

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 580-79722-1

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

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Authorized for release by:
10/12/2018 11:53:08 AM

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Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

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

TestAmerica Job ID: 580-79722-1

Job ID: 580-79722-1

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-79722-1

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 8/20/2018 3:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.8° C.

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.

The samples were frozen to preserve the holding times. Samples were originally received and frozen at TestAmerica Sacramento on 8/22/18. Frozen samples were shipped to the Seattle laboratory on 9/10/18 and received/frozen in Seattle on 9/11/18.

Samples PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2), and PDI-SG-B465 (580-79722-3) were taken off hold on 9/11/18.

The following samples were canceled for on hold Atterberg Limits by the client on 10/2/18 PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2), PDI-SG-B465 (580-79722-3) and PDI-SG-B431 (580-79722-4).

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-B473 (580-79722-1), PDI-SG-B467 (580-79722-2) and PDI-SG-B465 (580-79722-3) were analyzed for semivolatile organic compounds (GC-MS) in accordance with 8270D. The samples were prepared on 09/15/2018 and analyzed on 09/24/2018 and 09/25/2018.

Bis(2-ethylhexyl) phthalate was detected in method blank MB 580-284057/1-A at a level exceeding the reporting limit. 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 ½ the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Samples PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2), and PDI-SG-B465 (580-79722-3) were frozen upon receipt. Samples were removed from the freezer on 9/12/2018.

The following samples were diluted due to the nature of the sample matrix: PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2),

Case Narrative

Client: AECOM
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Laboratory: TestAmerica Seattle (Continued)

and PDI-SG-B465 (580-79722-3).

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-B473 (580-79722-1), PDI-SG-B467 (580-79722-2) and PDI-SG-B465 (580-79722-3) 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 09/19/2018.

Fluoranthene, Phenanthrene and Pyrene were detected in method blank MB 580-284059/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have 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 the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples were not performed.

Samples PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2), and PDI-SG-B465 (580-79722-3) were frozen upon receipt. The samples were removed in the evening on 09/14/2018.

The following samples were diluted due to the nature of the sample matrix: PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2), and PDI-SG-B465 (580-79722-3).

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-B473 (580-79722-1), PDI-SG-B467 (580-79722-2) and PDI-SG-B465 (580-79722-3) were analyzed for organotins by GC/MS in accordance with the Krone Method. The samples were prepared on 09/26/2018 and analyzed on 10/10/2018.

Samples PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2), and PDI-SG-B465 (580-79722-3) were received frozen at the laboratory. The samples were removed from the freezer on 9/14/18 and needed re-prep so were removed from the freezer again on 9/25/18.

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-B473 (580-79722-1), PDI-SG-B467 (580-79722-2) and PDI-SG-B465 (580-79722-3) 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 09/19/2018 and 09/20/2018.

Continuing calibration verification (CCV) standard associated with batch 580-284335 recovered outside %Drift acceptance criteria for o-Terphenyl surrogate. The %Recovery is within acceptance criteria for the surrogate in the CCV and associated samples; therefore, the data are qualified and reported. PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2), PDI-SG-B465 (580-79722-3), (CCV 580-284335/14), (CCV 580-284335/25), (CCVRT 580-284335/3), (LCS 580-284058/2-A), (LCSD 580-284058/3-A), and (MB 580-284058/1-A).

Samples PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2), and PDI-SG-B465 (580-79722-3) were frozen upon receipt. The samples were removed in the evening on 09/14/2018.

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

METALS (ICPMS)

Samples PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2) and PDI-SG-B465 (580-79722-3) were analyzed for Metals (ICPMS) in accordance with 6020A_LL. The samples were prepared on 09/11/2018 and analyzed on 09/12/2018.

Copper failed the recovery criteria high for the MSD of sample PDI-SG-B473MSD (580-79722-1) in batch 580-283863. The MS and associated LCS/LCSD recoveries met acceptance limits.

Case Narrative

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

TestAmerica Job ID: 580-79722-1

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Laboratory: TestAmerica Seattle (Continued)

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

TOTAL MERCURY

Samples PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2) and PDI-SG-B465 (580-79722-3) were analyzed for total mercury in accordance with EPA SW-846 Method 7471A. The samples were prepared and 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-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2) and PDI-SG-B465 (580-79722-3) were analyzed for total organic carbon in accordance with EPA SW-846 Method 9060. The samples were analyzed on 09/19/2018.

Total Organic Carbon - Duplicates was detected in method blank MB 580-284391/5 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 ½ the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

Samples PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2), and PDI-SG-B465 (580-79722-3) were frozen upon receipt. The samples were removed in the evening on 09/14/2018.

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

PERCENT SOLIDS

Samples PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2) and PDI-SG-B465 (580-79722-3) were analyzed for percent solids in accordance with ASTM D2216. The samples were analyzed on 09/14/2018.

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

TOTAL SOLIDS @ 70C

Samples PDI-SG-B473 (580-79722-1), PDI-SG-B467 (580-79722-2) and PDI-SG-B465 (580-79722-3) were analyzed for Total Solids @ 70C. The samples were analyzed on 09/13/2018.

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

Definitions/Glossary

Client: AECOM

TestAmerica Job ID: 580-79722-1

Project/Site: Portland Harbor Pre-Remedial Design

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.
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
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
B	Compound was found in the blank and sample.
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 Results

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

TestAmerica Job ID: 580-79722-1

Client Sample ID: PDI-SG-B473

Date Collected: 08/18/18 10:18

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-1

Matrix: Solid

Percent Solids: 63.3

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	3.2	J	15	1.3	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Acenaphthene	ND		15	1.8	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Acenaphthylene	ND		15	1.5	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Anthracene	1.9	J	15	1.8	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Benzo[a]anthracene	4.7	J	15	2.2	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Benzo[a]pyrene	4.4	J	15	1.2	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Benzo[b]fluoranthene	6.0	J	15	1.7	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Benzo[g,h,i]perylene	5.6	J	15	1.5	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Benzo[k]fluoranthene	1.8	J	15	1.8	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Chrysene	6.5	J	15	4.4	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Dibenz(a,h)anthracene	ND		15	2.1	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Fluoranthene	11	J B	15	4.1	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Fluorene	ND		15	1.5	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Indeno[1,2,3-cd]pyrene	4.0	J	15	1.8	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Naphthalene	4.8	J	15	2.3	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Phenanthrene	7.8	J B	15	2.0	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10
Pyrene	9.8	J B	15	2.8	ug/Kg	☼	09/15/18 16:23	09/19/18 15:39	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	102		57 - 120	09/15/18 16:23	09/19/18 15:39	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		400	48	ug/Kg	☼	09/15/18 14:52	09/24/18 23:12	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	91		58 - 120	09/15/18 14:52	09/24/18 23:12	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		110	28	ug/Kg	☼	09/26/18 09:35	10/10/18 00:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Triphenyltin	34		10 - 113	09/26/18 09:35	10/10/18 00:51	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)	28	J	71	17	mg/Kg	☼	09/15/18 15:32	09/19/18 23:46	1
Motor Oil (>C24-C36)	140		71	25	mg/Kg	☼	09/15/18 15:32	09/19/18 23:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	95		50 - 150	09/15/18 15:32	09/19/18 23:46	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.7		0.30	0.060	mg/Kg	☼	09/11/18 15:44	09/12/18 13:31	5
Cadmium	0.099	J	0.24	0.047	mg/Kg	☼	09/11/18 15:44	09/12/18 13:31	5
Copper	26	F1	0.60	0.13	mg/Kg	☼	09/11/18 15:44	09/12/18 13:31	5
Lead	6.9		0.30	0.029	mg/Kg	☼	09/11/18 15:44	09/12/18 13:31	5
Zinc	82		3.0	0.97	mg/Kg	☼	09/11/18 15:44	09/12/18 13:31	5

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79722-1

Client Sample ID: PDI-SG-B473

Date Collected: 08/18/18 10:18

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-1

Matrix: Solid

Percent Solids: 63.3

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.042		0.029	0.0088	mg/Kg	☼	09/12/18 12:34	09/12/18 15:29	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	11000	B	2000	44	mg/Kg	—		09/19/18 14:25	1
Total Solids	63.3		0.1	0.1	%			09/14/18 12:42	1
Total Solids @ 70°C	63	H	0.10	0.10	%			09/13/18 04:11	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79722-1

Client Sample ID: PDI-SG-B467

Date Collected: 08/18/18 12:29

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-2

Matrix: Solid

Percent Solids: 51.7

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	6.5	J	18	1.6	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Acenaphthene	ND		18	2.2	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Acenaphthylene	ND		18	1.8	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Anthracene	4.4	J	18	2.2	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Benzo[a]anthracene	8.4	J	18	2.7	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Benzo[a]pyrene	8.2	J	18	1.4	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Benzo[b]fluoranthene	14	J	18	2.1	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Benzo[g,h,i]perylene	9.3	J	18	1.8	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Benzo[k]fluoranthene	3.0	J	18	2.2	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Chrysene	15	J	18	5.4	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Dibenz(a,h)anthracene	ND		18	2.6	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Fluoranthene	21	B	18	5.1	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Fluorene	2.9	J	18	1.8	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Indeno[1,2,3-cd]pyrene	8.6	J	18	2.2	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Naphthalene	5.6	J	18	2.9	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Phenanthrene	14	J B	18	2.5	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10
Pyrene	21	B	18	3.5	ug/Kg	☼	09/15/18 16:23	09/19/18 16:02	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	100		57 - 120	09/15/18 16:23	09/19/18 16:02	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		520	62	ug/Kg	☼	09/15/18 14:52	09/24/18 23:36	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	90		58 - 120	09/15/18 14:52	09/24/18 23:36	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		140	36	ug/Kg	☼	09/26/18 09:35	10/10/18 00:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Triphenyltin	13		10 - 113	09/26/18 09:35	10/10/18 00:25	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)	55	J	94	23	mg/Kg	☼	09/15/18 15:32	09/20/18 00:08	1
Motor Oil (>C24-C36)	330		94	33	mg/Kg	☼	09/15/18 15:32	09/20/18 00:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	97		50 - 150	09/15/18 15:32	09/20/18 00:08	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.0		0.42	0.084	mg/Kg	☼	09/11/18 15:44	09/12/18 14:52	5
Cadmium	0.14	J	0.34	0.065	mg/Kg	☼	09/11/18 15:44	09/12/18 14:52	5
Copper	31		0.84	0.18	mg/Kg	☼	09/11/18 15:44	09/12/18 14:52	5
Lead	7.5		0.42	0.040	mg/Kg	☼	09/11/18 15:44	09/12/18 14:52	5
Zinc	83		4.2	1.4	mg/Kg	☼	09/11/18 15:44	09/12/18 14:52	5

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79722-1

Client Sample ID: PDI-SG-B467

Date Collected: 08/18/18 12:29

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-2

Matrix: Solid

Percent Solids: 51.7

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.062		0.052	0.016	mg/Kg	☼	09/12/18 12:34	09/12/18 15:32	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	24000	B	2000	44	mg/Kg	—		09/19/18 14:30	1
Total Solids	51.7		0.1	0.1	%			09/14/18 12:42	1
Total Solids @ 70°C	52	H	0.10	0.10	%			09/13/18 04:11	1

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79722-1

Client Sample ID: PDI-SG-B465

Date Collected: 08/18/18 13:40

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-3

Matrix: Solid

Percent Solids: 66.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
2-Methylnaphthalene	2.1	J	14	1.3	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Acenaphthene	ND		14	1.7	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Acenaphthylene	ND		14	1.4	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Anthracene	ND		14	1.7	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Benzo[a]anthracene	3.6	J	14	2.2	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Benzo[a]pyrene	3.5	J	14	1.1	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Benzo[b]fluoranthene	7.0	J	14	1.7	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Benzo[g,h,i]perylene	5.9	J	14	1.4	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Benzo[k]fluoranthene	2.2	J	14	1.7	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Chrysene	5.3	J	14	4.3	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Dibenz(a,h)anthracene	ND		14	2.1	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Fluoranthene	8.0	J B	14	4.0	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Fluorene	ND		14	1.4	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Indeno[1,2,3-cd]pyrene	5.7	J	14	1.7	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Naphthalene	2.8	J	14	2.3	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Phenanthrene	4.4	J B	14	2.0	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10
Pyrene	7.1	J B	14	2.8	ug/Kg	☼	09/15/18 16:23	09/19/18 16:25	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14	104		57 - 120	09/15/18 16:23	09/19/18 16:25	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	ND		400	47	ug/Kg	☼	09/15/18 14:52	09/25/18 00:01	10

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	97		58 - 120	09/15/18 14:52	09/25/18 00:01	10

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		110	28	ug/Kg	☼	09/26/18 09:35	10/10/18 00:00	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Triphenyltin	15		10 - 113	09/26/18 09:35	10/10/18 00:00	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)	29	J	68	17	mg/Kg	☼	09/15/18 15:32	09/20/18 00:30	1
Motor Oil (>C24-C36)	180		68	24	mg/Kg	☼	09/15/18 15:32	09/20/18 00:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	94		50 - 150	09/15/18 15:32	09/20/18 00:30	1

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	3.4		0.34	0.068	mg/Kg	☼	09/11/18 15:44	09/12/18 14:55	5
Cadmium	0.094	J	0.27	0.052	mg/Kg	☼	09/11/18 15:44	09/12/18 14:55	5
Copper	23		0.68	0.15	mg/Kg	☼	09/11/18 15:44	09/12/18 14:55	5
Lead	6.1		0.34	0.033	mg/Kg	☼	09/11/18 15:44	09/12/18 14:55	5
Zinc	68		3.4	1.1	mg/Kg	☼	09/11/18 15:44	09/12/18 14:55	5

TestAmerica Seattle

Client Sample Results

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

TestAmerica Job ID: 580-79722-1

Client Sample ID: PDI-SG-B465

Date Collected: 08/18/18 13:40

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-3

Matrix: Solid

Percent Solids: 66.1

Method: 7471A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.041		0.030	0.0089	mg/Kg	☼	09/12/18 12:34	09/12/18 15:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	13000	B	2000	44	mg/Kg	—		09/19/18 14:34	1
Total Solids	66.1		0.1	0.1	%			09/14/18 12:42	1
Total Solids @ 70°C	63	H	0.10	0.10	%			09/13/18 04:11	1

QC Sample Results

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

TestAmerica Job ID: 580-79722-1

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

Lab Sample ID: MB 580-284057/1-A

Matrix: Solid

Analysis Batch: 284800

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 284057

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bis(2-ethylhexyl) phthalate	8.73	J	30	3.6	ug/Kg	-	09/15/18 14:52	09/24/18 18:17	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14 (Surr)	97		58 - 120				09/15/18 14:52	09/24/18 18:17	1

Lab Sample ID: LCS 580-284057/2-A

Matrix: Solid

Analysis Batch: 284800

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 284057

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Bis(2-ethylhexyl) phthalate	50.0	59.7		ug/Kg	-	119	59 - 123
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
Terphenyl-d14 (Surr)	116		58 - 120				

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

Lab Sample ID: MB 580-284059/1-A

Matrix: Solid

Analysis Batch: 284623

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 284059

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 16:23	09/21/18 17:08	1
Acenaphthene	ND		1.0	0.12	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Acenaphthylene	ND		1.0	0.10	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Anthracene	ND		1.0	0.12	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Benzo[a]anthracene	ND		1.0	0.15	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Benzo[a]pyrene	ND		1.0	0.080	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Benzo[b]fluoranthene	ND		1.0	0.12	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Benzo[g,h,i]perylene	ND		1.0	0.10	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Benzo[k]fluoranthene	ND		1.0	0.12	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Chrysene	ND		1.0	0.30	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Dibenz(a,h)anthracene	ND		1.0	0.14	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Fluoranthene	0.373	J	1.0	0.28	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Fluorene	ND		1.0	0.10	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Indeno[1,2,3-cd]pyrene	ND		1.0	0.12	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Naphthalene	ND		1.0	0.16	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Phenanthrene	0.734	J	1.0	0.14	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Pyrene	0.314	J	1.0	0.19	ug/Kg	-	09/15/18 16:23	09/21/18 17:08	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
Terphenyl-d14	91		57 - 120				09/15/18 16:23	09/21/18 17:08	1

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79722-1

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

Lab Sample ID: LCS 580-284059/2-A

Matrix: Solid

Analysis Batch: 284415

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 284059

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
2-Methylnaphthalene	200	183		ug/Kg		92	68 - 120
Acenaphthene	200	191		ug/Kg		95	68 - 120
Acenaphthylene	200	203		ug/Kg		101	68 - 120
Anthracene	200	180		ug/Kg		90	73 - 125
Benzo[a]anthracene	200	183		ug/Kg		91	66 - 120
Benzo[a]pyrene	200	201		ug/Kg		100	72 - 124
Benzo[b]fluoranthene	200	205		ug/Kg		103	63 - 121
Benzo[g,h,i]perylene	200	206		ug/Kg		103	63 - 120
Benzo[k]fluoranthene	200	212		ug/Kg		106	63 - 123
Chrysene	200	210		ug/Kg		105	69 - 120
Dibenz(a,h)anthracene	200	232		ug/Kg		116	70 - 125
Fluoranthene	200	200		ug/Kg		100	74 - 125
Fluorene	200	189		ug/Kg		95	73 - 120
Indeno[1,2,3-cd]pyrene	200	239		ug/Kg		120	65 - 121
Naphthalene	200	177		ug/Kg		89	70 - 120
Phenanthrene	200	189		ug/Kg		94	73 - 120
Pyrene	200	198		ug/Kg		99	70 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Terphenyl-d14	107		57 - 120

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

Lab Sample ID: MB 580-284918/1-A

Matrix: Solid

Analysis Batch: 285981

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 284918

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tributyltin	ND		75	20	ug/Kg		09/26/18 09:35	10/09/18 16:44	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Tripentyltin	54		10 - 113	09/26/18 09:35	10/09/18 16:44	1

Lab Sample ID: LCS 580-284918/2-A

Matrix: Solid

Analysis Batch: 285981

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 284918

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Tributyltin	178	95.2		ug/Kg		53	14 - 150

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Tripentyltin	52		10 - 113

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79722-1

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

Lab Sample ID: MB 580-284058/1-A

Matrix: Solid

Analysis Batch: 284335

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 284058

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 15:32	09/19/18 22:17	1
Motor Oil (>C24-C36)	ND		50	18	mg/Kg		09/15/18 15:32	09/19/18 22:17	1
Surrogate	%Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
o-Terphenyl	93		50 - 150				09/15/18 15:32	09/19/18 22:17	1

Lab Sample ID: LCS 580-284058/2-A

Matrix: Solid

Analysis Batch: 284335

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 284058

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
#2 Diesel (C10-C24)	500	499		mg/Kg		100	70 - 125		
Motor Oil (>C24-C36)	500	504		mg/Kg		101	70 - 129		
Surrogate	%Recovery	LCS Qualifier	Limits						
o-Terphenyl	113		50 - 150						

Lab Sample ID: LCSD 580-284058/3-A

Matrix: Solid

Analysis Batch: 284335

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 284058

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
#2 Diesel (C10-C24)	500	515		mg/Kg		103	70 - 125	3	16
Motor Oil (>C24-C36)	500	515		mg/Kg		103	70 - 129	2	16
Surrogate	%Recovery	LCSD Qualifier	Limits						
o-Terphenyl	119		50 - 150						

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-283709/22-A

Matrix: Solid

Analysis Batch: 283863

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 283709

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.25	0.050	mg/Kg		09/11/18 15:44	09/12/18 13:20	5
Cadmium	ND		0.20	0.039	mg/Kg		09/11/18 15:44	09/12/18 13:20	5
Copper	ND		0.50	0.11	mg/Kg		09/11/18 15:44	09/12/18 13:20	5
Lead	ND		0.25	0.024	mg/Kg		09/11/18 15:44	09/12/18 13:20	5
Zinc	ND		2.5	0.81	mg/Kg		09/11/18 15:44	09/12/18 13:20	5

Lab Sample ID: LCS 580-283709/23-A

Matrix: Solid

Analysis Batch: 283863

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 283709

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits		
Arsenic	200	201		mg/Kg		101	80 - 120		

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79722-1

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

Lab Sample ID: LCS 580-283709/23-A
Matrix: Solid
Analysis Batch: 283863

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 283709

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Cadmium	5.00	4.94		mg/Kg		99	80 - 120
Copper	25.0	25.9		mg/Kg		104	80 - 120
Lead	50.0	47.9		mg/Kg		96	80 - 120
Zinc	200	201		mg/Kg		100	80 - 120

Lab Sample ID: LCSD 580-283709/24-A
Matrix: Solid
Analysis Batch: 283863

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 283709

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Arsenic	200	203		mg/Kg		102	80 - 120	1	20
Cadmium	5.00	5.00		mg/Kg		100	80 - 120	1	20
Copper	25.0	26.0		mg/Kg		104	80 - 120	0	20
Lead	50.0	48.4		mg/Kg		97	80 - 120	1	20
Zinc	200	203		mg/Kg		102	80 - 120	1	20

Lab Sample ID: 580-79722-1 MS
Matrix: Solid
Analysis Batch: 283863

Client Sample ID: PDI-SG-B473
Prep Type: Total/NA
Prep Batch: 283709

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	3.7		240	255		mg/Kg	☼	105	80 - 120
Cadmium	0.099	J	6.00	6.34		mg/Kg	☼	104	80 - 120
Copper	26	F1	30.0	60.8		mg/Kg	☼	116	80 - 120
Lead	6.9		60.0	68.5		mg/Kg	☼	103	80 - 120
Zinc	82		240	342		mg/Kg	☼	109	80 - 120

Lab Sample ID: 580-79722-1 MSD
Matrix: Solid
Analysis Batch: 283863

Client Sample ID: PDI-SG-B473
Prep Type: Total/NA
Prep Batch: 283709

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Arsenic	3.7		238	271		mg/Kg	☼	112	80 - 120	6	20
Cadmium	0.099	J	5.95	6.93		mg/Kg	☼	115	80 - 120	9	20
Copper	26	F1	29.7	64.7	F1	mg/Kg	☼	130	80 - 120	6	20
Lead	6.9		59.5	72.9		mg/Kg	☼	111	80 - 120	6	20
Zinc	82		238	363		mg/Kg	☼	118	80 - 120	6	20

Lab Sample ID: 580-79722-1 DU
Matrix: Solid
Analysis Batch: 283863

Client Sample ID: PDI-SG-B473
Prep Type: Total/NA
Prep Batch: 283709

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Arsenic	3.7		3.61		mg/Kg	☼	2	20
Cadmium	0.099	J	0.0826	J	mg/Kg	☼	18	20
Copper	26	F1	24.6		mg/Kg	☼	6	20
Lead	6.9		7.74		mg/Kg	☼	11	20
Zinc	82		76.8		mg/Kg	☼	6	20

TestAmerica Seattle

QC Sample Results

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

TestAmerica Job ID: 580-79722-1

Method: 7471A - Mercury (CVAA)

Lab Sample ID: MB 580-283789/22-A
Matrix: Solid
Analysis Batch: 283864

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 283789

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.030	0.0090	mg/Kg		09/12/18 12:34	09/12/18 15:01	1

Lab Sample ID: LCS 580-283789/23-A
Matrix: Solid
Analysis Batch: 283864

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 283789

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	0.167	0.155		mg/Kg		93	80 - 120

Lab Sample ID: LCSD 580-283789/24-A
Matrix: Solid
Analysis Batch: 283864

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 283789

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Mercury	0.167	0.144		mg/Kg		86	80 - 120	8	20

Method: 9060_PSEP - TOC (Puget Sound)

Lab Sample ID: MB 580-284391/5
Matrix: Solid
Analysis Batch: 284391

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	119	J	2000	44	mg/Kg			09/19/18 12:31	1

Lab Sample ID: LCS 580-284391/6
Matrix: Solid
Analysis Batch: 284391

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	4310		mg/Kg		101	68 - 149

Lab Sample ID: LCSD 580-284391/7
Matrix: Solid
Analysis Batch: 284391

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	3680		mg/Kg		86	68 - 149	16	32

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79722-1

Client Sample ID: PDI-SG-B473

Date Collected: 08/18/18 10:18

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	284391	09/19/18 14:25	TTN	TAL SEA
Total/NA	Analysis	D 2216		1	283991	09/14/18 12:42	KMS	TAL SEA
Total/NA	Analysis	Moisture 70C		1	283855	09/13/18 04:11	HJM	TAL SEA

Client Sample ID: PDI-SG-B473

Date Collected: 08/18/18 10:18

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-1

Matrix: Solid

Percent Solids: 63.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			284057	09/15/18 14:52	DB	TAL SEA
Total/NA	Analysis	8270D		10	284800	09/24/18 23:12	ADB	TAL SEA
Total/NA	Prep	3546			284059	09/15/18 16:23	DB	TAL SEA
Total/NA	Analysis	8270D SIM		10	284415	09/19/18 15:39	CJ	TAL SEA
Total/NA	Prep	Organotin Prep			284918	09/26/18 09:35	APR	TAL SEA
Total/NA	Analysis	Organotins		1	285981	10/10/18 00:51	ERZ	TAL SEA
Total/NA	Prep	3546			284058	09/15/18 15:32	DB	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	284335	09/19/18 23:46	JCM	TAL SEA
Total/NA	Prep	3050B			283709	09/11/18 15:44	T1H	TAL SEA
Total/NA	Analysis	6020B		5	283863	09/12/18 13:31	FCW	TAL SEA
Total/NA	Prep	7471A			283789	09/12/18 12:34	T1H	TAL SEA
Total/NA	Analysis	7471A		1	283864	09/12/18 15:29	FCW	TAL SEA

Client Sample ID: PDI-SG-B467

Date Collected: 08/18/18 12:29

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	284391	09/19/18 14:30	TTN	TAL SEA
Total/NA	Analysis	D 2216		1	283991	09/14/18 12:42	KMS	TAL SEA
Total/NA	Analysis	Moisture 70C		1	283855	09/13/18 04:11	HJM	TAL SEA

Client Sample ID: PDI-SG-B467

Date Collected: 08/18/18 12:29

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-2

Matrix: Solid

Percent Solids: 51.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			284057	09/15/18 14:52	DB	TAL SEA
Total/NA	Analysis	8270D		10	284800	09/24/18 23:36	ADB	TAL SEA
Total/NA	Prep	3546			284059	09/15/18 16:23	DB	TAL SEA
Total/NA	Analysis	8270D SIM		10	284415	09/19/18 16:02	CJ	TAL SEA
Total/NA	Prep	Organotin Prep			284918	09/26/18 09:35	APR	TAL SEA
Total/NA	Analysis	Organotins		1	285981	10/10/18 00:25	ERZ	TAL SEA

TestAmerica Seattle

Lab Chronicle

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

TestAmerica Job ID: 580-79722-1

Client Sample ID: PDI-SG-B467

Date Collected: 08/18/18 12:29

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-2

Matrix: Solid

Percent Solids: 51.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3546			284058	09/15/18 15:32	DB	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	284335	09/20/18 00:08	JCM	TAL SEA
Total/NA	Prep	3050B			283709	09/11/18 15:44	T1H	TAL SEA
Total/NA	Analysis	6020B		5	283863	09/12/18 14:52	FCW	TAL SEA
Total/NA	Prep	7471A			283789	09/12/18 12:34	T1H	TAL SEA
Total/NA	Analysis	7471A		1	283864	09/12/18 15:32	FCW	TAL SEA

Client Sample ID: PDI-SG-B465

Date Collected: 08/18/18 13:40

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060_PSEP		1	284391	09/19/18 14:34	TTN	TAL SEA
Total/NA	Analysis	D 2216		1	283991	09/14/18 12:42	KMS	TAL SEA
Total/NA	Analysis	Moisture 70C		1	283855	09/13/18 04:11	HJM	TAL SEA

Client Sample ID: PDI-SG-B465

Date Collected: 08/18/18 13:40

Date Received: 08/20/18 15:10

Lab Sample ID: 580-79722-3

Matrix: Solid

Percent Solids: 66.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3550B			284057	09/15/18 14:52	DB	TAL SEA
Total/NA	Analysis	8270D		10	284800	09/25/18 00:01	ADB	TAL SEA
Total/NA	Prep	3546			284059	09/15/18 16:23	DB	TAL SEA
Total/NA	Analysis	8270D SIM		10	284415	09/19/18 16:25	CJ	TAL SEA
Total/NA	Prep	Organotin Prep			284918	09/26/18 09:35	APR	TAL SEA
Total/NA	Analysis	Organotins		1	285981	10/10/18 00:00	ERZ	TAL SEA
Total/NA	Prep	3546			284058	09/15/18 15:32	DB	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	284335	09/20/18 00:30	JCM	TAL SEA
Total/NA	Prep	3050B			283709	09/11/18 15:44	T1H	TAL SEA
Total/NA	Analysis	6020B		5	283863	09/12/18 14:55	FCW	TAL SEA
Total/NA	Prep	7471A			283789	09/12/18 12:34	T1H	TAL SEA
Total/NA	Analysis	7471A		1	283864	09/12/18 15:34	FCW	TAL SEA

Laboratory References:

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

TestAmerica Seattle

Accreditation/Certification Summary

Client: AECOM

TestAmerica Job ID: 580-79722-1

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: 580-79722-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79722-1	PDI-SG-B473	Solid	08/18/18 10:18	08/20/18 15:10
580-79722-2	PDI-SG-B467	Solid	08/18/18 12:29	08/20/18 15:10
580-79722-3	PDI-SG-B465	Solid	08/18/18 13:40	08/20/18 15:10

SURFACE SEDIMENT CHAIN OF CUSTODY

[illegible]

$$I_{125} = 2.5/2.5 \text{ w/c.s.}$$

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79722-1

Login Number: 79722

List Source: TestAmerica Seattle

List Number: 1

Creator: Antonson, Angeline D

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	