

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

TestAmerica Job ID: 580-79202-6

Client Project/Site: Portland Harbor Pre-Remedial Design

For:

AECOM
1111 Third Ave
Suite 1600
Seattle, Washington 98101

Attn: Amy Dahl

M. Elaine Walker

Authorized for release by:
8/8/2018 1:19:34 PM

Elaine Walker, Project Manager II
(253)248-4972
elaine.walker@testamericainc.com

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www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

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: 580-79202-6

Job ID: 580-79202-6

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE

Client: AECOM

Project: Portland Harbor Pre-Remedial Design

Report Number: 580-79202-6

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

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

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

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

RECEIPT

Six samples were received on 7/30/2018 1:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.8° C.

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

This report only contains results for Grain Size analysis requested on a rush TAT and performed at TestAmerica Seattle. All other analyses are currently on hold.

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.

GRAIN SIZE

Samples PDI-SG-B485 (580-79202-1), PDI-SG-B484 (580-79202-2), PDI-SG-B482 (580-79202-3), PDI-SG-B487 (580-79202-4), PDI-SG-B488 (580-79202-5) and PDI-SG-B486 (580-79202-6) were analyzed for grain size in accordance with ASTM D7928/D6913. The samples were analyzed on 07/31/2018 and 08/01/2018.

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: 580-79202-6

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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: 580-79202-6

Client Sample ID: PDI-SG-B485

Lab Sample ID: 580-79202-1

Date Collected: 07/27/18 12:45

Matrix: Solid

Date Received: 07/30/18 13:40

Method: D7928/D6913 - ASTM D7928/D6913

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay	7.3				%			07/31/18 13:43	1
Coarse Sand	0.0				%			07/31/18 13:43	1
Fine Sand	43.0				%			07/31/18 13:43	1
Gravel	0.0				%			07/31/18 13:43	1
Medium Sand	0.2				%			07/31/18 13:43	1
Silt	49.5				%			07/31/18 13:43	1

Client Sample Results

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

TestAmerica Job ID: 580-79202-6

Client Sample ID: PDI-SG-B484

Lab Sample ID: 580-79202-2

Date Collected: 07/27/18 15:15

Matrix: Solid

Date Received: 07/30/18 13:40

Method: D7928/D6913 - ASTM D7928/D6913

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay	7.2				%			07/31/18 13:43	1
Coarse Sand	0.1				%			07/31/18 13:43	1
Fine Sand	51.5				%			07/31/18 13:43	1
Gravel	0.0				%			07/31/18 13:43	1
Medium Sand	0.1				%			07/31/18 13:43	1
Silt	41.1				%			07/31/18 13:43	1

Client Sample Results

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

TestAmerica Job ID: 580-79202-6

Client Sample ID: PDI-SG-B482

Lab Sample ID: 580-79202-3

Date Collected: 07/27/18 14:18

Matrix: Solid

Date Received: 07/30/18 13:40

Method: D7928/D6913 - ASTM D7928/D6913

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay	5.5				%			07/31/18 13:43	1
Coarse Sand	0.1				%			07/31/18 13:43	1
Fine Sand	65.3				%			07/31/18 13:43	1
Gravel	0.0				%			07/31/18 13:43	1
Medium Sand	0.3				%			07/31/18 13:43	1
Silt	28.9				%			07/31/18 13:43	1

Client Sample Results

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

TestAmerica Job ID: 580-79202-6

Client Sample ID: PDI-SG-B487

Lab Sample ID: 580-79202-4

Date Collected: 07/28/18 09:31

Matrix: Solid

Date Received: 07/30/18 13:40

Method: D7928/D6913 - ASTM D7928/D6913

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay	5.8				%			07/31/18 13:43	1
Coarse Sand	0.1				%			07/31/18 13:43	1
Fine Sand	59.7				%			07/31/18 13:43	1
Gravel	0.0				%			07/31/18 13:43	1
Medium Sand	0.5				%			07/31/18 13:43	1
Silt	33.9				%			07/31/18 13:43	1

Client Sample Results

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

TestAmerica Job ID: 580-79202-6

Client Sample ID: PDI-SG-B488

Lab Sample ID: 580-79202-5

Date Collected: 07/28/18 10:32

Matrix: Solid

Date Received: 07/30/18 13:40

Method: D7928/D6913 - ASTM D7928/D6913

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay	6.4				%			08/01/18 08:58	1
Coarse Sand	0.0				%			08/01/18 08:58	1
Fine Sand	51.4				%			08/01/18 08:58	1
Gravel	0.0				%			08/01/18 08:58	1
Medium Sand	0.2				%			08/01/18 08:58	1
Silt	42.0				%			08/01/18 08:58	1

Client Sample Results

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

TestAmerica Job ID: 580-79202-6

Client Sample ID: PDI-SG-B486

Lab Sample ID: 580-79202-6

Date Collected: 07/28/18 11:29

Matrix: Solid

Date Received: 07/30/18 13:40

Method: D7928/D6913 - ASTM D7928/D6913

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Clay	8.6				%			08/01/18 08:58	1
Coarse Sand	0.0				%			08/01/18 08:58	1
Fine Sand	53.0				%			08/01/18 08:58	1
Gravel	0.0				%			08/01/18 08:58	1
Medium Sand	0.3				%			08/01/18 08:58	1
Silt	38.1				%			08/01/18 08:58	1

Lab Chronicle

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

TestAmerica Job ID: 580-79202-6

Client Sample ID: PDI-SG-B485

Date Collected: 07/27/18 12:45

Date Received: 07/30/18 13:40

Lab Sample ID: 580-79202-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D7928/D6913		1	280487	07/31/18 13:43	JKM	TAL SEA

Client Sample ID: PDI-SG-B484

Date Collected: 07/27/18 15:15

Date Received: 07/30/18 13:40

Lab Sample ID: 580-79202-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D7928/D6913		1	280487	07/31/18 13:43	JKM	TAL SEA

Client Sample ID: PDI-SG-B482

Date Collected: 07/27/18 14:18

Date Received: 07/30/18 13:40

Lab Sample ID: 580-79202-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D7928/D6913		1	280487	07/31/18 13:43	JKM	TAL SEA

Client Sample ID: PDI-SG-B487

Date Collected: 07/28/18 09:31

Date Received: 07/30/18 13:40

Lab Sample ID: 580-79202-4

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D7928/D6913		1	280487	07/31/18 13:43	JKM	TAL SEA

Client Sample ID: PDI-SG-B488

Date Collected: 07/28/18 10:32

Date Received: 07/30/18 13:40

Lab Sample ID: 580-79202-5

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D7928/D6913		1	280552	08/01/18 08:58	JKM	TAL SEA

Client Sample ID: PDI-SG-B486

Date Collected: 07/28/18 11:29

Date Received: 07/30/18 13:40

Lab Sample ID: 580-79202-6

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D7928/D6913		1	280552	08/01/18 08:58	JKM	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: 580-79202-6

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
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

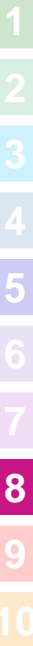
Sample Summary

Client: AECOM

Project/Site: Portland Harbor Pre-Remedial Design

TestAmerica Job ID: 580-79202-6

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-79202-1	PDI-SG-B485	Solid	07/27/18 12:45	07/30/18 13:40
580-79202-2	PDI-SG-B484	Solid	07/27/18 15:15	07/30/18 13:40
580-79202-3	PDI-SG-B482	Solid	07/27/18 14:18	07/30/18 13:40
580-79202-4	PDI-SG-B487	Solid	07/28/18 09:31	07/30/18 13:40
580-79202-5	PDI-SG-B488	Solid	07/28/18 10:32	07/30/18 13:40
580-79202-6	PDI-SG-B486	Solid	07/28/18 11:29	07/30/18 13:40



SURFACE SEDIMENT CHAIN OF CUSTODY

TestAmerica-Seattle
 5755-8th-Street-East
 Tacoma, WA 98424-1317
 PH: 253-922-2310 Fax: 253-922-5047
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: DU

Project Contact: Amy Dahl / Chelsea 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
 Carrier: Courier
 COC No: 1 of 1 pages

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 168A	PCDDs 1613B	TPH Diesel, Metals, Mercury NVTPH-DX	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive - 20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LI, Kron/Linger	Sample Specific Notes:	
PDI-SG-B485	7/27/2018	12:45	SS		LS	8		H	H	H	x	H	H	H	H	
PDI-SG-B484	7/27/2018	15:15	SS		MM	7		H	H	H	x	H	H	H	H	
PDI-SG-B482	7/27/2018	14:18	SS		MM	187		H	H	H	x	H	H	H	H	
PDI-SG-B487	7/28/2018	9:31	SS		MT	8		H	H	H	x	H	H	H	H	
PDI-SG-B488	7/28/2018	10:32	SS		MT	8		H	H	H	x	H	H	H	H	
PDI-SG-B486	7/28/2018	11:29	SS		MT	8		H	H	H	x	H	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.

Relinquished by: *[Signature]*
 Relinquished by: *[Signature]*
 Relinquished by: *[Signature]*

Received by: *[Signature]*
 Received by: *[Signature]*
 Received by: *[Signature]*

Date/Time: 7/30/18 / 1305
 Date/Time: 7/30/18 / 1340
 Date/Time: 7/30/18 / 1340

Company: AECOM
 Company: AECOM
 Company: AECOM

Company: *[Signature]*
 Company: *[Signature]*
 Company: *[Signature]*



TestAmerica-Seattle		SURFACE SEDIMENT CHAIN OF CUSTODY														
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				7/30/2018		COC No: 1				
Client Contact		Analysis Turnaround Time				Carrier: Courier				1 of 1 pages						
AECOM 1111 3rd Ave Suite 1600 Seattle, WA 98101 Phone: (206) 438-2700 Fax: 1+(866) 495-5288		Calendar (C) or Work Days (W)														
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling		<input type="checkbox"/> 21 days														
Portland, OR		<input checked="" type="checkbox"/> Other _ASAP_														
Project #: 60566335 Study: Surface Sediment																
Sample Type: D/U																
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 168A	PCDD/Fs 161B	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, BHP, Toluene, 8270-SIM, 8270-LL, Kona/Unger	ATTN: B326	Sample Specific Notes:
PDI-SG-B485	7/27/2018	12:45	SS		LS	8		H	H	H	x	H	H	H	H	
PDI-SG-B484	7/27/2018	15:15	SS		MM	7		H	H	H	x	H	H	H		
PDI-SG-B482	7/27/2018	14:18	SS		MM	187		H	H	H	x	H	H	H		
PDI-SG-B487	7/28/2018	9:31	SS		MT	8		H	H	H	x	H	H	H		
PDI-SG-B488	7/28/2018	10:32	SS		MT	8		H	H	H	x	H	H	H		
PDI-SG-B486	7/28/2018	11:29	SS		MT	8		H	H	H	x	H	H	H		
580-79202 Chain of Custody																
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 <input type="checkbox"/> Return To Client <input checked="" type="checkbox"/> Disposal By Lab <input checked="" type="checkbox"/> 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.																
Relinquished by: <i>[Signature]</i>	Company: AECOM	Date/Time: 7/30/18/1305	Received by: <i>[Signature]</i>				Company: M.E	Date/Time: 7-30-18/1305				3-8				
Relinquished by: <i>[Signature]</i>	Company: M.E	Date/Time: 7-30-18/1340	Received by: <i>[Signature]</i>				Company: TAPOR	Date/Time: 7/30/18/1340								
Relinquished by: <i>[Signature]</i>	Company: TAPOR	Date/Time: 7/30/18/1700	Received by: <i>[Signature]</i>				Company: SRH TA	Date/Time: 7/31/18/0930								

IKS = 1.4/1.4 w/c.s.

Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79202-6

Login Number: 79202

List Source: TestAmerica Seattle

List Number: 1

Creator: O'Connell, Jason I

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	

