



17 September 2018

Karen Mixon
AECOM
1111 Third Avenue, Suite 1600
Seattle, WA 98101

RE: Portland Harbor Pre-Remedial Design

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

<u>Associated Work Order(s)</u>	<u>Associated SDG ID(s)</u>
18H0420	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



TestAmerica Seattle

5755 8th Street East
Tacoma, WA 98424
Phone (253) 922-2310 Fax (253) 922-5047

Chain of Custody Record



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

18H0420

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Walker, Elaine M	Carrier Tracking No(s):	COC No: 580-58768.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: elaine.walker@testamericainc.com	State of Origin: Oregon	Page: Page 1 of 1

Company: Analytical Resources, Inc	Accreditations Required (See note):	Job #: 580-79792-1
Address: 4611 South 134th Place, Suite 100,	Due Date Requested: 9/10/2018	Analysis Requested
City: Tukwila	TAT Requested (days):	
State, Zip: WA, 98168	PO #:	
Phone: 206-695-6200(Tel)	WO #:	

Project Name: Portland Harbor Pre-Remedial Design	Project #: 58012120	SUB (8041A Pentachloropheno) / 8041A Pentachlorophenol	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers	Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)
Site:	SSOW#:					

Sample Identification - Client ID	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers	Special Instructions/Note:
PDI-WS-T05-1808	8/21/18	20:28 Pacific		Water	X		1	
PDI-RB-PP-1820	8/20/18	16:00 Pacific		Water	X		1	

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/tests/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.

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 _____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Primary Deliverable Rank: 2
Special Instructions/QC Requirements:	

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by: [Signature]	Date/Time: 8/30/18 1500	Company: TA-SE/HA	Received by: Stephanie Fisher
Relinquished by:	Date/Time:	Company:	Date/Time: 8-30-18 1501
Relinquished by:	Date/Time:	Company:	Company: ARI

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.: N/A	Cooler Temperature(s) °C and Other Remarks: 3.5
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PDI-WS-T05-1808	18H0420-01	Water	21-Aug-2018 20:28	30-Aug-2018 15:01
PDI-RB-PP-1820	18H0420-02	Water	20-Aug-2018 16:00	30-Aug-2018 15:01



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Case Narrative

Sample receipt

Samples as listed on the preceding page were received August 30, 2018 under ARI work order 18H0420. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Pentachlorophenol - EPA Method SW8041A

The samples were received outside of the 7 day recommended holding time and have been flagged with "H" qualifiers.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank was clean at the reporting limits.

The LCS percent recoveries were within control limits.



Cooler Receipt Form

ARI Client: Cost America

Project Name: Portland Harbor

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 18H0420

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO
 Were custody papers included with the cooler? YES NO
 Were custody papers properly filled out (ink, signed, etc.) YES NO
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 3.5
 Time: 1501
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DC02565

Cooler Accepted by: SeF Date: 8-30-18 Time: 1501

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
 What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
 Was sufficient ice used (if appropriate)? NA YES NO
 Were all bottles sealed in individual plastic bags? YES NO
 Did all bottles arrive in good condition (unbroken)? YES NO
 Were all bottle labels complete and legible? YES NO
 Did the number of containers listed on COC match with the number of containers received? YES NO
 Did all bottle labels and tags agree with custody papers? YES NO
 Were all bottles used correct for the requested analyses? YES NO
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO
 Were all VOC vials free of air bubbles? NA YES NO
 Was sufficient amount of sample sent in each bottle? YES NO
 Date VOC Trip Blank was made at ARI: _____ NA
 Was Sample Split by ARI: NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: SeF Date: 8-30-18 Time: 1525

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
<u>PD1-RB-PP-180820</u>	<u>PD1-RB-PP-1820</u>		

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____

			Small → "sm" (< 2 mm)
			Peabubbles → "pb" (2 to < 4 mm)
			Large → "lg" (4 to < 6 mm)
			Headspace → "hs" (> 6 mm)



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PDI-WS-T05-1808
18H0420-01 (Water)

Phenols

Method: EPA 8041A Sampled: 08/21/2018 20:28

Instrument: ECD8 Analyst: YZ Analyzed: 12-Sep-2018 15:51

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGH0819 Sample Size: 500 mL
Prepared: 30-Aug-2018 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.014	0.025	ND	ug/L	H, U
<i>Surrogate: 2,4,6-Tribromophenol</i>				10-181 %	85.9	%	
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>				10-181 %	68.2	%	H



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PDI-RB-PP-1820
18H0420-02 (Water)

Phenols

Method: EPA 8041A

Sampled: 08/20/2018 16:00

Instrument: ECD8 Analyst: YZ

Analyzed: 12-Sep-2018 16:09

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BGH0819 Sample Size: 500 mL
Prepared: 30-Aug-2018 Final Volume: 5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Pentachlorophenol	87-86-5	1	0.014	0.025	ND	ug/L	H, U
<i>Surrogate: 2,4,6-Tribromophenol</i>				10-181 %	78.2	%	H
<i>Surrogate: 2,4,6-Tribromophenol [2C]</i>				10-181 %	67.8	%	H



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Phenols - Quality Control

Batch BGH0819 - EPA 3510C SepF

Instrument: ECD8 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGH0819-BLK1)					Prepared: 30-Aug-2018 Analyzed: 12-Sep-2018 15:15						
Pentachlorophenol	ND	0.014	0.025	ug/L							U
Surrogate: 2,4,6-Tribromophenol	0.191			ug/L	0.250		76.5	10-181			
Surrogate: 2,4,6-Tribromophenol [2C]	0.170			ug/L	0.250		68.0	10-181			
LCS (BGH0819-BS1)					Prepared: 30-Aug-2018 Analyzed: 12-Sep-2018 15:33						
Pentachlorophenol	0.181	0.014	0.025	ug/L	0.250		72.4	36-159			
Surrogate: 2,4,6-Tribromophenol	0.208			ug/L	0.250		83.3	10-181			
Surrogate: 2,4,6-Tribromophenol [2C]	0.183			ug/L	0.250		73.4	10-181			



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Certified Analyses included in this Report

Analyte

Certifications

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	02/07/2019
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/07/2019
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-011	05/12/2019
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019



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Notes and Definitions

- H Hold time violation - Hold time was exceeded.
- U This analyte is not detected above the applicable reporting or detection limit.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.