ALS Environmental
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www.alsglobal.com

November 06, 2018 **Analytical Report for Service Request No:** K1810002

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

RE: Portland Harbor Pre-Remedial Design Investigation / 60566335

Dear Amy,

Enclosed are the results of the sample(s) submitted to our laboratory July 16, 2018
For your reference, these analyses have been assigned our service request number **K1810002.**

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.

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

ALS Environmental
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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: K1810002
Date Received: 07/16/2018

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 07/16/2018. 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 10/24/2018: The following analytes were flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS42\102418F004.D: 2,4'-DDD, 4,4'-DDE, and Dieldrin. In accordance with the EPA Method, 80% or more of the CCV analytes must have passed within 20% of the true value. The remaining analytes are allowed a 40% difference as per the ALS SOP. The CCV met these criteria. No further corrective action was required.

Method ALS SOP, Organochlorine Pesticides by GC/MS/MS 10/24/2018: The matrix spike recovery and RPD of 2,4'-DDT and Aldrin for sample D5-0to28-100918 was outside control criteria because of suspected matrix interference. Recovery in the Laboratory Control Sample (LCS) was acceptable, which indicated the analytical batch was in control. No further corrective action was appropriate.

Approved by _____ Date 11/06/2018

Chain of Custody

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10002
K1806461

ALS-Environmental-Kelso	SURFACE SEDIMENT CHAIN OF CUSTODY		
1317-S-13th-Ave			
Kelso, WA 98626			
Ph: 360-577-7222 Fax: 360-636-1068			
Client Contact	**Project Contact: Amy Dahl / Chelsey Cook**	**Site Contact: Jennifer Ray**	7/5/2018 COC No: 1
AECOM	Tel: (206) 438-2261 / (206) 438-2010	Laboratory Contact: Howard-Holmes	Carrier: Courier 1 of 1 pages
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	[X] 21 days		
Project Name: Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling	[ ] Other _____		
Portland, OR			
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 1668A	WQ - Pesticides 1699m	Sample Specific Notes:
PDI-SG-B483	7/13/2018	14:50	SS		LS	1		H		
PDI-SG-B487 WC-B487	7/13/2018	12:10	SS		LS	1		B		

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 [X] Disposal By Lab [X] Archive For 12 Months

Special Instructions/QC Requirements & Comments:

H - Hold analyses pending further instruction.

	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	AECOM	7/16/18 1204		HV	7/16/18 1204
Relinquished by:	HV	7/16/18 1330	Received by:	ALS	7/16/18 1330
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

ALS

Client AECOM **Cooler Receipt and Preservation Form** 10002 PC HV

Received: 7/16/18 Opened: 7/16/18 By: Service Request K18 Otto1

Unloaded: 7/16/18 By:

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

   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
4.5	4.3	—	—	-0.2	322			

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
7. If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
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:

7/25/16

Page ____ of ____

Total Solids

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Analytical Report

Client:	AECOM	**Service Request:**	K1810002
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	07/13/18
Sample Matrix:	Sediment	**Date Received:**	07/16/18
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-S266	K1810002-001	**55.9**	-	-	1	10/12/18 12:31	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1810002
Project	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	07/13/18
Sample Matrix:	Sludge, Solid	**Date Received:**	07/16/18
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Replicate Sample Summary
Inorganic Parameters

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1809964-008DUP	-	56.4	56.2	56.3	<1	20	10/12/18
PDI-SG-S266	K1810002-001DUP	-	55.9	56.1	56.0	<1	20	10/12/18

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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Client:	AECOM	**Service Request:**	K1810002
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	07/13/18 12:10
Sample Matrix:	Sediment	**Date Received:**	07/16/18 13:30
Sample Name:	PDI-SG-S266	**Units:**	ug/Kg
Lab Code:	K1810002-001	**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	0.35	0.23	1	10/24/18 18:38	10/11/18	*
2,4'-DDE	ND U	0.35	0.28	1	10/24/18 18:38	10/11/18	
2,4'-DDT	ND U	0.35	0.34	1	10/24/18 18:38	10/11/18	
4,4'-DDD	**0.31 J**	0.35	0.13	1	10/24/18 18:38	10/11/18	
4,4'-DDE	**0.42**	0.35	0.25	1	10/24/18 18:38	10/11/18	*
4,4'-DDT	ND U	0.35	0.17	1	10/24/18 18:38	10/11/18	
Aldrin	ND U	0.35	0.28	1	10/24/18 18:38	10/11/18	
alpha-Chlordane	ND U	0.70	0.22	1	10/24/18 18:38	10/11/18	
cis-Nonachlor	ND U	0.35	0.35	1	10/24/18 18:38	10/11/18	
Dieldrin	ND U	0.70	0.28	1	10/24/18 18:38	10/11/18	*
gamma-BHC (Lindane)	ND U	0.35	0.11	1	10/24/18 18:38	10/11/18	
gamma-Chlordane	ND U	0.70	0.23	1	10/24/18 18:38	10/11/18	
Heptachlor	ND U	0.35	0.14	1	10/24/18 18:38	10/11/18	
Oxychlordane	ND U	0.70	0.46	1	10/24/18 18:38	10/11/18	
trans-Nonachlor	ND U	0.70	0.21	1	10/24/18 18:38	10/11/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'DDD-d4	89	5 - 120	10/24/18 18:38	
S_4,4'-DDT-d4	81	13 - 200	10/24/18 18:38	
S_Aldrin-13C12	49	10 - 143	10/24/18 18:38	
S_Endrin-13C12	79	20 - 157	10/24/18 18:38	
S_GBHCD6	49	5 - 124	10/24/18 18:38	
S_Heptachlor-13C10	64	10 - 177	10/24/18 18:38	
S_Heptachlrepox13C10	51	8 - 146	10/24/18 18:38	
S_Oxychlordane-13C10	52	5 - 144	10/24/18 18:38	

Analytical Report

Client:	AECOM	**Service Request:**	K1810002
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:	KQ1814562-04	**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	10/24/18 14:49	10/11/18	
2,4'-DDE	ND U	0.079	0.079	1	10/24/18 14:49	10/11/18	
2,4'-DDT	ND U	0.094	0.094	1	10/24/18 14:49	10/11/18	
4,4'-DDD	ND U	0.049	0.035	1	10/24/18 14:49	10/11/18	
4,4'-DDE	ND U	0.070	0.070	1	10/24/18 14:49	10/11/18	
4,4'-DDT	ND U	0.049	0.047	1	10/24/18 14:49	10/11/18	
Aldrin	ND U	0.079	0.079	1	10/24/18 14:49	10/11/18	
alpha-Chlordane	ND U	0.098	0.062	1	10/24/18 14:49	10/11/18	
cis-Nonachlor	ND U	0.097	0.097	1	10/24/18 14:49	10/11/18	
Dieldrin	ND U	0.20	0.077	1	10/24/18 14:49	10/11/18	
gamma-BHC (Lindane)	ND U	0.049	0.031	1	10/24/18 14:49	10/11/18	
gamma-Chlordane	ND U	0.098	0.064	1	10/24/18 14:49	10/11/18	
Heptachlor	ND U	0.049	0.039	1	10/24/18 14:49	10/11/18	
Oxychlordane	ND U	0.20	0.13	1	10/24/18 14:49	10/11/18	
trans-Nonachlor	ND U	0.098	0.058	1	10/24/18 14:49	10/11/18	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
S_4,4'DDD-d4	82	5 - 120	10/24/18 14:49	
S_4,4'-DDT-d4	95	13 - 200	10/24/18 14:49	
S_Aldrin-13C12	58	10 - 143	10/24/18 14:49	
S_Endrin-13C12	84	20 - 157	10/24/18 14:49	
S_GBHCD6	52	5 - 124	10/24/18 14:49	
S_Heptachlor-13C10	68	10 - 177	10/24/18 14:49	
S_Heptachlrepox13C10	56	8 - 146	10/24/18 14:49	
S_Oxychlordane-13C10	53	5 - 144	10/24/18 14:49	

Client: AECOM **Service Request:** K1810002

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	K1809944-011	74	88	52
PDI-SG-S266	K1810002-001	89	81	49
Method Blank	KQ1814562-04	82	95	58
Lab Control Sample	KQ1814562-03	80	82	64
Batch QC	KQ1814562-01	76	80	49
Batch QC	KQ1814562-02	58	73	46

Client: AECOM **Service Request:** K1810002

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	K1809944-011	78	55	74
PDI-SG-S266	K1810002-001	79	49	64
Method Blank	KQ1814562-04	84	52	68
Lab Control Sample	KQ1814562-03	86	55	67
Batch QC	KQ1814562-01	76	45	61
Batch QC	KQ1814562-02	67	41	59

Client: AECOM **Service Request:** K1810002

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	K1809944-011	57	53
PDI-SG-S266	K1810002-001	51	52
Method Blank	KQ1814562-04	56	53
Lab Control Sample	KQ1814562-03	63	57
Batch QC	KQ1814562-01	51	47
Batch QC	KQ1814562-02	46	42

Client: AECOM **Service Request:** K1810002
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 10/24/18 14:31

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

File ID: Y:\MS42\data\102418\102418F004.D **Lab Code:** KQ1815515-01
Instrument ID: K-MS-42 **Analysis Lot:** 612484
Analysis Method: ALS SOP **Signal ID:** 1

		Pyrene-d10	
		Area	**RT**
	Result ==>	43,748,877	9.779
	Upper Limit ==>	87,497,754	10.28
	Lower Limit ==>	21,874,439	9.28
Associated Analyses			
Method Blank	KQ1814562-04	43583945.63	9.773
Lab Control Sample	KQ1814562-03	39415851.84	9.764
Batch QCMS	KQ1814562-01	47130893.2	9.773
Batch QCDMS	KQ1814562-02	52926237.67	9.773
Batch QC	K1809944-011	46809996.74	9.780
PDI-SG-S266	K1810002-001	48104369.81	9.764

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	AECOM	**Service Request:**	K1810002
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	10/24/18
		Date Extracted:	10/11/18

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

Sample Name:	Batch QC	**Units:**	ug/Kg
Lab Code:	K1809944-011	**Basis:**	Dry
Analysis Method:	ALS SOP		
Prep Method:	EPA 3541		

		Matrix Spike KQ1814562-01			**Duplicate Matrix Spike** KQ1814562-02					
Analyte Name	**Sample Result**	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
2,4'-DDD	ND U	1.76	2.66	66	2.57	2.66	96	32-169	37	40
2,4'-DDE	0.14	1.75	2.66	61	2.55	2.66	91	43-155	37	40
2,4'-DDT	2.1	1.84	2.66	-11 *	2.53	2.66	15 *	55-161	31	40
4,4'-DDD	1.7	3.65	2.66	74	5.20	2.66	131	10-190	35	40
4,4'-DDE	2.2	3.57	2.66	50	4.35	2.66	79	35-162	20	40
4,4'-DDT	ND U	1.90	2.66	72	2.48	2.66	93	24-183	26	40
Aldrin	ND U	31.9 E	2.66	1200 *	12.1	2.66	455 *	52-151	90*	40
alpha-Chlordane	0.16 J	2.59	2.66	91	3.52	2.66	126	31-156	30	40
cis-Nonachlor	ND U	1.81	2.66	68	2.16	2.66	81	27-144	18	40
Dieldrin	ND U	1.41	2.66	53	1.70	2.66	64	28-150	19	40
gamma-BHC (Lindane)	ND U	1.72	2.66	65	2.33	2.66	88	64-135	30	40
gamma-Chlordane	0.24 J	2.49	2.66	85	3.11	2.66	108	31-158	22	40
Heptachlor	ND U	2.05	2.66	77	2.69	2.66	101	76-117	27	40
Oxychlordane	ND U	1.88	2.66	71	2.62	2.66	99	53-144	33	40
trans-Nonachlor	0.17 J	2.10	2.66	73	2.66	2.66	93	35-153	23	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:**	K1810002
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	10/24/18
Sample Matrix:	Sediment	**Date Extracted:**	10/11/18

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:	612484

Lab Control Sample
KQ1814562-03

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
2,4'-DDD	1.78	2.00	89	73-122
2,4'-DDE	1.69	2.00	84	54-145
2,4'-DDT	1.88	2.00	94	77-118
4,4'-DDD	2.04	2.00	102	74-117
4,4'-DDE	1.34	2.00	67	66-132
4,4'-DDT	2.02	2.00	101	78-116
Aldrin	1.94	2.00	97	74-122
alpha-Chlordane	2.40	2.00	120	74-130
cis-Nonachlor	2.04	2.00	102	69-134
Dieldrin	1.48	2.00	74	62-131
gamma-BHC (Lindane)	1.83	2.00	92	79-116
gamma-Chlordane	2.22	2.00	111	76-128
Heptachlor	1.97	2.00	99	81-114
Oxychlordane	1.96	2.00	98	59-141
trans-Nonachlor	2.09	2.00	105	76-124

Client:	AECOM	**Service Request:**	K1810002
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	10/24/18 14:49
Sample Matrix:	Sediment	**Date Extracted:**	10/11/18

Method Blank Summary
Organochlorine Pesticides by GC/MS/MS

Sample Name:	Method Blank	**Instrument ID:**	K-MS-42
Lab Code:	KQ1814562-04	**File ID:**	Y:\MS42\data\102418\102418F005.D
Analysis Method:	ALS SOP	**Analysis Lot:**	612484
Prep Method:	EPA 3541	**Extraction Lot:**	323933

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1814562-03	Y:\MS42\data\102418\102418F006.D	10/24/18 15:07
Batch QCMS	KQ1814562-01	Y:\MS42\data\102418\102418F007.D	10/24/18 15:24
Batch QCDMS	KQ1814562-02	Y:\MS42\data\102418\102418F008.D	10/24/18 15:42
Batch QC	K1809944-011	Y:\MS42\data\102418\102418F015.D	10/24/18 17:45
PDI-SG-S266	K1810002-001	Y:\MS42\data\102418\102418F018.D	10/24/18 18:38

Client:	AECOM	**Service Request:**	K1810002
Project:	Portland Harbor Pre-Remedial Design Investigation/60566335	**Date Analyzed:**	10/24/18 15:07
Sample Matrix:	Sediment	**Date Extracted:**	10/11/18

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

Sample Name:	Lab Control Sample	**Instrument ID:**	K-MS-42
Lab Code:	KQ1814562-03	**File ID:**	Y:\MS42\data\102418\102418F006.D
Analysis Method:	ALS SOP	**Analysis Lot:**	612484
Prep Method:	EPA 3541	**Extraction Lot:**	323933

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1814562-04	Y:\MS42\data\102418\102418F005.D	10/24/18 14:49
Batch QCMS	KQ1814562-01	Y:\MS42\data\102418\102418F007.D	10/24/18 15:24
Batch QCDMS	KQ1814562-02	Y:\MS42\data\102418\102418F008.D	10/24/18 15:42
Batch QC	K1809944-011	Y:\MS42\data\102418\102418F015.D	10/24/18 17:45
PDI-SG-S266	K1810002-001	Y:\MS42\data\102418\102418F018.D	10/24/18 18:38

Client: AECOM **Service Request:**K1810002
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:**10/24/18 14:31

Tune Summary
Organochlorine Pesticides by GC/MS/MS

File ID: Y:\MS42\data\102418\102418F004.D **Analytical Method:** ALS SOP
Instrument ID: K-MS-42 **Analysis Lot:** 612484

Sample Name	Lab Code	File ID:	Date Analyzed:	Q
Continuing Calibration Verification	KQ1815515-01	Y:\MS42\data\102418\102418F004.D	10/24/18 14:31	
Method Blank	KQ1814562-04	Y:\MS42\data\102418\102418F005.D	10/24/18 14:49	
Lab Control Sample	KQ1814562-03	Y:\MS42\data\102418\102418F006.D	10/24/18 15:07	
Batch QC	KQ1814562-01	Y:\MS42\data\102418\102418F007.D	10/24/18 15:24	
Batch QC	KQ1814562-02	Y:\MS42\data\102418\102418F008.D	10/24/18 15:42	
Batch QC	K1809944-011	Y:\MS42\data\102418\102418F015.D	10/24/18 17:45	
PDI-SG-S266	K1810002-001	Y:\MS42\data\102418\102418F018.D	10/24/18 18:38	

Client: AECOM **Service Request:** K1810002
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 10/16/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800476 **Signal ID:** 1
Instrument ID: K-MS-42

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC1800476-01	OC PEST ICAL 0.5ng/mL SVM59-48A	Y:\MS42\data\101618\101618F008.D	10/16/2018 16:19
02	KC1800476-02	OC PEST ICAL 1ng/mL SVM59-48B	Y:\MS42\data\101618\101618F009.D	10/16/2018 16:36
03	KC1800476-03	OC PEST ICAL 2ng/mL SVM59-48C	Y:\MS42\data\101618\101618F010.D	10/16/2018 16:54
04	KC1800476-04	OC PEST ICAL 5ng/mL SVM59-48D	Y:\MS42\data\101618\101618F011.D	10/16/2018 17:12
05	KC1800476-05	OC PEST ICAL 10ng/mL SVM59-48E	Y:\MS42\data\101618\101618F012.D	10/16/2018 17:29
06	KC1800476-06	OC PEST ICAL 20ng/mL SVM59-48F	Y:\MS42\data\101618\101618F013.D	10/16/2018 17:47
07	KC1800476-07	OC PEST ICAL 40ng/mL SVM59-48G	Y:\MS42\data\101618\101618F014.D	10/16/2018 18:04
08	KC1800476-08	OC PEST ICAL 60ng/mL SVM59-48H	Y:\MS42\data\101618\101618F015.D	10/16/2018 18:22
09	KC1800476-09	OC PEST ICAL 80ng/mL SVM59-48I	Y:\MS42\data\101618\101618F016.D	10/16/2018 18:40
10	KC1800476-10	OC PEST ICAL 100ng/mL SVM59-48J	Y:\MS42\data\101618\101618F017.D	10/16/2018 18:57

Analyte

2,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.408	02	1	1.486	03	2	1.393	04	5	1.148
05	10	0.9229	06	20	1.044	07	40	1.008	08	60	1.288
09	80	1.128	10	100	1.126						

2,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.036	02	1	0.9891	03	2	1.087	04	5	0.8842
05	10	0.9317	06	20	1.029	07	40	1.022	08	60	0.9559
09	80	0.8655	10	100	0.8687						

2,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.545	02	1	2.181	03	2	2.251	04	5	2.206
05	10	2.233	06	20	2.283	07	40	2.252	08	60	2.32
09	80	2.499	10	100	2.355						

4,4'-DDD

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.682	02	1	1.556	03	2	1.504	04	5	1.466
05	10	1.402	06	20	1.59	07	40	1.477	08	60	1.578
09	80	1.429	10	100	1.446						

4,4'-DDE

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.306	02	1	1.162	03	2	1.228	04	5	0.9593
05	10	0.8031	06	20	0.8555	07	40	0.8511	08	60	1.046
09	80	0.8879	10	100	0.8677						

Client: AECOM **Service Request:** K1810002
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 10/16/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800476 **Signal ID:** 1
Instrument ID: K-MS-42

Analyte

4,4'-DDT

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.224	02	1	1.125	03	2	1.124	04	5	1.115
05	10	1.115	06	20	1.1	07	40	1.031	08	60	1.067
09	80	1.137	10	100	1.159						

Aldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	4.09	02	1	2.409	03	2	1.455	04	5	0.8914
05	10	0.7729	06	20	0.7424	07	40	0.6798	08	60	0.6289
09	80	0.6249	10	100	0.6366						

Dieldrin

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.538	02	1	1.757	03	2	1.696	04	5	1.476
05	10	1.373	06	20	1.393	07	40	1.59	08	60	1.852
09	80	1.78	10	100	1.862						

Heptachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.245	02	1	1.106	03	2	1.202	04	5	1.097
05	10	1.118	06	20	1.088	07	40	1.08	08	60	1.105
09	80	1.057	10	100	0.976						

Oxychlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.981	02	1	2.837	03	2	2.897	04	5	2.683
05	10	2.602	06	20	2.777	07	40	2.569	08	60	2.612
09	80	2.614	10	100	2.42						

S_4,4'-DDT-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	1.593	02	5	1.66	03	5	1.714	04	5	1.676
05	5	1.634	06	5	1.658	07	5	1.735	08	5	1.775
09	5	1.807	10	5	1.803						

S_4,4'DDD-d4

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5	3.202	02	5	3.227	03	5	3.695	04	5	3.237
05	5	3.262	06	5	2.832	07	5	3.267	08	5	3.482
09	5	3.996	10	5	4.023						

S_Aldrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.5276	02	20	0.5221	03	20	0.6648	04	20	0.4651
05	20	0.508	06	20	0.476	07	20	0.5362	08	20	0.5574
09	20	0.516	10	20	0.5198						

Client: AECOM **Service Request:** K1810002
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 10/16/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800476 **Signal ID:** 1
Instrument ID: K-MS-42

Analyte

S_Endrin-13C12

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.173	02	20	0.1519	03	20	0.1811	04	20	0.159
05	20	0.1529	06	20	0.1477	07	20	0.1536	08	20	0.1655
09	20	0.1708	10	20	0.1678						

S_GBHCD6

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	1.631	02	20	1.271	03	20	1.716	04	20	1.386
05	20	1.472	06	20	1.526	07	20	1.731	08	20	1.479
09	20	1.505	10	20	1.464						

S_Heptachlor-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.5789	02	20	0.5263	03	20	0.5551	04	20	0.5908
05	20	0.6355	06	20	0.6391	07	20	0.6795	08	20	0.6186
09	20	0.6452	10	20	0.626						

S_Heptachlrepox13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.1657	02	20	0.1641	03	20	0.19	04	20	0.1504
05	20	0.1705	06	20	0.1634	07	20	0.1928	08	20	0.1914
09	20	0.1781	10	20	0.1924						

S_Oxychlordane-13C10

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	20	0.3767	02	20	0.3563	03	20	0.4321	04	20	0.3441
05	20	0.3929	06	20	0.3651	07	20	0.4343	08	20	0.4107
09	20	0.3915	10	20	0.4249						

alpha-Chlordane

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.06	02	1	1.815	03	2	1.847	04	5	1.785
05	10	1.787	06	20	1.892	07	40	1.855	08	60	1.902
09	80	1.89	10	100	1.727						

cis-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	0.6709	02	1	0.6127	03	2	0.569	04	5	0.5738
05	10	0.5618	06	20	0.639	07	40	0.5998	08	60	0.6296
09	80	0.6394	10	100	0.5818						

gamma-BHC (Lindane)

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	2.407	02	1	2.512	03	2	2.178	04	5	2.121
05	10	2.284	06	20	2.246	07	40	2.186	08	60	2.305
09	80	2.186	10	100	2.204						

Client: AECOM **Service Request:** K1810002
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 10/16/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800476 **Signal ID:** 1
Instrument ID: K-MS-42

Analyte

trans-Nonachlor

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.5	1.792	02	1	1.567	03	2	1.509	04	5	1.482
05	10	1.488	06	20	1.618	07	40	1.57	08	60	1.521
09	80	1.509	10	100	1.449						

Client: AECOM **Service Request:** K1810002
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 10/16/2018

Initial Calibration Summary
Organochlorine Pesticides by GC/MS/MS

Calibration ID: KC1800476 **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	15.8	≤20	1.195	0.01
2,4'-DDE	TRG	Average RF	% RSD	8.1	≤20	0.9669	0.01
2,4'-DDT	TRG	Average RF	% RSD	5.3	≤20	2.312	0.01
4,4'-DDD	TRG	Average RF	% RSD	5.7	≤20	1.513	0.01
4,4'-DDE	TRG	Average RF	% RSD	17.9	≤20	0.9967	0.01
4,4'-DDT	TRG	Average RF	% RSD	4.6	≤20	1.12	0.01
Aldrin	TRG	Quadratic	COD	0.9991	≥	1.293	0.01
Dieldrin	TRG	Average RF	% RSD	11.2	≤20	1.632	0.01
Heptachlor	TRG	Average RF	% RSD	6.7	≤20	1.107	0.01
Oxychlordane	TRG	Average RF	% RSD	6.3	≤20	2.699	0.01
S_4,4'-DDT-d4	SURR	Average RF	% RSD	4.3	≤	1.705	0.01
S_4,4'DDD-d4	SURR	Average RF	% RSD	11.1	≤	3.422	0.01
S_Aldrin-13C12	SURR	Average RF	% RSD	10.3	≤	0.5293	0.01
S_Endrin-13C12	SURR	Average RF	% RSD	6.7	≤	0.1623	0.01
S_GBHCD6	SURR	Average RF	% RSD	9.4	≤	1.518	0.01
S_Heptachlor-13C10	SURR	Average RF	% RSD	7.6	≤	0.6095	0.01
S_Heptachlrepox13C10	SURR	Average RF	% RSD	8.6	≤	0.1759	0.01
S_Oxychlordane-13C10	SURR	Average RF	% RSD	8.2	≤	0.3929	0.01
alpha-Chlordane	TRG	Average RF	% RSD	4.9	≤20	1.856	0.01
cis-Nonachlor	TRG	Average RF	% RSD	6.0	≤20	0.6078	0.01
gamma-BHC (Lindane)	TRG	Average RF	% RSD	5.3	≤20	2.263	0.01
trans-Nonachlor	TRG	Average RF	% RSD	6.3	≤20	1.551	0.01

Client: AECOM **Service Request:** K1810002
Project: Portland Harbor Pre-Remedial Design Investigation **Calibration Date:** 10/16/2018

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

Calibration ID: KC1800476 **Signal ID:** 1
Instrument ID: K-MS-42

#	Lab Code	Sample Name	File Location	Acquisition Date
11	KC1800476-11	OC PEST ICV 20ng/mL SVM59-48K	Y:\MS42\data\101618\101618F018.D	10/16/2018 19:15

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
2,4'-DDD	20.0	22.3	1.195E0	1.335E0	11.71	±25	Average RF
2,4'-DDE	20.0	21.2	9.669E-1	1.027E0	6.17	±25	Average RF
2,4'-DDT	20.0	19.2	2.312E0	2.214E0	-4.248	±25	Average RF
4,4'-DDD	20.0	20.2	1.513E0	1.528E0	1.03	±25	Average RF
4,4'-DDE	20.0	21.3	9.967E-1	1.064E0	6.75	±25	Average RF
4,4'-DDT	20.0	19.9	1.12E0	1.112E0	-0.645	±25	Average RF
Aldrin	20.0	20.8	1.293E0	7.308E-1	4.06	±25	Quadratic
alpha-Chlordane	20.0	20.4	1.856E0	1.892E0	1.96	±25	Average RF
cis-Nonachlor	20.0	18.0	6.078E-1	5.485E-1	-9.754	±25	Average RF
Dieldrin	20.0	21.9	1.632E0	1.783E0	9.28	±25	Average RF
gamma-BHC (Lindane)	20.0	19.4	2.263E0	2.195E0	-3.006	±25	Average RF
Heptachlor	20.0	19.9	1.107E0	1.104E0	-0.320	±25	Average RF
Oxychlordane	20.0	21.0	2.699E0	2.836E0	5.06	±25	Average RF
trans-Nonachlor	20.0	19.3	1.551E0	1.497E0	-3.436	±25	Average RF

Analyte Name	Expected	Result	Average RF	SSV RF	Rec.	Criteria	Curve Fit
S_4,4'DDD-d4	5.00	5.54	3.422E0	3.789E0	111	50-200	Average RF
S_4,4'-DDT-d4	5.00	4.85	1.705E0	1.653E0	97.0	50-200	Average RF
S_Aldrin-13C12	20.0	23.9	5.293E-1	6.331E-1	120	50-200	Average RF
S_Endrin-13C12	20.0	21.4	1.623E-1	1.734E-1	107	50-200	Average RF
S_GBHCD6	20.0	23.2	1.518E0	1.763E0	116	50-200	Average RF
S_Heptachlor-13C10	20.0	19.0	6.095E-1	5.778E-1	95.0	50-200	Average RF
S_Heptachlrepox13C10	20.0	25.0	1.759E-1	2.198E-1	125	50-200	Average RF
S_Oxychlordane-13C10	20.0	23.0	3.929E-1	4.515E-1	115	50-200	Average RF

Client: AECOM **Service Request:** K1810002
Project: Portland Harbor Pre-Remedial Design Investigation/60566335 **Date Analyzed:** 10/24/18 14:31

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

Analysis Method: ALS SOP **Calibration Date:** 10/16/2018
File ID: Y:\MS42\data\102418\102418F004.D **Calibration ID:** KC1800476
Signal ID: 1 **Analysis Lot:** 612484
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
2,4'-DDD	20.0	13.9	1.1952	0.8317	-30.4*	NA	±25	Average RF
2,4'-DDE	20.0	16.3	0.9669	0.7904	-18.3	NA	±25	Average RF
2,4'-DDT	20.0	15.7	2.3125	1.8116	-21.7	NA	±25	Average RF
4,4'-DDD	20.0	21.1	1.5128	1.5968	5.6	NA	±25	Average RF
4,4'-DDE	20.0	12.4	0.9967	0.6194	-37.9*	NA	±25	Average RF
4,4'-DDT	20.0	18.5	1.1197	1.0383	-7.3	NA	±25	Average RF
Aldrin	20.0	19.2	1.2931	0.6808	NA	-4.1	±25	Quadratic
alpha-Chlordane	20.0	25.1	1.856	2.3257	25.3	NA	±25	Average RF
cis-Nonachlor	20.0	19.8	0.6078	0.6025	-0.9	NA	±25	Average RF
Dieldrin	20.0	14.3	1.6318	1.1473	-29.7*	NA	±25	Average RF
gamma-BHC (Lindane)	20.0	19.1	2.263	2.1627	-4.4	NA	±25	Average RF
gamma-Chlordane	20.0	20.5	NA	NA	NA	NA	±25	
Heptachlor	20.0	21.3	1.1074	1.1781	6.4	NA	±25	Average RF
Oxychlordane	20.0	19.9	2.6993	2.6905	-0.3	NA	±25	Average RF
trans-Nonachlor	20.0	18.9	1.5507	1.4634	-5.6	NA	±25	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
S_4,4'DDD-d4	5.00	5.22	3.4222	3.5741	104	NA	50-200	Average RF
S_4,4'-DDT-d4	5.00	6.46	1.7055	2.2031	129	NA	50-200	Average RF
S_Aldrin-13C12	20.0	16.2	0.5293	0.428	80.9	NA	50-200	Average RF
S_Endrin-13C12	20.0	22.8	0.1623	0.185	114	NA	50-200	Average RF
S_GBHCD6	20.0	15.3	1.518	1.1591	76.4	NA	50-200	Average RF
S_Heptachlor-13C10	20.0	20.4	0.6095	0.6214	102	NA	50-200	Average RF
S_Heptachlrepox13C10	20.0	15.8	0.1759	0.1393	79.2	NA	50-200	Average RF
S_Oxychlordane-13C10	20.0	15.9	0.3929	0.3129	79.6	NA	50-200	Average RF

Client: AECOM **Service Request:**K1810002
Project: Portland Harbor Pre-Remedial Design Investigation/60566335

Analysis Run Log
Organochlorine Pesticides by GC/MS/MS

Analysis Method: ALS SOP **Analysis Lot:**612484
Instrument ID:K-MS-42

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
Y:\MS42\data\102418\102418F004.D	Continuing Calibration Verification	KQ1815515-01	10/24/2018	14:31	
Y:\MS42\data\102418\102418F005.D	Method Blank	KQ1814562-04	10/24/2018	14:49	
Y:\MS42\data\102418\102418F006.D	Lab Control Sample	KQ1814562-03	10/24/2018	15:07	
Y:\MS42\data\102418\102418F007.D	Batch QC MS	KQ1814562-01	10/24/2018	15:24	
Y:\MS42\data\102418\102418F008.D	Batch QC DMS	KQ1814562-02	10/24/2018	15:42	
Y:\MS42\data\102418\102418F010.D	ZZZZZZZ	ZZZZZZZ	10/24/2018	16:17	
Y:\MS42\data\102418\102418F011.D	ZZZZZZZ	ZZZZZZZ	10/24/2018	16:35	
Y:\MS42\data\102418\102418F012.D	ZZZZZZZ	ZZZZZZZ	10/24/2018	16:52	
Y:\MS42\data\102418\102418F013.D	ZZZZZZZ	ZZZZZZZ	10/24/2018	17:10	
Y:\MS42\data\102418\102418F014.D	ZZZZZZZ	ZZZZZZZ	10/24/2018	17:27	
Y:\MS42\data\102418\102418F015.D	Batch QC	K1809944-011	10/24/2018	17:45	
Y:\MS42\data\102418\102418F016.D	ZZZZZZZ	ZZZZZZZ	10/24/2018	18:03	
Y:\MS42\data\102418\102418F017.D	ZZZZZZZ	ZZZZZZZ	10/24/2018	18:20	
Y:\MS42\data\102418\102418F018.D	PDI-SG-S266	K1810002-001	10/24/2018	18:38	

Client: AECOM **Service Request:** K1810002
Project: Portland Harbor Pre-Remedial Design Investigation/60566335
Sample Matrix: Sediment

Organochlorine Pesticides by GC/MS/MS

Prep Method: EPA 3541 **Extraction Lot:** 323933
Analytical Method: ALS SOP **Extraction Date:** 10/11/18 17:23

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
Batch QC	K1809944-011	NA	NA	20.224 g	1 mL	37.1
PDI-SG-S266	K1810002-001	7/13/18	7/16/18	5.089 g	1 mL	55.9
Matrix Spike	KQ1814562-01MS	NA	NA	20.278 g	1 mL	37.1
Duplicate Matrix Spike	KQ1814562-02DMS	NA	NA	20.258 g	1 mL	37.1
Lab Control Sample	KQ1814562-03LCS	NA	NA	10 g	1 mL	
Method Blank	KQ1814562-04MB	NA	NA	20.3690 g	1 mL	