

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: 580-79202-5

Client Project/Site: Portland Harbor Pre-Remedial Design
Revision: 1

For:

AECOM
1111 Third Ave
Suite 1600
Seattle, Washington 98101

Attn: Amy Dahl

M. Elaine Walker

Authorized for release by:
12/12/2018 4:14:31 PM

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

LINKS

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TotalAccess

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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: 580-79202-5

Job ID: 580-79202-5

Laboratory: TestAmerica Seattle

Narrative

CASE NARRATIVE
Client: AECOM
Project: Portland Harbor Pre-Remedial Design
Report Number: 580-79202-5

REVISION 1: DECEMBER 12, 2018

This revision was required because the Plasticity was incorrectly calculated using un-rounded numbers rather than rounded.

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.

The following samples were activated by the client for all on hold analysis on 8/16/18: 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).

Atterberg Limits were cancelled for all samples except for PDI-SG-B485 (580-79202-1) on 8/29/2018 and this report contains results for this analysis only.

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.

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS

Sample PDI-SG-B485 (580-79202-1) was analyzed for Liquid Limit, Plastic Limit and Plasticity Index of Soils in accordance with ASTM D4318. The sample was analyzed on 08/29/2018.

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: 580-79202-5

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: 580-79202-5

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: D4318 - Liquid Limit, Plastic Limit and Plasticity Index of Soils

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Liquid Limit	52				NONE			08/29/18 17:01	1
Plastic Limit	36				NONE			08/29/18 17:01	1
Plasticity Index	16				NONE			08/29/18 17:01	1

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Lab Chronicle

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

TestAmerica Job ID: 580-79202-5

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

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D4318		1	133482	08/29/18 17:01	MAP	TAL BUR

Laboratory References:

TAL BUR = TestAmerica Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990



Accreditation/Certification Summary

Client: AECOM

TestAmerica Job ID: 580-79202-5

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	11-05-19
Montana (UST)	State Program	8	N/A	04-30-20
Nevada	State Program	9	WA000502019-1	07-31-19
Oregon	NELAP	10	WA100007	11-05-19
US Fish & Wildlife	Federal		LE058448-0	07-31-19
USDA	Federal		P330-14-00126	02-10-20
Washington	State Program	10	C553	02-17-19

Laboratory: TestAmerica Burlington

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
ANAB	DoD ELAP		L2336	02-25-20
Connecticut	State Program	1	PH-0751	09-30-19
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	NA	02-01-19
Florida	NELAP	4	E87467	06-30-19
Maine	State Program	1	VT00008	04-17-19
Minnesota	NELAP	5	050-999-436	12-31-18 *
New Hampshire	NELAP	1	2006	12-18-18 *
New Jersey	NELAP	2	VT972	06-30-19
New York	NELAP	2	10391	04-01-19
Pennsylvania	NELAP	3	68-00489	04-30-19
Rhode Island	State Program	1	LAO00298	12-30-18 *
US Fish & Wildlife	Federal		LE-058448-0	07-31-19
USDA	Federal		P330-11-00093	07-24-20
Vermont	State Program	1	VT-4000	12-31-18 *
Virginia	NELAP	3	460209	12-14-18 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Seattle

Sample Summary

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

TestAmerica Job ID: 580-79202-5

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

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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	
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	



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: <i>[Signature]</i>	Company: AECOM	Date/Time: 7/30/18 / 1305
Relinquished by: <i>[Signature]</i>	Company: M.E.	Date/Time: 7-30-18 / 1340
Relinquished by: <i>[Signature]</i>	Company: TARDOR	Date/Time: 7-30-18 / 1350



SURFACE SEDIMENT CHAIN OF CUSTODY

TestAmerica-Seattle 5755-8th-Street-East Tacoma, WA 98424-1317 Ph: 253-922-2310 Fax: 253-922-5047		Site Contact: Jennifer Ray 7/30/2018 COC No: 1														
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		Project Contact: Amy Dahl / Chelsey Cook Tel: (206) 438-2261 / (206) 438-2010 Laboratory Contact: Elaine-Walker Carrier: Courier 1 of 1 pages														
Analysis Turnaround Time Calendar (C) or Work Days (W) <input type="checkbox"/> 21 days <input checked="" type="checkbox"/> Other _ASAP_		Fraction PCB Congeners 168A 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 BHPH, Tribunylin, 8270-SIM, 8270-LL, Kron/Unger ATSO B326														
Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	PCB Congeners 168A	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 BHPH, Tribunylin, 8270-SIM, 8270-LL, Kron/Unger	ATSO B326	Sample Specific Notes:
PDI-SG-B485	7/27/2018	12:45	SS		LS	8	H	H	H	x	H	H	H	H	H	
PDI-SG-B484	7/27/2018	15:15	SS		MM	7	H	H	H	x	H	H	H	H	H	
PDI-SG-B482	7/27/2018	14:18	SS		MM	7	H	H	H	x	H	H	H	H	H	
PDI-SG-B487	7/28/2018	9:31	SS		MT	8	H	H	H	x	H	H	H	H	H	
PDI-SG-B488	7/28/2018	10:32	SS		MT	8	H	H	H	x	H	H	H	H	H	
PDI-SG-B486	7/28/2018	11:29	SS		MT	8	H	H	H	x	H	H	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)																
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] Company: AECOM Date/Time: 7/30/18 1305 Relinquished by: [Signature] Company: M.E Date/Time: 7/30/18 1340 Relinquished by: [Signature] Company: TAPOR Date/Time: 7/30/18 1700																
Received by: [Signature] Company: M.E Date/Time: 7/30/18 1305 Received by: [Signature] Company: TAPOR Date/Time: 7/30/18 1340 Received by: [Signature] Company: SRH TA Date/Time: 7/31/18 0930																

IKS = 1.4/1.4 w/c.s.



Chain of Custody Record

580-79202 Chain of Custody

Client Information (Sub Contract Lab)		Lab PM: Walker, Elaine M	14.1
Client Contact: Walker, Elaine M		E-Mail: elaine.walker@testamericainc.com	Page 1 of 1
Shipping/Receiving		Address: Oregon	Job #: 580-79202-5
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note):	Preservation Codes: M - Hexane N - None O - AsNaO2 P - Na2CO3 Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 X - EDTA L - EDA Other:
Address: 30 Community Drive, Suite 11, South Burlington State, Zip: VT, 05403 Phone: 802-660-1990(Tel) 802-660-1919(Fax) Email:		Due Date Requested: 8/15/2018 TAT Requested (days): PO #: WO #: Project #: 58012120 SSOW#:	
Project Name: Portland Harbor Pre-Remedial Design Site:		Analysis Requested	
Sample Identification - Client ID (Lab ID)		Total Number of Containers	
Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=Water, S=solid, O=soil, BT=Tissue, AS=Asp)
7/27/18	12:45 Pacific		Solid
7/28/18	09:31 Pacific		Solid
7/28/18	10:32 Pacific		Solid
7/28/18	11:29 Pacific		Solid
PDI-SG-B485 (580-79202-1)			
PDI-SG-B487 (580-79202-4)			
PDI-SG-B488 (580-79202-5)			
PDI-SG-B486 (580-79202-6)			
Special Instructions/Note:		D318 (Hold)	
Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.		Special Instructions/Note:	
Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed		<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For	
Deliverable Requested: I, II, III, IV, Other (specify)		Special Instructions/QC Requirements:	
Primary Deliverable Rank: 2		Method of Shipment:	
Date/Time: 8/2/18 11:45		Date/Time:	
Relinquished by: [Signature]		Received by: [Signature]	
Relinquished by: [Signature]		Received by: [Signature]	
Relinquished by: [Signature]		Received by: [Signature]	
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Cooler Temperature(s) °C and Other Remarks: 0.2	



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159459-434 R172 EXP 03/19

ORIGIN ID: BNOA (503) 906-9240
SAMPLE CONTROL
TESTAMERICA PORTLAND
8920 SW GEMINI DR
BUILDING 7
BEAVERTON, OR 970087145
UNITED STATES US

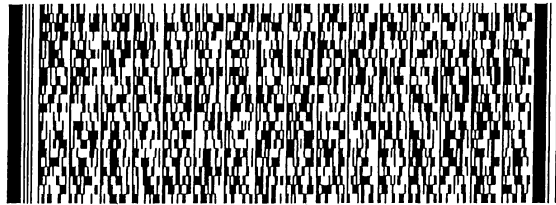
SHIP DATE: 02AUG18
ACTWTG: 33.35 LB
CAD: 0996922/CAFE3210

BILL RECIPIENT

TO SHIPPING/RECEIVING
TESTAMERICA LABORATORIES, INC.
30 COMMUNITY DRIVE
SUITE 11
SOUTH BURLINGTON VT 05403

(802) 660-1990
REF: S580-29961

3401/60EE/13155



FedEx
Express



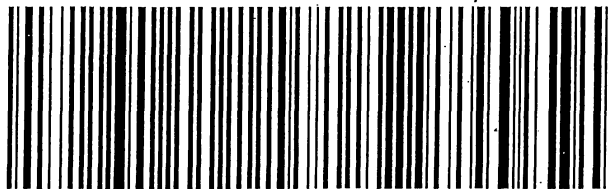
AN 000200111181J

TRK# 4423 0750 7969
0201

FRI - 03 AUG 10:30A
PRIORITY OVERNIGHT

XH BTVA

05403
VT-US BTV



Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79202-5

Login Number: 79202

List Source: TestAmerica Seattle

List Number: 1

Creator: O'Connell, Jason I

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.	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 <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



Login Sample Receipt Checklist

Client: AECOM

Job Number: 580-79202-5

Login Number: 79202
List Number: 2
Creator: Mohn, Taylor J

List Source: TestAmerica Burlington
List Creation: 08/03/18 01:29 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Was not measured.
The cooler's custody seal, if present, is intact.	True	Seal present with no number.
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	0.2°C
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?	N/A	Received project as a subcontract.
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.	N/A	
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	

