10/14/18 11:28	10/18/18 19:24	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14 (Surr)	*95*		*58 - 120*	*10/14/18 11:28*	*10/18/18 19:24*	*1*

Lab Sample ID: LCS 580-286469/2-A
Matrix: Solid
Analysis Batch: 286907

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 286469

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Bis(2-ethylhexyl) phthalate	50.0	46.2		ug/Kg		92	59 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Terphenyl-d14 (Surr)	*99*		*58 - 120*

Lab Sample ID: 580-80635-1 MS
Matrix: Solid
Analysis Batch: 286907

Client Sample ID: PDI-SG-B436
Prep Type: Total/NA
Prep Batch: 286469

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Bis(2-ethylhexyl) phthalate	1100	J F2	88.5	979	J 4	ug/Kg	☼	-140	59 - 123

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
Terphenyl-d14 (Surr)	*101*		*58 - 120*

Lab Sample ID: 580-80635-1 MSD
Matrix: Solid
Analysis Batch: 286907

Client Sample ID: PDI-SG-B436
Prep Type: Total/NA
Prep Batch: 286469

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Bis(2-ethylhexyl) phthalate	1100	J F2	92.9	1140	J 4 F2	ug/Kg	☼	36	59 - 123	15	13

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
Terphenyl-d14 (Surr)	*83*		*58 - 120*

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

Lab Sample ID: MB 580-286335/1-A
Matrix: Solid
Analysis Batch: 286695

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 286335

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	ND		1.0	0.090	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Acenaphthene	ND		1.0	0.12	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Acenaphthylene	ND		1.0	0.10	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Anthracene	ND		1.0	0.12	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Benzo[a]anthracene	ND		1.0	0.15	ug/Kg		10/12/18 10:39	10/17/18 08:48	1

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

Lab Sample ID: MB 580-286335/1-A
Matrix: Solid
Analysis Batch: 286695

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 286335

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzo[a]pyrene	ND		1.0	0.080	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Benzo[b]fluoranthene	ND		1.0	0.12	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Benzo[g,h,i]perylene	ND		1.0	0.10	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Benzo[k]fluoranthene	ND		1.0	0.12	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Chrysene	ND		1.0	0.30	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Dibenz(a,h)anthracene	ND		1.0	0.14	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Fluoranthene	ND		1.0	0.28	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Fluorene	ND		1.0	0.10	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Indeno[1,2,3-cd]pyrene	ND		1.0	0.12	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Naphthalene	ND		1.0	0.16	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Phenanthrene	ND		1.0	0.14	ug/Kg		10/12/18 10:39	10/17/18 08:48	1
Pyrene	ND		1.0	0.19	ug/Kg		10/12/18 10:39	10/17/18 08:48	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Terphenyl-d14	*91*		*57 - 120*	*10/12/18 10:39*	*10/17/18 08:48*	*1*

Lab Sample ID: LCS 580-286335/2-A
Matrix: Solid
Analysis Batch: 286695

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 286335

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
2-Methylnaphthalene	200	164		ug/Kg		82	68 - 120
Acenaphthene	200	156		ug/Kg		78	68 - 120
Acenaphthylene	200	151		ug/Kg		75	68 - 120
Anthracene	200	141	*	ug/Kg		71	73 - 125
Benzo[a]anthracene	200	178		ug/Kg		89	66 - 120
Benzo[a]pyrene	200	145		ug/Kg		72	72 - 124
Benzo[b]fluoranthene	200	193		ug/Kg		96	63 - 121
Benzo[g,h,i]perylene	200	164		ug/Kg		82	63 - 120
Benzo[k]fluoranthene	200	184		ug/Kg		92	63 - 123
Chrysene	200	182		ug/Kg		91	69 - 120
Dibenz(a,h)anthracene	200	170		ug/Kg		85	70 - 125
Fluoranthene	200	191		ug/Kg		95	74 - 125
Fluorene	200	178		ug/Kg		89	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	171		ug/Kg		86	73 - 120
Pyrene	200	190		ug/Kg		95	70 - 120

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Terphenyl-d14	*78*		*57 - 120*

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

Lab Sample ID: MB 580-286319/1-A
Matrix: Solid
Analysis Batch: 286496

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 286319

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		75	20	ug/Kg		10/12/18 09:39	10/15/18 18:04	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Tripentyltin	*58*		*10 - 113*	*10/12/18 09:39*	*10/15/18 18:04*	*1*

Lab Sample ID: LCS 580-286319/2-A
Matrix: Solid
Analysis Batch: 286496

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 286319

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Tributyltin			357	212		ug/Kg		59	14 - 150		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Tripentyltin	*60*		*10 - 113*

Lab Sample ID: LCSD 580-286319/3-A
Matrix: Solid
Analysis Batch: 286496

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 286319

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Tributyltin			357	210		ug/Kg		59	14 - 150	1	20

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

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

Lab Sample ID: MB 580-286342/1-A
Matrix: Solid
Analysis Batch: 286486

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 286342

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		50	12	mg/Kg		10/12/18 10:48	10/14/18 20:08	1
Motor Oil (>C24-C36)	ND		50	18	mg/Kg		10/12/18 10:48	10/14/18 20:08	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
o-Terphenyl	*93*		*50 - 150*	*10/12/18 10:48*	*10/14/18 20:08*	*1*

Lab Sample ID: LCS 580-286342/2-A
Matrix: Solid
Analysis Batch: 286486

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 286342

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
#2 Diesel (C10-C24)			500	467		mg/Kg		93	70 - 125		
Motor Oil (>C24-C36)			500	479		mg/Kg		96	70 - 129		

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

Lab Sample ID: LCS 580-286342/2-A
Matrix: Solid
Analysis Batch: 286486

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 286342

Surrogate	LCS %Recovery	LCS Qualifier	Limits
o-Terphenyl	91		50 - 150

Lab Sample ID: LCSD 580-286342/3-A
Matrix: Solid
Analysis Batch: 286486

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 286342

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)			500	486		mg/Kg		97	70 - 125	4	16
Motor Oil (>C24-C36)			500	501		mg/Kg		100	70 - 129	4	16

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
o-Terphenyl	100		50 - 150

Lab Sample ID: 580-80635-4 DU
Matrix: Solid
Analysis Batch: 286486

Client Sample ID: PDI-SG-B481
Prep Type: Total/NA
Prep Batch: 286342

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
#2 Diesel (C10-C24)	360	J		ND		mg/Kg	☼			NC	35
Motor Oil (>C24-C36)	1700			679	J F3	mg/Kg	☼			85	35

Surrogate	DU %Recovery	DU Qualifier	Limits
o-Terphenyl	89		50 - 150

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-286618/22-A
Matrix: Solid
Analysis Batch: 286918

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 286618

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.25	0.050	mg/Kg		10/16/18 11:18	10/17/18 11:28	5
Cadmium	ND		0.20	0.039	mg/Kg		10/16/18 11:18	10/17/18 11:28	5
Copper	ND		0.50	0.11	mg/Kg		10/16/18 11:18	10/17/18 11:28	5
Lead	ND		0.25	0.024	mg/Kg		10/16/18 11:18	10/17/18 11:28	5
Zinc	ND		2.5	0.81	mg/Kg		10/16/18 11:18	10/17/18 11:28	5

Lab Sample ID: LCS 580-286618/23-A
Matrix: Solid
Analysis Batch: 286918

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 286618

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Arsenic			200	205		mg/Kg		103	80 - 120		
Cadmium			5.00	5.25		mg/Kg		105	80 - 120		
Copper			25.0	26.1		mg/Kg		104	80 - 120		
Lead			50.0	49.7		mg/Kg		99	80 - 120		
Zinc			200	201		mg/Kg		100	80 - 120		

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

Lab Sample ID: LCSD 580-286618/24-A
Matrix: Solid
Analysis Batch: 286918

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 286618

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Arsenic	200	204		mg/Kg		102	80 - 120	1	20
Cadmium	5.00	5.44		mg/Kg		109	80 - 120	3	20
Copper	25.0	26.0		mg/Kg		104	80 - 120	0	20
Lead	50.0	51.3		mg/Kg		103	80 - 120	3	20
Zinc	200	201		mg/Kg		100	80 - 120	0	20

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 580-286525/19-A
Matrix: Solid
Analysis Batch: 286585

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 286525

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.030	0.0090	mg/Kg		10/15/18 11:40	10/15/18 17:33	1

Lab Sample ID: LCS 580-286525/20-A
Matrix: Solid
Analysis Batch: 286585

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 286525

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.167	0.166		mg/Kg		100	80 - 120

Lab Sample ID: LCSD 580-286525/21-A
Matrix: Solid
Analysis Batch: 286585

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 286525

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.167	0.166		mg/Kg		100	80 - 120	0	20

Method: 9060_PSEP - TOC (Puget Sound)

Lab Sample ID: MB 580-286515/5
Matrix: Solid
Analysis Batch: 286515

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			10/14/18 13:28	1

Lab Sample ID: LCS 580-286515/6
Matrix: Solid
Analysis Batch: 286515

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	4300		mg/Kg		101	68 - 149

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

Lab Sample ID: LCSD 580-286515/7
Matrix: Solid
Analysis Batch: 286515

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	3350		mg/Kg		79	68 - 149	25	32

Lab Chronicle

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

TestAmerica Job ID: 580-80635-1

Client Sample ID: PDI-SG-B436
Date Collected: 08/16/18 11:40
Date Received: 09/27/18 12:55

Lab Sample ID: 580-80635-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	286515	10/14/18 17:41	A1K	TAL SEA
Total/NA	Analysis	D 2216		1	286202	10/11/18 09:09	BAH	TAL SEA
Total/NA	Analysis	Moisture 70C		1	286405	10/12/18 16:56	BAH	TAL SEA

Client Sample ID: PDI-SG-B436
Date Collected: 08/16/18 11:40
Date Received: 09/27/18 12:55

Lab Sample ID: 580-80635-1
Matrix: Solid
Percent Solids: 53.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			286469	10/14/18 11:28	BAH	TAL SEA
Total/NA	Analysis	8270D		50	286907	10/18/18 23:13	CJ	TAL SEA
Total/NA	Prep	3546			286335	10/12/18 10:39	BAH	TAL SEA
Total/NA	Analysis	8270D SIM		25	286695	10/17/18 16:21	CJ	TAL SEA
Total/NA	Prep	Organotin Prep			286319	10/12/18 09:39	KMS	TAL SEA
Total/NA	Analysis	Organotins		1	286496	10/15/18 21:56	KFS	TAL SEA
Total/NA	Prep	3546			286342	10/12/18 10:48	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		3	286486	10/14/18 22:41	W1T	TAL SEA
Total/NA	Prep	3050B			286618	10/16/18 11:18	T1H	TAL SEA
Total/NA	Analysis	6020B		5	286918	10/17/18 12:31	FCW	TAL SEA
Total/NA	Prep	7471A			286525	10/15/18 11:40	T1H	TAL SEA
Total/NA	Analysis	7471A		1	286585	10/15/18 18:07	FCW	TAL SEA

Client Sample ID: PDI-SG-B481
Date Collected: 07/27/18 13:30
Date Received: 09/27/18 12:55

Lab Sample ID: 580-80635-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	286515	10/14/18 17:46	A1K	TAL SEA
Total/NA	Analysis	D 2216		1	286202	10/11/18 09:09	BAH	TAL SEA
Total/NA	Analysis	Moisture 70C		1	286405	10/12/18 16:56	BAH	TAL SEA

Client Sample ID: PDI-SG-B481
Date Collected: 07/27/18 13:30
Date Received: 09/27/18 12:55

Lab Sample ID: 580-80635-4
Matrix: Solid
Percent Solids: 55.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			286469	10/14/18 11:28	BAH	TAL SEA
Total/NA	Analysis	8270D		50	286907	10/19/18 00:29	CJ	TAL SEA
Total/NA	Prep	3546			286335	10/12/18 10:39	BAH	TAL SEA
Total/NA	Analysis	8270D SIM		25	286695	10/17/18 16:46	CJ	TAL SEA
Total/NA	Prep	Organotin Prep			286319	10/12/18 09:39	KMS	TAL SEA
Total/NA	Analysis	Organotins		1	286496	10/15/18 22:22	KFS	TAL SEA

Lab Chronicle

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

TestAmerica Job ID: 580-80635-1

Client Sample ID: PDI-SG-B481
Date Collected: 07/27/18 13:30
Date Received: 09/27/18 12:55

Lab Sample ID: 580-80635-4
Matrix: Solid
Percent Solids: 55.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			286342	10/12/18 10:48	BAH	TAL SEA
Total/NA	Analysis	NWTPH-Dx		10	286486	10/14/18 23:02	W1T	TAL SEA
Total/NA	Prep	3050B			286618	10/16/18 11:18	T1H	TAL SEA
Total/NA	Analysis	6020B		5	286918	10/17/18 12:27	FCW	TAL SEA
Total/NA	Prep	7471A			286525	10/15/18 11:40	T1H	TAL SEA
Total/NA	Analysis	7471A		1	286585	10/15/18 18:10	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
Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-80635-1

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: 580-80635-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-80635-1	PDI-SG-B436	Solid	08/16/18 11:40	09/27/18 12:55
580-80635-4	PDI-SG-B481	Solid	07/27/18 13:30	09/27/18 12:55

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**	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**9/26/2018** 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 Sediment Sample Type: D/U	**Analysis Turnaround Time** Calendar (C) or Work Days (W) _____ ☐ 21 days ☒ Other _ASAP_____		**Carrier: Courier**

580-80635 Chain of Custody

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	ATTACHED	Sample Specific Notes:
PDI-SG-B436	8/16/2018	11:40	SS		MM	8		H	H	H	x	H	H	H	H	ALL FROZEN (EXCEPT ASTM) 8/10 @1405
PDI-SG-B474	8/17/2018	15:53	SS		MM	7		H	H	H	x	H	H	H		
PDI-SG-B480	8/17/2018	11:05	SS		MM	7		H	H	H	x	H	H	H		FROZEN 7/30 @0805
PDI-SG-B481	7/27/2018	1330	SS		MM	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.
KEEP FROZEN SAMPLES UPON RECEIPT -11.0 3.3

Relinquished by:	Company: RECOM	Date/Time: 9/26/18 1215	Received by:	Company: M.E.	Date/Time: 9/26/18 1215
Relinquished by:	Company: M.E.	Date/Time: 9/26/18 1255	Received by:	Company: TA-POR	Date/Time: 9/26/18 1255
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

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**	**Site Contact: Jennifer Ray** **Laboratory Contact: Elaine-Walker**	**9/26/2018** COC No: 1 **Carrier: Courier** 1 of 1 COCs

Client Contact	Analysis Turnaround Time
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 Sediment** Sample Type: D/U	Calendar (C) or Work Days (W) _____ ☐ 21 days ☒ Other _ASAP_____

580-80635 Chain of Custody

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	ATOSSCS16	Sample Specific Notes:
PDI-SG-B436	8/16/2018	11:40	SS		MM	18		H	H	H	x	H	H	H		All frozen (except est Amount 8/19 @ 1405 ↓ Frozen 7/30 @ 0805
PDI-SG-B474	8/17/2018	15:53	SS		MM	7		H	H	H	x	H	H	H	H	
PDI-SG-B480	8/17/2018	11:05	SS		MM	7		H	H	H	x	H	H	H		
PDI-SG-B481	7/27/2018	1330	SS		MM	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.

KEEP FROZEN SAMPLES UPON RECEIPT -11.0 3.3

Relinquished by:	Company: ARCOM	Date/Time: 9/26/18 1215	Received by:	Company: M.E.	Date/Time: 9/26/18 1215
Relinquished by:	Company: M.E.	Date/Time: 9/26/18 1255	Received by:	Company: TA-POR	Date/Time: 9/26/18 1255
Relinquished by:	Company:	Date/Time:	Received by: Tom Blankenship	Company: TA-Sea	Date/Time: 9/28/18 0930

IR4 -10.0/-10.0

Revised

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1111 3rd Ave Suite 1600	Analysis Turnaround Time
Seattle, WA 98101	Calendar (C) or Work Days (W) _____
Phone: (206) 438-2700 Fax: 1+(866) 495-5288	☐ 21 days
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	☒ Other _ASAP_____
Portland, OR	
Project #: 60566335 Study: Surface Sediment	
Sample Type: D/U	

Site Contact: Jennifer Ray
Laboratory Contact: Elaine-Walker
Carrier: Courier
9/26/2018
COC No: 1
1 of 1 COCs

580-80635 Chain of Custody

KP 10/2/18

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PDI-SG-B480	8/17/2018	11:05	SS		MM	7		H	H	H	x	H	H	H		
PDI-SG-B481	7/27/2018	1330	SS		MM	7		H	H	H	x	H	H	H		

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Relinquished by:	Company:	Date/Time:	Received by:	Company: TA-Sea	Date/Time: 9/28/18 0930

IR4 -10.0/-10.0

10/24/2018

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-80635-1

Login Number: 80635
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.	False	Refer to Job Narrative for details.
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	