ALS Environmental
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March 29, 2019

Analytical Report for Service Request No: K1810367
Revised Service Request No: K1810367.02

Amy Dahl
AECOM
1111 Third Avenue, Suite 1600
Seattle, WA 98101

RE: Portland Harbor Pre-Remedial Design Investigation / 60566335

Dear Amy,

Enclosed is the revised report for the sample(s) submitted to our laboratory September 27, 2018 For your reference, these analyses have been assigned our service request number **K1810367.**

OC Pesticides data was revised due to ICAL switch, 2,4-DDT & 4,4-DDD.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

We apologize for any inconvenience this may have created.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

REVISED
4:33 pm, Mar 21, 2019

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Table of Contents

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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ALS Environmental

Client: AECOM
Project: Portland Harbor Pre-Remedial Design Investigation
Sample Matrix: Sediment

Service Request: K1810367
Date Received: 09/27/2018

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt:

One sediment sample was received for analysis at ALS Environmental on 09/27/2018. The sample was received in good condition and consistent with the accompanying chain of custody form. The samples were stored frozen at -20ºC upon receipt at the laboratory.

Semivolatiles by GC/MS:

Method ALS SOP, Organochlorine Pesticides by GC/MS/MS 11/07/2018: The matrix spike recovery of Aldrin for sample Batch QC was outside control criteria because of matrix interference coelution. The chromatogram indicated the presence of non-target background components that did not produce daughter ions and was therefore deleted in the parent sample. However, because the matrix spike standard necessarily contained Aldrin daughter ions were present in addition to the co-eluting interference resulting in elevated recovery. As a result, accurate quantitation was not possible. The data has been flagged to indicate the interference. No further corrective action was required.

Approved by _____ Date 11/15/2018

Chain of Custody

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K1810367
~~K1809371~~ CG 10/23

TestAmerica-Seattle ~~ALS Kelso~~
5755-8th Street-East
Tacoma, WA 98424-1317
Ph: 253-922-2310 Fax: 253-922-5047

SURFACE SEDIMENT CHAIN OF CUSTODY

Client Contact	Project Contact: Amy Dahl / Chelsey Cook	Site Contact: Jennifer Ray	9/26/2018	COC No 1
AECOM	Tel: (206) 438-2261 / (206) 438-2010	Laboratory Contact: Elaine-Walker	Carrier: Courier	1 of 1 COCs
1111 3rd Ave Suite 1600	Analysis Turnaround Time			
Seattle, WA 98101	Calendar (C) or Work Days (W)			
Phone (206) 438-2700 Fax: 1+(866) 495-5288	☐ 21 days			
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling				
Portland, OR	☒ Other _ASAP_			
Project # 60566335 Study: Surface ~~Water~~ Sediment				
Sample Type: D/U				

Sample Identification	Sample Date	Sample Time	Matrix	QC Sample	Sampler's Initials	Total No. of Cont.	Fraction	~~PCB Congeners 1668A~~ Rest TS	PCDD/Fs 1613B	TPH Diesel, Metals, Mercury NWTPH-Dx, 6020B, 7471A	Grain size ASTM D7928/D6913	Total organic carbon, Total solids 9060 (104C & 70C)	Archive Archive -20 C	PAHs, BEHP, Tributyltin, 8270-SIM, 8270-LL, Krone/Unger	Sample Specific Notes:
PDI-SG-B436	8/16/2018	11:40	SS		MM	1		H	H	H	x	H	H	H	
PDI-SG-B474	8/17/2018	15:53	SS		MM	1		H	H	H	x	H	H	H	
PDI-SG-B480	8/17/2018	11:05	SS		MM	1		H	H	H	x	H	H	H	
PDI-SG-B481	7/27/2018	13:30	SS		MM	1		H	H	H	x	H	H	H	

Container Type: WMG=Wide Mouth Glass Jar, P=HDPE, PP=Polypropylene, AG=amber glass, G=glass, RC=Resin Column

Preservative: HCl = Hydrochloric Acid, H3PO4 = Phosphoric Acid, HNO3 = Nitric Acid

Fraction: D = Dissolved, PRT = Particulate, T = Total (unfiltered)

Sample Disposal
☐ Return To Client ☒ Disposal By Lab ☒ Archive For 12 Months

Special Instructions/QC Requirements & Comments:
Analyze samples for grain size ASAP, Hold (H) remaining analyses pending further instruction.
~~Separate reports for each lab~~
KEEP FROZEN

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	AECOM	9/27/18 / 1210	[signature]	AW	9/27/18 1210
Relinquished by: [signature]	Company:	Date/Time:	Received by: [signature]	ALS	9/27/18 1400
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Cooler Receipt and Preservation Form

K1810367 PC H2

Client AECOM Service Request ~~K18~~ 0937.1 CG 10/23

Received: 9/27/18 Opened: 9/27/18 By: JM Unloaded: 9/27/18 By: R

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* (*Courier*) *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (N) N If yes, how many and where? 1 Front
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
0.0	0.0	3.9	3.9	0	376			

4. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* (*Wet Ice*) *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the ~~table below.~~* NA (Y) N
   If applicable, tissue samples were received: *Frozen* (*Partially Thawed*) *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Total Solids

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Analytical Report

Client:	AECOM	**Service Request:**	K1810367
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	08/17/18
Sample Matrix:	Sediment	**Date Received:**	09/27/18
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
PDI-SG-B474	K1810367-001	**71.4**	-	-	1	10/24/18 12:06	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1810367
Project	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	08/17/18
Sample Matrix:	Sediment	**Date Received:**	09/27/18
		Date Analyzed:	10/24/18

Replicate Sample Summary
Inorganic Parameters

Sample Name:	PDI-SG-B474	**Units:**	Percent
Lab Code:	K1810367-001	**Basis:**	As Received

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample K1810367-001DUP Result	Average	RPD	RPD Limit
Solids, Total	160.3 Modified	-	71.4	71.0	71.2	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Organochlorine Pesticides

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REVISED
4:34 pm, Mar 21, 2019

Analytical Report

Client:	AECOM	**Service Request:**	K1810367
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	08/17/18 15:53
Sample Matrix:	Sediment	**Date Received:**	09/27/18 14:00
Sample Name:	PDI-SG-B474	**Units:**	ug/Kg
Lab Code:	K1810367-001	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND U	0.070	0.063	1	11/07/18 03:57	10/25/18	
2,4'-DDE	ND U	0.079	0.079	1	11/07/18 03:57	10/25/18	
2,4'-DDT	ND U	0.094	0.094	1	11/07/18 03:57	10/25/18	
4,4'-DDD	**0.15**	0.070	0.035	1	11/07/18 03:57	10/25/18	
4,4'-DDE	**0.23**	0.070	0.070	1	11/07/18 03:57	10/25/18	
4,4'-DDT	ND U	0.070	0.047	1	11/07/18 03:57	10/25/18	
Aldrin	ND U	0.079	0.079	1	11/07/18 03:57	10/25/18	
alpha-Chlordane	ND U	0.14	0.062	1	11/07/18 03:57	10/25/18	
cis-Nonachlor	ND U	0.097	0.097	1	11/07/18 03:57	10/25/18	
Dieldrin	ND U	0.20	0.077	1	11/07/18 03:57	10/25/18	
gamma-BHC (Lindane)	ND U	0.070	0.031	1	11/07/18 03:57	10/25/18	
gamma-Chlordane	ND U	0.14	0.064	1	11/07/18 03:57	10/25/18	
Heptachlor	ND U	0.070	0.039	1	11/07/18 03:57	10/25/18	
Oxychlordane	ND U	0.20	0.13	1	11/07/18 03:57	10/25/18	
trans-Nonachlor	ND U	0.14	0.058	1	11/07/18 03:57	10/25/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'DDD-d4	81	5 - 120	11/07/18 03:57	
S_4,4'-DDT-d4	95	13 - 200	11/07/18 03:57	
S_Aldrin-13C12	55	10 - 143	11/07/18 03:57	
S_Endrin-13C12	74	20 - 157	11/07/18 03:57	
S_GBHCD6	51	5 - 124	11/07/18 03:57	
S_Heptachlor-13C10	59	10 - 177	11/07/18 03:57	
S_Heptachlrepox13C10	54	8 - 146	11/07/18 03:57	
S_Oxychlordane-13C10	53	5 - 144	11/07/18 03:57	

Analytical Report

Client:	AECOM	**Service Request:**	K1810367
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KQ1814982-04	**Basis:**	Dry

Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Prep Method: EPA 3541

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4'-DDD	ND U	0.063	0.063	1	11/06/18 22:57	10/25/18	
2,4'-DDE	ND U	0.079	0.079	1	11/06/18 22:57	10/25/18	
2,4'-DDT	ND U	0.094	0.094	1	11/06/18 22:57	10/25/18	
4,4'-DDD	ND U	0.049	0.035	1	11/06/18 22:57	10/25/18	
4,4'-DDE	ND U	0.070	0.070	1	11/06/18 22:57	10/25/18	
4,4'-DDT	ND U	0.049	0.047	1	11/06/18 22:57	10/25/18	
Aldrin	ND U	0.079	0.079	1	11/06/18 22:57	10/25/18	
alpha-Chlordane	ND U	0.098	0.062	1	11/06/18 22:57	10/25/18	
cis-Nonachlor	ND U	0.097	0.097	1	11/06/18 22:57	10/25/18	
Dieldrin	ND U	0.20	0.077	1	11/06/18 22:57	10/25/18	
gamma-BHC (Lindane)	ND U	0.049	0.031	1	11/06/18 22:57	10/25/18	
gamma-Chlordane	ND U	0.098	0.064	1	11/06/18 22:57	10/25/18	
Heptachlor	ND U	0.049	0.039	1	11/06/18 22:57	10/25/18	
Oxychlordane	ND U	0.20	0.13	1	11/06/18 22:57	10/25/18	
trans-Nonachlor	ND U	0.098	0.058	1	11/06/18 22:57	10/25/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'DDD-d4	80	5 - 120	11/06/18 22:57	
S_4,4'-DDT-d4	80	13 - 200	11/06/18 22:57	
S_Aldrin-13C12	77	10 - 143	11/06/18 22:57	
S_Endrin-13C12	89	20 - 157	11/06/18 22:57	
S_GBHCD6	71	5 - 124	11/06/18 22:57	
S_Heptachlor-13C10	71	10 - 177	11/06/18 22:57	
S_Heptachlrepox13C10	70	8 - 146	11/06/18 22:57	
S_Oxychlordane-13C10	71	5 - 144	11/06/18 22:57	

Client: AECOM **Service Request:** K1810367
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP
Extraction Method: EPA 3541

Sample Name	Lab Code	S_4,4'DDD-d4 5-120	S_4,4'-DDT-d4 13-200	S_Aldrin-13C12 10-143
Batch QC	K1810083-011	69	79	53
PDI-SG-B474	K1810367-001	81	95	55
Method Blank	KQ1814982-04	80	80	77
Lab Control Sample	KQ1814982-03	68	74	60
Batch QC	KQ1814982-01	66	68	60
Batch QC	KQ1814982-02	67	62	48

Client: AECOM **Service Request:** K1810367

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP

Extraction Method: EPA 3541

Sample Name	Lab Code	S_Endrin-13C12 20-157	S_GBHCD6 5-124	S_Heptachlor-13C10 10-177
Batch QC	K1810083-011	76	49	67
PDI-SG-B474	K1810367-001	74	51	59
Method Blank	KQ1814982-04	89	71	71
Lab Control Sample	KQ1814982-03	71	55	57
Batch QC	KQ1814982-01	76	56	66
Batch QC	KQ1814982-02	70	49	60

Client: AECOM **Service Request:** K1810367

Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Sample Matrix: Sediment

SURROGATE RECOVERY SUMMARY
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP

Extraction Method: EPA 3541

Sample Name	Lab Code	S_Heptachlrepox13C10 8-146	S_Oxychlordane-13C10 5-144
Batch QC	K1810083-011	56	54
PDI-SG-B474	K1810367-001	54	53
Method Blank	KQ1814982-04	70	71
Lab Control Sample	KQ1814982-03	59	59
Batch QC	KQ1814982-01	61	60
Batch QC	KQ1814982-02	54	54

Client: AECOM **Service Request:** K1810367
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 11/06/18 20:19

Internal Standard Area and RT SUMMARY
Organochlorine Pesticides by GC/MS/MS

File ID: Y:\MS42\data\110618\110618F022.D **Lab Code:** KQ1816235-02
Instrument ID: K-MS-42 **Analysis Lot:** 614105
Analysis Method: ALS SOP **Signal ID:** 1

		Pyrene-d10	
		Area	**RT**
	Result ==>	51,408,185	9.712
	Upper Limit ==>	102,816,369	10.21
	Lower Limit ==>	25,704,092	9.21
Associated Analyses			
Method Blank	KQ1814982-04	33360047.77	9.719
Lab Control Sample	KQ1814982-03	35039710.38	9.712
Batch QCMS	KQ1814982-01	42393046.39	9.725
Batch QCDMS	KQ1814982-02	48418166.95	9.721
Batch QC	K1810083-011	54482506.36	9.732
PDI-SG-B474	K1810367-001	57209026.49	9.719

Client:	AECOM	**Service Request:**	K1810367
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	11/6/18
		Date Extracted:	10/25/18

Duplicate Matrix Spike Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1810083-011	**Basis:**	Dry
Analysis Method:	ALS SOP		
Prep Method:	EPA 3541		

		Matrix Spike KQ1814982-01			**Duplicate Matrix Spike** KQ1814982-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	ND U	3.29	2.94	112	2.95	2.94	100	32-169	11	40
2,4'-DDE	0.12 J	3.37	2.94	111	2.82	2.94	92	43-155	18	40
2,4'-DDT	ND U	3.27	2.94	111	3.21	2.94	109	55-161	2	40
4,4'-DDD	1.5	5.04	2.94	120	5.05	2.94	121	10-190	<1	40
4,4'-DDE	2.7	5.76	2.94	106	5.10	2.94	83	35-162	12	40
4,4'-DDT	ND U	2.74	2.94	93	2.84	2.94	97	24-183	4	40
Aldrin	3.8	9.21 X	2.94	185 *	13.7 X	2.94	339 *	52-151	39	40
alpha-Chlordane	0.16 J	3.17	2.94	102	2.84	2.94	91	31-156	11	40
cis-Nonachlor	ND U	2.46	2.94	84	2.21	2.94	75	27-144	11	40
Dieldrin	ND U	2.42	2.94	82	2.23	2.94	76	28-150	8	40
gamma-BHC (Lindane)	ND U	2.74	2.94	93	2.54	2.94	86	64-135	8	40
gamma-Chlordane	0.23 J	3.20	2.94	101	3.13	2.94	98	31-158	2	40
Heptachlor	ND U	3.11	2.94	106	2.84	2.94	96	76-117	9	40
Oxychlordane	ND U	2.77	2.94	94	2.64	2.94	90	53-144	5	40
trans-Nonachlor	0.21 J	3.05	2.94	97	2.88	2.94	91	35-153	6	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	AECOM	**Service Request:**	K1810367
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	11/06/18
Sample Matrix:	Sediment	**Date Extracted:**	10/25/18

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Units:**	ug/Kg
Prep Method:	EPA 3541	**Basis:**	Dry
		Analysis Lot:	614105

Lab Control Sample
KQ1814982-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
2,4'-DDD	1.94	2.00	97	73-122
2,4'-DDE	1.97	2.00	98	54-145
2,4'-DDT	1.80	2.00	90	77-118
4,4'-DDD	1.89	2.00	94	74-117
4,4'-DDE	1.95	2.00	97	66-132
4,4'-DDT	1.86	2.00	93	78-116
Aldrin	1.83	2.00	92	74-122
alpha-Chlordane	1.99	2.00	100	74-130
cis-Nonachlor	2.04	2.00	102	69-134
Dieldrin	1.72	2.00	86	62-131
gamma-BHC (Lindane)	1.83	2.00	92	79-116
gamma-Chlordane	2.12	2.00	106	76-128
Heptachlor	1.89	2.00	95	81-114
Oxychlordane	1.84	2.00	92	59-141
trans-Nonachlor	1.96	2.00	98	76-124

Client:	AECOM	**Service Request:**	K1810367
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	11/06/18 22:57
Sample Matrix:	Sediment	**Date Extracted:**	10/25/18

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MS-42
Lab Code:	KQ1814982-04	**File ID:**	Y:\MS42\data\110618\110618F031.D
Analysis Method:	ALS SOP	**Analysis Lot:**	614105
Prep Method:	EPA 3541	**Extraction Lot:**	324391

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1814982-03	Y:\MS42\data\110618\110618F032.D	11/06/18 23:15
Batch QCMS	KQ1814982-01	Y:\MS42\data\110618\110618F033.D	11/06/18 23:33
Batch QCDMS	KQ1814982-02	Y:\MS42\data\110618\110618F034.D	11/06/18 23:50
Batch QC	K1810083-011	Y:\MS42\data\110618\110618F041.D	11/07/18 01:54
PDI-SG-B474	K1810367-001	Y:\MS42\data\110618\110618F048.D	11/07/18 03:57

Client:	AECOM	**Service Request:**	K1810367
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	11/06/18 23:15
Sample Matrix:	Sediment	**Date Extracted:**	10/25/18

Lab Control Sample Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-42
Lab Code:	KQ1814982-03	**File ID:**	Y:\MS42\data\110618\110618F032.D
Analysis Method:	ALS SOP	**Analysis Lot:**	614105
Prep Method:	EPA 3541	**Extraction Lot:**	324391

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1814982-04	Y:\MS42\data\110618\110618F031.D	11/06/18 22:57
Batch QCMS	KQ1814982-01	Y:\MS42\data\110618\110618F033.D	11/06/18 23:33
Batch QCDMS	KQ1814982-02	Y:\MS42\data\110618\110618F034.D	11/06/18 23:50
Batch QC	K1810083-011	Y:\MS42\data\110618\110618F041.D	11/07/18 01:54
PDI-SG-B474	K1810367-001	Y:\MS42\data\110618\110618F048.D	11/07/18 03:57

Client: AECOM **Service Request:**K1810367
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**11/06/18 20:19

Tune Summary
Organochlorine Pesticides by GC/MS/MS

File ID: Y:\MS42\data\110618\110618F022.D **Analytical Method:** ALS SOP
Instrument ID: K-MS-42 **Analysis Lot:** 614105

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1816235-02	Y:\MS42\data\110618\110618F022.D	11/06/18 20:19	
Method Blank	KQ1814982-04	Y:\MS42\data\110618\110618F031.D	11/06/18 22:57	
Lab Control Sample	KQ1814982-03	Y:\MS42\data\110618\110618F032.D	11/06/18 23:15	
Batch QC	KQ1814982-01	Y:\MS42\data\110618\110618F033.D	11/06/18 23:33	
Batch QC	KQ1814982-02	Y:\MS42\data\110618\110618F034.D	11/06/18 23:50	
Batch QC	K1810083-011	Y:\MS42\data\110618\110618F041.D	11/07/18 01:54	
PDI-SG-B474	K1810367-001	Y:\MS42\data\110618\110618F048.D	11/07/18 03:57	

Client: AECOM **Service Request:** K1810367
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 11/6/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900099 **Signal ID:** 1
Instrument ID: K-MS-42

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1900099-01	OC PEST ICAL 0.5ng/mL SVM59-48A	Y:\MS42\data\110618\110618F012.D	11/06/2018 17:23
02	KC1900099-02	OC PEST ICAL 1ng/mL SVM59-48B	Y:\MS42\data\110618\110618F013.D	11/06/2018 17:40
03	KC1900099-03	OC PEST ICAL 2ng/mL SVM59-48C	Y:\MS42\data\110618\110618F014.D	11/06/2018 17:58
04	KC1900099-04	OC PEST ICAL5ng/mL SVM59-48D	Y:\MS42\data\110618\110618F015.D	11/06/2018 18:15
05	KC1900099-05	OC PEST ICAL 10ng/mL SVM59-48E	Y:\MS42\data\110618\110618F016.D	11/06/2018 18:33
06	KC1900099-06	OC PEST ICAL 20ng/mL SVM59-48F	Y:\MS42\data\110618\110618F017.D	11/06/2018 18:51
07	KC1900099-07	OC PEST ICAL 40ng/mL SVM59-48G	Y:\MS42\data\110618\110618F018.D	11/06/2018 19:08
08	KC1900099-08	OC PEST ICAL 60ng/mL SVM59-48H	Y:\MS42\data\110618\110618F019.D	11/06/2018 19:26
09	KC1900099-09	OC PEST ICAL 80ng/mL SVM59-48I	Y:\MS42\data\110618\110618F020.D	11/06/2018 19:44
10	KC1900099-10	OC PEST ICAL 100ng/mL SVM59-48J	Y:\MS42\data\110618\110618F021.D	11/06/2018 20:01

Analyte

2,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.252	02	1	1.181	03	2	1.198	04	5	1.085
05	10	0.9599	06	20	0.8947	07	40	0.9002	08	60	1.127
09	80	1.001	10	100	0.9482						

2,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.9802	02	1	0.8092	03	2	0.8185	04	5	0.7787
05	10	0.8799	06	20	0.8045	07	40	0.807	08	60	0.8129
09	80	0.7312	10	100	0.6882						

2,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.488	02	1	2.051	03	2	1.933	04	5	1.83
05	10	2.009	06	20	2.074	07	40	2.201	08	60	2.008
09	80	1.84	10	100	1.915						

4,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.848	02	1	1.732	03	2	1.721	04	5	1.604
05	10	1.508	06	20	1.484	07	40	1.418	08	60	1.578
09	80	1.503	10	100	1.473						

4,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.861	02	1	0.8026	03	2	0.783	04	5	0.7288
05	10	0.6869	06	20	0.6637	07	40	0.6344	08	60	0.7903
09	80	0.7061	10	100	0.6413						

Client: AECOM **Service Request:** K1810367
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 11/6/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900099 **Signal ID:** 1
Instrument ID: K-MS-42

Analyte

4,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.136	02	1	1.19	03	2	1.133	04	5	1.114
05	10	1.07	06	20	1.021	07	40	1.113	08	60	1.065
09	80	1.076	10	100	1.117						

Aldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	4.077	02	1	2.192	03	2	1.589	04	5	0.9482
05	10	0.8013	06	20	0.7412	07	40	0.6799	08	60	0.6189
09	80	0.6066	10	100	0.6072						

Dieldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.733	02	1	1.373	03	2	1.439	04	5	1.247
05	10	1.284	06	20	1.348	07	40	1.244	08	60	1.472
09	80	1.491	10	100	1.479						

Heptachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.303	02	1	1.16	03	2	1.119	04	5	1.057
05	10	1.104	06	20	1.124	07	40	1.096	08	60	1.07
09	80	1.072	10	100	1.065						

Oxychlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	3.284	02	1	2.976	03	2	2.863	04	5	2.693
05	10	2.7	06	20	2.736	07	40	2.548	08	60	2.673
09	80	2.807	10	100	2.519						

S_4,4'-DDT-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	1.985	02	5	2.148	03	5	2.451	04	5	2.304
05	5	2.318	06	5	2.312	07	5	2.214	08	5	2.329
09	5	2.624	10	5	2.558						

S_4,4'DDD-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	3.638	02	5	3.954	03	5	3.957	04	5	3.9
05	5	3.799	06	5	3.909	07	5	4.012	08	5	4.111
09	5	4.701	10	5	4.762						

S_Aldrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.5291	02	20	0.4875	03	20	0.4578	04	20	0.4638
05	20	0.5536	06	20	0.5074	07	20	0.5531	08	20	0.5727
09	20	0.5662	10	20	0.5358						

Client: AECOM **Service Request:** K1810367
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 11/6/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900099 **Signal ID:** 1
Instrument ID: K-MS-42

Analyte

S_Endrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.187	02	20	0.1956	03	20	0.1886	04	20	0.1975
05	20	0.1924	06	20	0.1903	07	20	0.2061	08	20	0.201
09	20	0.2109	10	20	0.2044						

S_GBHCD6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	1.473	02	20	1.284	03	20	1.303	04	20	1.252
05	20	1.67	06	20	1.425	07	20	1.729	08	20	1.525
09	20	1.557	10	20	1.412						

S_Heptachlor-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.6995	02	20	0.6937	03	20	0.7068	04	20	0.696
05	20	0.7781	06	20	0.776	07	20	0.78	08	20	0.7609
09	20	0.77	10	20	0.7044						

S_Heptachlrepox13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.1895	02	20	0.1812	03	20	0.1769	04	20	0.1724
05	20	0.1905	06	20	0.1882	07	20	0.2122	08	20	0.194
09	20	0.2079	10	20	0.1889						

S_Oxychlordane-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.3895	02	20	0.3361	03	20	0.3702	04	20	0.3718
05	20	0.4287	06	20	0.3925	07	20	0.4523	08	20	0.4371
09	20	0.4172	10	20	0.4224						

alpha-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.373	02	1	2.371	03	2	2.274	04	5	2.15
05	10	2.234	06	20	2.254	07	40	2.029	08	60	2.178
09	80	2.302	10	100	2.162						

cis-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.5997	02	1	0.6293	03	2	0.5825	04	5	0.5663
05	10	0.542	06	20	0.6008	07	40	0.5321	08	60	0.5851
09	80	0.6213	10	100	0.5971						

gamma-BHC (Lindane)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.273	02	1	2.225	03	2	2.392	04	5	2.257
05	10	2.059	06	20	2.36	07	40	2.026	08	60	2.198
09	80	2.253	10	100	2.223						

Client: AECOM **Service Request:** K1810367
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 11/6/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900099 **Signal ID:** 1
Instrument ID: K-MS-42

Analyte

gamma-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.9604	02	1	0.9971	03	2	0.9052	04	5	0.8828
05	10	0.9	06	20	0.887	07	40	0.8667	08	60	0.9044
09	80	0.975	10	100	0.9154						

trans-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.545	02	1	1.591	03	2	1.466	04	5	1.33
05	10	1.557	06	20	1.608	07	40	1.514	08	60	1.518
09	80	1.609	10	100	1.464						

Client: AECOM **Service Request:** K1810367
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 11/6/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900099 **Signal ID:** 1
Instrument ID: K-MS-42

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	Compound Type	Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
2,4'-DDD	TRG	Average RF	% RSD	12.4	≤20	1.055	0.01
2,4'-DDE	TRG	Average RF	% RSD	9.7	≤20	0.811	0.01
2,4'-DDT	TRG	Average RF	% RSD	9.6	≤20	2.035	0.01
4,4'-DDD	TRG	Average RF	% RSD	8.7	≤20	1.587	0.01
4,4'-DDE	TRG	Average RF	% RSD	10.5	≤20	0.7298	0.01
4,4'-DDT	TRG	Average RF	% RSD	4.3	≤20	1.104	0.01
Aldrin	TRG	Quadratic	COD	0.9991	≥	1.286	0.01
Dieldrin	TRG	Average RF	% RSD	10.4	≤20	1.411	0.01
Heptachlor	TRG	Average RF	% RSD	6.5	≤20	1.117	0.01
Oxychlordane	TRG	Average RF	% RSD	8.0	≤20	2.78	0.01
S_4,4'-DDT-d4	SURR	Average RF	% RSD	8.1	≤	2.324	0.01
S_4,4'DDD-d4	SURR	Average RF	% RSD	9.0	≤	4.074	0.01
S_Aldrin-13C12	SURR	Average RF	% RSD	8.0	≤	0.5227	0.01
S_Endrin-13C12	SURR	Average RF	% RSD	4.1	≤	0.1974	0.01
S_GBHCD6	SURR	Average RF	% RSD	11.0	≤	1.463	0.01
S_Heptachlor-13C10	SURR	Average RF	% RSD	5.3	≤	0.7365	0.01
S_Heptachlrepox13C10	SURR	Average RF	% RSD	6.5	≤	0.1902	0.01
S_Oxychlordane-13C10	SURR	Average RF	% RSD	8.9	≤	0.4018	0.01
alpha-Chlordane	TRG	Average RF	% RSD	4.8	≤20	2.233	0.01
cis-Nonachlor	TRG	Average RF	% RSD	5.4	≤20	0.5856	0.01
gamma-BHC (Lindane)	TRG	Average RF	% RSD	5.1	≤20	2.227	0.01
gamma-Chlordane	TRG	Average RF	% RSD	4.7	≤20	0.9194	0.01
trans-Nonachlor	TRG	Average RF	% RSD	5.6	≤20	1.52	0.01

Client: AECOM **Service Request:** K1810367
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 11/6/2018

Initial Calibration Verification Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1900099 **Signal ID:** 1
Instrument ID: K-MS-42

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1900099-11	OC PEST ICV 20ng/mL SVM59-48K	Y:\MS42\data\110618\110618F022.D	11/06/2018 20:19

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
2,4'-DDD	20.0	21.4	1.055E0	1.13E0	7.14	±25	Average RF
2,4'-DDE	20.0	20.6	8.11E-1	8.357E-1	3.04	±25	Average RF
2,4'-DDT	20.0	16.7	2.035E0	1.699E0	-16.493	±25	Average RF
4,4'-DDD	20.0	19.5	1.587E0	1.546E0	-2.568	±25	Average RF
4,4'-DDE	20.0	22.4	7.298E-1	8.169E-1	11.93	±25	Average RF
4,4'-DDT	20.0	20.3	1.104E0	1.118E0	1.28	±25	Average RF
Aldrin	20.0	18.7	1.286E0	6.784E-1	-6.621	±25	Quadratic
alpha-Chlordane	20.0	21.0	2.233E0	2.34E0	4.80	±25	Average RF
cis-Nonachlor	20.0	19.9	5.856E-1	5.831E-1	-0.424	±25	Average RF
Dieldrin	20.0	19.5	1.411E0	1.379E0	-2.269	±25	Average RF
gamma-BHC (Lindane)	20.0	19.1	2.227E0	2.123E0	-4.650	±25	Average RF
gamma-Chlordane	20.0	20.2	9.194E-1	9.291E-1	1.05	±25	Average RF
Heptachlor	20.0	20.4	1.117E0	1.141E0	2.17	±25	Average RF
Oxychlordane	20.0	21.2	2.78E0	2.942E0	5.82	±25	Average RF
trans-Nonachlor	20.0	20.0	1.52E0	1.518E0	-0.124	±25	Average RF

Analyte Name	Expected	Result	Average RF	SSV RF	Rec.	Criteria	Curve Fit
S_4,4'DDD-d4	5.00	4.86	4.074E0	3.959E0	97.2	50-200	Average RF
S_4,4'-DDT-d4	5.00	5.07	2.324E0	2.356E0	101	50-200	Average RF
S_Aldrin-13C12	20.0	18.5	5.227E-1	4.844E-1	92.5	50-200	Average RF
S_Endrin-13C12	20.0	19.2	1.974E-1	1.897E-1	96.0	50-200	Average RF
S_GBHCD6	20.0	18.3	1.463E0	1.339E0	91.5	50-200	Average RF
S_Heptachlor-13C10	20.0	17.8	7.365E-1	6.57E-1	89.0	50-200	Average RF
S_Heptachlrepox13C10	20.0	19.4	1.902E-1	1.846E-1	97.0	50-200	Average RF
S_Oxychlordane-13C10	20.0	18.7	4.018E-1	3.766E-1	93.5	50-200	Average RF

Client:	AECOM	**Service Request:**	K1810367
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	11/06/18 20:19

Continuing Calibration Verification (CCV) Summary
Organochlorine Pesticides by GC/MS/MS

Analysis Method:	ALS SOP	**Calibration Date:**	11/6/2018
File ID:	Y:\MS42\data\110618\110618F022.D	**Calibration ID:**	KC1900099
Signal ID:	1	**Analysis Lot:**	614105
		Units:	ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
2,4'-DDD	20.0	21.4	1.0547	1.1299	7.1	NA	±25	Average RF
2,4'-DDE	20.0	20.6	0.811	0.8357	3.0	NA	±25	Average RF
2,4'-DDT	20.0	16.7	2.0349	1.6992	-16.5	NA	±25	Average RF
4,4'-DDD	20.0	19.5	1.5869	1.5454	-2.6	NA	±25	Average RF
4,4'-DDE	20.0	22.4	0.7298	0.8169	11.9	NA	±25	Average RF
4,4'-DDT	20.0	20.3	1.1035	1.1177	1.3	NA	±25	Average RF
Aldrin	20.0	18.7	1.2861	0.6784	NA	-6.6	±25	Quadratic
alpha-Chlordane	20.0	21.0	2.2326	2.3399	4.8	NA	±25	Average RF
cis-Nonachlor	20.0	19.9	0.5856	0.5831	-0.4	NA	±25	Average RF
Dieldrin	20.0	19.5	1.4111	1.379	-2.3	NA	±25	Average RF
gamma-BHC (Lindane)	20.0	19.1	2.2266	2.123	-4.6	NA	±25	Average RF
gamma-Chlordane	20.0	20.2	0.9194	0.9291	1.1	NA	±25	Average RF
Heptachlor	20.0	20.4	1.1169	1.1411	2.2	NA	±25	Average RF
Oxychlordane	20.0	21.2	2.7799	2.9417	5.8	NA	±25	Average RF
trans-Nonachlor	20.0	20.0	1.5201	1.5182	-0.1	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
S_4,4'DDD-d4	5.00	4.86	4.0744	3.9586	97.2	NA	50-200	Average RF
S_4,4'-DDT-d4	5.00	5.07	2.3243	2.3559	101	NA	50-200	Average RF
S_Aldrin-13C12	20.0	18.5	0.5227	0.4844	92.7	NA	50-200	Average RF
S_Endrin-13C12	20.0	19.2	0.1974	0.1897	96.1	NA	50-200	Average RF
S_GBHCD6	20.0	18.3	1.4629	1.3389	91.5	NA	50-200	Average RF
S_Heptachlor-13C10	20.0	17.8	0.7365	0.657	89.2	NA	50-200	Average RF
S_Heptachlrepox13C10	20.0	19.4	0.1902	0.1846	97.1	NA	50-200	Average RF
S_Oxychlordane-13C10	20.0	18.7	0.4018	0.3766	93.7	NA	50-200	Average RF

Client: AECOM **Service Request:**K1810367
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP **Analysis Lot:**614105
Instrument ID:K-MS-42

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
Y:\MS42\data\110618\110618F022.D	Continuing Calibration Verification	KQ1816235-02	11/6/2018	20:19	
Y:\MS42\data\110618\110618F022.D	ZZZZZZZ	ZZZZZZZ	11/6/2018	20:19	
Y:\MS42\data\110618\110618F023.D	ZZZZZZZ	ZZZZZZZ	11/6/2018	20:36	
Y:\MS42\data\110618\110618F024.D	ZZZZZZZ	ZZZZZZZ	11/6/2018	20:54	
Y:\MS42\data\110618\110618F025.D	ZZZZZZZ	ZZZZZZZ	11/6/2018	21:12	
Y:\MS42\data\110618\110618F026.D	ZZZZZZZ	ZZZZZZZ	11/6/2018	21:29	
Y:\MS42\data\110618\110618F027.D	ZZZZZZZ	ZZZZZZZ	11/6/2018	21:47	
Y:\MS42\data\110618\110618F028.D	ZZZZZZZ	ZZZZZZZ	11/6/2018	22:04	
Y:\MS42\data\110618\110618F029.D	ZZZZZZZ	ZZZZZZZ	11/6/2018	22:22	
Y:\MS42\data\110618\110618F030.D	ZZZZZZZ	ZZZZZZZ	11/6/2018	22:40	
Y:\MS42\data\110618\110618F031.D	Method Blank	KQ1814982-04	11/6/2018	22:57	
Y:\MS42\data\110618\110618F032.D	Lab Control Sample	KQ1814982-03	11/6/2018	23:15	
Y:\MS42\data\110618\110618F033.D	Batch QC MS	KQ1814982-01	11/6/2018	23:33	
Y:\MS42\data\110618\110618F034.D	Batch QC DMS	KQ1814982-02	11/6/2018	23:50	
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Y:\MS42\data\110618\110618F036.D	ZZZZZZZ	ZZZZZZZ	11/7/2018	00:25	
Y:\MS42\data\110618\110618F037.D	ZZZZZZZ	ZZZZZZZ	11/7/2018	00:43	
Y:\MS42\data\110618\110618F038.D	ZZZZZZZ	ZZZZZZZ	11/7/2018	01:01	
Y:\MS42\data\110618\110618F039.D	ZZZZZZZ	ZZZZZZZ	11/7/2018	01:18	
Y:\MS42\data\110618\110618F040.D	ZZZZZZZ	ZZZZZZZ	11/7/2018	01:36	
Y:\MS42\data\110618\110618F041.D	Batch QC	K1810083-011	11/7/2018	01:54	
Y:\MS42\data\110618\110618F042.D	ZZZZZZZ	ZZZZZZZ	11/7/2018	02:11	
Y:\MS42\data\110618\110618F043.D	ZZZZZZZ	ZZZZZZZ	11/7/2018	02:29	
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Y:\MS42\data\110618\110618F061.D	ZZZZZZZ	ZZZZZZZ	11/7/2018	07:46	

Prep Summary Report

Client: AECOM **Service Request:** K1810367
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

Organochlorine Pesticides by GC/MS/MS

Prep Method: EPA 3541 **Extraction Lot:** 324391
Analytical Method: ALS SOP **Extraction Date:** 10/25/18 13:40

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
Batch QC	K1810083-011	NA	NA	20.254 g	1 mL	33.7
PDI-SG-B474	K1810367-001	8/17/18	9/27/18	20.047 g	1 mL	71.4
Matrix Spike	KQ1814982-01MS	NA	NA	20.169 g	1 mL	33.7
Duplicate Matrix Spike	KQ1814982-02DMS	NA	NA	20.183 g	1 mL	33.7
Lab Control Sample	KQ1814982-03LCS	NA	NA	10 g	1 mL	
Method Blank	KQ1814982-04MB	NA	NA	20.3450 g	1 mL	