

# APPENDIX D. LABORATORY REPORTS AND DATA VALIDATION REPORT

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# ALS Environmental-Kelso



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Kelso, WA 98626  
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[www.alsglobal.com](http://www.alsglobal.com)

April 18, 2018

**Analytical Report for Service Request No: K1802285**  
**Revised Service Request No: K1802285.01**

Amara Vandervort  
Windward Environmental, LLC  
200 West Mercer St., Suite 401  
Seattle, WA 98119

**RE: Duwamish AOC3 Baseline Surface Sediment / Task 4**

Dear Amara,

Enclosed is the revised report for the sample(s) submitted to our laboratory March 14, 2018  
For your reference, these analyses have been assigned our service request number **K1802285**.

This report has been revised to include the missing data from the subcontract  
laboratory.

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](http://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 3283. You may also contact me via  
email at [Jeff.Grindstaff@alsglobal.com](mailto:Jeff.Grindstaff@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Jeff Grindstaff  
Laboratory Director



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ALS Group USA, Corp  
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## Table of Contents

Acronyms

Qualifiers

State Certifications, Accreditations, And Licenses

Case Narrative

Chain of Custody

Subcontract Lab Results

## 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**

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



## Case Narrative

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)



**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Received:** 03/14/2018

### 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:

Forty five sediment samples were received for analysis at ALS Environmental on 03/14/2018. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

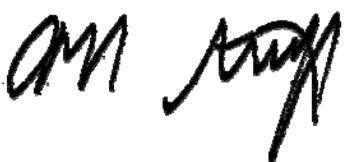
#### Subcontracted Analytical Parameters:

Black Carbon

Black Carbon by method GBC Cyc54 881-560 12 01 was performed at ALS Laboratory in Tucson, Arizona. The data for this analysis is included in the corresponding section of this report.

Moisture

Moisture by method D3173 was performed at ALS Laboratory in Tucson, Arizona. The data for this analysis is included in the corresponding section of this report.



Approved by \_\_\_\_\_

Date 04/06/2018



# Chain of Custody

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)

# CHAIN-OF-CUSTODY/TEST REQUEST FORM

*K1802285*

Project/Client Name: AOC3 Sediment  
 Project Number: Task 4  
 Contact Name: Amara Vandervort  
 Sampled By: AV/KM

Ship to: ALS Environmental-Kelso No. AOC3 2017-0054  
 Attn: Jeff Grindstaff Shipping Date: 03/13/18  
 Shipper: Courier Airbill Number: \_\_\_\_\_  
 Form filled out by: A. Vandervort Turnaround requested: Standard

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)						Comments / Instructions [Composite/Bag ID]
					Black Carbon						
2/26/18	13:49	LDW18-SS-Comp01	1	sediment	X						
2/28/18	13:02	LDW18-SS-Comp02	1	sediment	X						
3/6/18	12:49	LDW18-SS-Comp03	1	sediment	X						
3/6/18	11:46	LDW18-SS-Comp04	1	sediment	X						
2/26/18	14:20	LDW18-SS-Comp05	1	sediment	X						
3/5/18	13:45	LDW18-SS-Comp06	1	sediment	X						
3/5/18	14:02	LDW18-SS-Comp07	1	sediment	X						
3/6/18	12:28	LDW18-SS-Comp08	1	sediment	X						
3/6/18	1436	LDW18-SS-Comp09	1	sediment	X						
3/5/18	14:19	LDW18-SS-Comp10	1	sediment	X						
3/6/18	14:57	LDW18-SS-Comp11	1	sediment	X						
3/6/18	15:19	LDW18-SS-Comp12	1	sediment	X						

**Total Number of Containers** 12 Purchase Order / Statement of Work # PO 2017-0054

1) Released by: Print name: <u>Brandon Fisk</u> Signature: <u>[Signature]</u> Company: <u>ARI</u> Date/Time: <u>3/13/18 1220</u>	1) Rec'd by: Print name: <u>[Signature]</u> Company: <u>ARI</u> Date/Time: <u>3/14/18 1030</u>	2) Released by: Print name: _____ Signature: _____ Company: _____ Date/Time: _____	2) Rec'd by: Print name: _____ Signature: _____ Company: _____ Date/Time: _____
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\* Distribution: White copies accompany shipment; yellow retained by consignor.



200 West Mercer Street  
 Suite 401  
 Seattle, WA 98119  
 Tel: (206) 378-1364  
 Fax: (206) 217-9343

**To be completed by Laboratory upon sample receipt:**

Date of receipt::	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

# CHAIN-OF-CUSTODY/TEST REQUEST FORM

K1802285

Project/Client Name: **AOC3 Sediment**  
 Project Number: **Task 4**  
 Contact Name: **Amara Vandervort**  
 Sampled By: **AV/KM**

Ship to: **ALS Environmental-Kelso** No. AOC3 2017-0054  
 Attn: **Jeff Grindstaff** Shipping Date: **03/13/18**  
 Shipper: **Courier** Airbill Number: \_\_\_\_\_  
 Form filled out by: **A. Vandervort** Turnaround requested: **Standard**

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)						Comments / Instructions [Composite/Bag ID]
					Black Carbon						
3/5/18	15:22	LDW18-SS-Comp13	1	sediment	X						
3/6/18	10:40	LDW18-SS-Comp14	1	sediment	X						
3/6/18	11:03	LDW18-SS-Comp15	1	sediment	X						
2/26/18	14:45	LDW18-SS-Comp16	1	sediment	X						
3/5/18	14:35	LDW18-SS-Comp17	1	sediment	X						
2/28/18	13:30	LDW18-SS-Comp18	1	sediment	X						
3/5/18	14:52	LDW18-SS-Comp19	1	sediment	X						
3/9/18	12:12	LDW18-SS-Comp20	1	sediment	X						
3/6/18	11:28	LDW18-SS-Comp21	1	sediment	X						
2/28/18	13:55	LDW18-SS-Comp22	1	sediment	X						
2/28/18	14:16	LDW18-SS-Comp23	1	sediment	X						
3/5/18	15:37	LDW18-SS-Comp24	1	sediment	X						

**Total Number of Containers** 12 Purchase Order / Statement of Work # PO 2017-0054

1) Released by: Print name: <i>Brandon Fisk</i> Signature: <i>[Signature]</i> Company: <i>ARI</i> Date/Time: <i>3/13/18 1220</i>	1) Rec'd by: Print name: <i>[Signature]</i> Company: <i>AV</i> Date/Time: <i>3/14/18 1030</i>	2) Released by: Print name: _____ Signature: _____ Company: _____ Date/Time: _____	2) Rec'd by: Print name: _____ Signature: _____ Company: _____ Date/Time: _____
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\* Distribution: White copies accompany shipment; yellow retained by consignor.



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 Fax: (206) 217-9343

**To be completed by Laboratory upon sample receipt:**

Date of receipt::	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Collected by:	Received by:

# CHAIN-OF-CUSTODY/TEST REQUEST FORM

*K1802289*

Project/Client Name: AOC3 Sediment  
 Project Number: Task 4  
 Contact Name: Amara Vandervort  
 Sampled By: TD, KM, NM, JR

Ship to: ALS Environmental-Kelso No. AOC3 2017-0054  
 Attn: Jeff Grindstaff Shipping Date: 03/13/18  
 Shipper: Courier Airbill Number: \_\_\_\_\_  
 Form filled out by: A. Vandervort Turnaround requested: Standard

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)						Comments / Instructions [Composite/Bag ID]
					Black Carbon						
2/23/18	15:15	LDW18-SS-169	1	sediment	X						
3/1/18	13:10	LDW18-SS-170	1	sediment	X						
3/1/18	10:48	LDW18-SS-171	1	sediment	X						
3/1/18	12:22	LDW18-SS-172	1	sediment	X						
3/1/18	10:28	LDW18-SS-173	1	sediment	X						
3/1/18	13:34	LDW18-SS-174	1	sediment	X						
3/1/18	9:51	LDW18-SS-175	1	sediment	X						
3/1/18	9:25	LDW18-SS-176	1	sediment	X						
3/2/18	7:49	LDW18-SS-177	1	sediment	X						
3/1/18	8:39	LDW18-SS-178	1	sediment	X						
3/1/18	8:39	LDW18-SS-178-FD	1	sediment	X						
2/23/18	11:48	LDW18-SS-179	1	sediment	X						

**Total Number of Containers**

12

Purchase Order / Statement of Work # PO 2017-0054

1) Released by: Print name: <i>Brendon Fisk</i> Signature: <i>[Signature]</i> Company: <i>ARI</i> Date/Time: <i>3/13/18 1220</i>	1) Rec'd by: Print name: <i>[Signature]</i> Signature: <i>[Signature]</i> Company: <i>ARI</i> Date/Time: <i>3/14/18 1030</i>	2) Released by: Print name: _____ Signature: _____ Company: _____ Date/Time: _____	2) Rec'd by: Print name: _____ Signature: _____ Company: _____ Date/Time: _____
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 Seattle, WA 98119  
 Tel: (206) 378-1364  
 Fax: (206) 217-9343

**To be completed by Laboratory upon sample receipt:**

Date of receipt: _____	Laboratory W.O. #: _____
Condition upon receipt: _____	Time of receipt: _____
Cooler temperature: _____	Received by: _____

# CHAIN-OF-CUSTODY/TEST REQUEST FORM

*X1802285*

Project/Client Name: AOC3 Sediment Ship to: ALS Environmental-Kelso No. AOC3 2017-0054  
 Project Number: Task 4 Attn: Jeff Grindstaff Shipping Date: 03/13/18  
 Contact Name: Amara Vandervort Shipper: Courier Airbill Number: \_\_\_\_\_  
 Sampled By: TD, KM, NM, JR Form filled out by: A. Vandervort Turnaround requested: Standard

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)						Comments / Instructions [Composite/Bag ID]
					Black Carbon						
2/28/18	14:10	LDW18-SS-180	1	sediment	X						
2/28/18	14:32	LDW18-SS-181	1	sediment	X						
3/1/18	8:03	LDW18-SS-182	1	sediment	X						
3/2/18	12:24	LDW18-SS-183	1	sediment	X						
2/23/18	13:26	LDW18-SS-184	1	sediment	X						
2/28/18	12:27	LDW18-SS-185	1	sediment	X						
2/28/18	12:09	LDW18-SS-186	1	sediment	X						
3/2/18	11:31	LDW18-SS-187	1	sediment	X						
2/28/18	9:15	LDW18-SS-188	1	sediment	X						

**Total Number of Containers** 10 Purchase Order / Statement of Work # PO 2017-0054

1) Released by: Print name: <u>Brandon Fick</u> Signature: <u>[Signature]</u> Company: <u>ARI</u> Date/Time: <u>3/13/18 1220</u>	1) Rec'd by: [Signature] Company: <u>[Signature]</u> Date/Time: <u>3/14/18 1030</u>	2) Released by: Print name: _____ Signature: _____ Company: _____ Date/Time: _____	2) Rec'd by: _____ Company: _____ Date/Time: _____
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 Tel: (206) 378-1364  
 Fax: (206) 217-9343

**To be completed by Laboratory upon sample receipt:**

Date of receipt::	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:



PC Grindstad

### Cooler Receipt and Preservation Form

Client Windward Env. Service Request K18 02285  
 Received: 3/14/18 Opened: 3/14/18 By: BR Unloaded: 3/14/18 By: BR

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 (Y) 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	Tracking Number	NA	Filed
<u>-0.3</u>	<u>-0.2</u>	<u>—</u>	<u>—</u>	<u>+0.1</u>	<u>351</u>	<u>NA</u>	<u>780034611351</u>	<u>NA</u>	

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 CI2/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



# Subcontract Lab Results

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
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April 18, 2018

Service Request No:K1802285

Amara Vandervort  
Windward Environmental, LLC  
200 West Mercer St., Suite 401  
Seattle, WA 98119

**Laboratory Results for: Duwamish AOC3 Baseline Surface Sediment**

Dear Amara,

Enclosed are the results of the sample(s) submitted to our laboratory March 14, 2018  
For your reference, these analyses have been assigned our service request number **K1802285**.

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](http://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 3283. You may also contact me via email at [Jeff.Grindstaff@alsglobal.com](mailto:Jeff.Grindstaff@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Jeff Grindstaff  
Laboratory Director

ADDRESS 3860 S. Palo Verde Road, Suite 302, Tucson, AZ 85714  
PHONE +1 520 573 1061 | FAX +1 520 573 1063  
ALS Group USA, Corp.  
dba ALS Environmental

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4

**Service Request:**K1802285

**SAMPLE CROSS-REFERENCE**

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K1802285-001	LDW18-SS-Comp01	2/26/2018	1349
K1802285-002	LDW18-SS-Comp02	2/28/2018	1302
K1802285-003	LDW18-SS-Comp03	3/6/2018	1249
K1802285-004	LDW18-SS-Comp04	3/6/2018	1146
K1802285-005	LDW18-SS-Comp05	2/26/2018	1420
K1802285-006	LDW18-SS-Comp06	3/5/2018	1345
K1802285-007	LDW18-SS-Comp07	3/5/2018	1402
K1802285-008	LDW18-SS-Comp08	3/6/2018	1228
K1802285-009	LDW18-SS-Comp09	3/6/2018	1436
K1802285-010	LDW18-SS-Comp10	3/5/2018	1419
K1802285-011	LDW18-SS-Comp11	3/6/2018	1457
K1802285-012	LDW18-SS-Comp12	3/6/2018	1519
K1802285-013	LDW18-SS-Comp13	3/5/2018	1522
K1802285-014	LDW18-SS-Comp14	3/6/2018	1040
K1802285-015	LDW18-SS-Comp15	3/6/2018	1103
K1802285-016	LDW18-SS-Comp16	2/26/2018	1445
K1802285-017	LDW18-SS-Comp17	3/5/2018	1435
K1802285-018	LDW18-SS-Comp18	2/28/2018	1330
K1802285-019	LDW18-SS-Comp19	3/5/2018	1452
K1802285-020	LDW18-SS-Comp20	3/9/2018	1212
K1802285-021	LDW18-SS-Comp21	3/6/2018	1128
K1802285-022	LDW18-SS-Comp22	2/28/2018	1355
K1802285-023	LDW18-SS-Comp23	2/28/2018	1416
K1802285-024	LDW18-SS-Comp24	3/5/2018	1537
K1802285-025	LDW18-SS-169	2/23/2018	1515
K1802285-026	LDW18-SS-170	3/1/2018	1310
K1802285-027	LDW18-SS-171	3/1/2018	1048
K1802285-028	LDW18-SS-172	3/1/2018	1222
K1802285-029	LDW18-SS-173	3/1/2018	1028
K1802285-030	LDW18-SS-174	3/1/2018	1334
K1802285-031	LDW18-SS-175	3/1/2018	0951
K1802285-032	LDW18-SS-176	3/1/2018	0925
K1802285-033	LDW18-SS-177	3/2/2018	0749
K1802285-034	LDW18-SS-178	3/1/2018	0839
K1802285-035	LDW18-SS-178-FD	3/1/2018	0839
K1802285-036	LDW18-SS-179	2/23/2018	1148
K1802285-037	LDW18-SS-180	2/28/2018	1410
K1802285-038	LDW18-SS-181	2/28/2018	1432
K1802285-039	LDW18-SS-182	3/1/2018	0803
K1802285-040	LDW18-SS-183	3/2/2018	1224
K1802285-041	LDW18-SS-184	2/23/2018	1326
K1802285-042	LDW18-SS-185	2/28/2018	1227

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4

**Service Request:**K1802285

**SAMPLE CROSS-REFERENCE**

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K1802285-043	LDW18-SS-186	2/28/2018	1209
K1802285-044	LDW18-SS-187	3/2/2018	1131
K1802285-045	LDW18-SS-188	2/28/2018	0915

## Data Qualifiers

### Lab Standard

- + Possible Tedlar bag artifact.
- A TIC is a suspected aldol-condensation product
- B Analyte found in the associated method blank as well as in the sample.
- BC Reported results are not blank corrected.
- BH The back section of the tube yielded higher results than the front.
- BT Results indicated possible breakthrough; back section  $\geq 10\%$  front section.
- C Result identification confirmed.
- D Compound identified in an analysis at a secondary dilution factor
- D Spike was diluted out
- DE Reported results are corrected for desorption efficiency.
- E Estimated value. Concentration above calibration range
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- H1 Sample analysis performed past holding time. See case narrative.
- H2 Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
- H3 Sample was received and analyzed past holding time.
- H4 Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
- I Internal standard not within the specified limits. See case narrative.
- J Estimated Value. Concentration found below MRL.
- K A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
- K Analyte was detected above the method reporting limit prior to normalization.
- L1 Laboratory control sample recovery outside the specified limits; results may be biased high.
- L2 Laboratory control sample recovery outside the specified limits; results may be biased low.
- L3 Laboratory control sample recovery outside the specified limits.
- M Matrix interference; results may be biased high.
- M The duplicate injection precision not met.
- M1 Matrix interference due to coelution with a non-target compound; results may be biased high.
- N Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- P Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
- P Pesticide/Aroclor target analyte  $> 40\%$  difference for detected concentrations between GC columns
- Q Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
- R Duplicate Precision not met.
- R1 Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
- S Surrogate recovery not within specified limits.

## Data Qualifiers

### Lab Standard

- S The reported value was determined by the Method of Standard Additions (MSA).
- T Analyte is a tentatively identified compound, result is estimated.
- U Compound was analyzed for, but was not detected (ND).
- V1 The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
- V2 The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
- W Result quantified, but the corresponding peak was detected outside the generated retention time window.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- X See case narrative.
- Y Recovery outside limits
- Y The chromatogram resembles a petroleum product but does not match the calibration standard.
- Z The chromatogram does not resemble a petroleum product.
- i The MRL/MDL has been elevated due to a matrix interference.

1 of 4

# CHAIN-OF-CUSTODY/TEST REQUEST FORM

*11802285*

Project/Client Name: **AOCC3 Sediment** Ship to: **ALS Environmental-Kelso** No. AOC3 2017-0054  
 Project Number: **Task 4** Attn: **Jeff Grindstaff** Shipping Date: **03/13/18**  
 Contact Name: **Amara Vandevort** Shipper: **Courier** Airbill Number: \_\_\_\_\_  
 Sampled By: **AV/KM** Form filled out by: **A. Vandevort** Turnaround requested: **Standard**

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)				Comments / Instructions [Composite/Bag ID]
					Black Carbon				
2/26/18	13:49	LDW18-SS-Comp01	1	sediment	X				
2/28/18	13:02	LDW18-SS-Comp02	1	sediment	X				
3/6/18	12:49	LDW18-SS-Comp03	1	sediment	X				
3/6/18	11:46	LDW18-SS-Comp04	1	sediment	X				
2/26/18	14:20	LDW18-SS-Comp05	1	sediment	X				
3/5/18	13:45	LDW18-SS-Comp06	1	sediment	X				
3/5/18	14:02	LDW18-SS-Comp07	1	sediment	X				
3/6/18	12:28	LDW18-SS-Comp08	1	sediment	X				
3/6/18	14:36	LDW18-SS-Comp09	1	sediment	X				
3/5/18	14:19	LDW18-SS-Comp10	1	sediment	X				
3/6/18	14:57	LDW18-SS-Comp11	1	sediment	X				
3/6/18	15:19	LDW18-SS-Comp12	1	sediment	X				
<b>Total Number of Containers</b>			<b>12</b>						

\* Distribution: White copies accompany shipment; yellow retained by consignee.

1) Released by: Print name: <i>Amara Vandevort</i> Signature: <i>[Signature]</i> Company: <i>AKI</i> Date/Time: <i>3/13/18 1220</i>	1) Rec'd by: Print name: <i>[Signature]</i> Signature: <i>[Signature]</i> Company: <i>[Signature]</i> Date/Time: <i>3/14/18 1030</i>
---	--

Purchase Order / Statement of Work # PO 2017-0054

2) Released by: Print name: _____ Signature: _____ Company: _____ Date/Time: _____	2) Rec'd by: Print name: _____ Signature: _____ Company: _____ Date/Time: _____
--	---

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

**Ward**  
 environmental LLC  
 200 West Mercer Street  
 Suite 401  
 Seattle, WA 98119  
 Tel: (206) 378-1364  
 Fax: (206) 217-9343

2 of 4

# CHAIN-OF-CUSTODY/TEST REQUEST FORM

*11802285*

Project/Client Name: **AOCC3 Sediment** Ship to: **ALS Environmental-Kelso** No. AOCC3 2017-0054  
 Project Number: **Task 4** Attn: **Jeff Grindstaff** Shipping Date: **03/13/18**  
 Contact Name: **Amara Vandevort** Shipper: **Courier** Airbill Number:  
 Sampled By: **AV/KM** Form filled out by: **A. Vandevort** Turnaround requested: **Standard**

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)		Comments / Instructions [Composite/Bag ID]
					Black Carbon		
3/5/18	15:22	LDW18-SS-Comp13	1	sediment	X		
3/6/18	10:40	LDW18-SS-Comp14	1	sediment	X		
3/6/18	11:03	LDW18-SS-Comp15	1	sediment	X		
2/26/18	14:45	LDW18-SS-Comp16	1	sediment	X		
3/5/18	14:35	LDW18-SS-Comp17	1	sediment	X		
2/28/18	13:30	LDW18-SS-Comp18	1	sediment	X		
3/5/18	14:52	LDW18-SS-Comp19	1	sediment	X		
3/9/18	12:12	LDW18-SS-Comp20	1	sediment	X		
3/6/18	11:28	LDW18-SS-Comp21	1	sediment	X		
2/28/18	13:55	LDW18-SS-Comp22	1	sediment	X		
2/28/18	14:16	LDW18-SS-Comp23	1	sediment	X		
3/5/18	15:37	LDW18-SS-Comp24	1	sediment	X		
<b>Total Number of Containers</b>			12	Purchase Order / Statement of Work # PO 2017-0054			

1) Released by: *BRANDON FLSK*  
 Signature: *[Signature]*  
 Company: *ARR1*  
 Date/Time: *3/13/18 1220*

1) Rec'd by: *[Signature]*  
 Company: *ARR1*  
 Date/Time: *3/14/18 1030*

2) Released by: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_

2) Rec'd by: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Date/Time: \_\_\_\_\_

\* Distribution: White copies accompany shipment; yellow retained by consignee.

**To be completed by Laboratory upon sample receipt:**

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

**Windward Environmental LLC**  
 200 West Mercer Street  
 Suite 401  
 Seattle, WA 98119  
 Tel: (206) 378-1364  
 Fax: (206) 217-9343

3 of 4

# CHAIN-OF-CUSTODY/TEST REQUEST FORM

*11802285*

Project/Client Name: AOC3 Sediment Ship to: ALS Environmental-Kelso No. AOC3 2017-0054  
 Project Number: Task 4 Attn: Jeff Grindstaff Shipping Date: 03/13/18  
 Contact Name: Amara Vandervort Shipper: Courier Airbill Number: \_\_\_\_\_  
 Sampled By: TD, KM, NM, JR Form filled out by: A Vandervort Turnaround requested: Standard

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)				Comments / Instructions [Composite/Bag ID]
					Black Carbon				
2/23/18	15:15	LDW18-SS-169	1	sediment	X				
3/1/18	13:10	LDW18-SS-170	1	sediment	X				
3/1/18	10:48	LDW18-SS-171	1	sediment	X				
3/1/18	12:22	LDW18-SS-172	1	sediment	X				
3/1/18	10:28	LDW18-SS-173	1	sediment	X				
3/1/18	13:34	LDW18-SS-174	1	sediment	X				
3/1/18	9:51	LDW18-SS-175	1	sediment	X				
3/1/18	9:25	LDW18-SS-176	1	sediment	X				
3/2/18	7:49	LDW18-SS-177	1	sediment	X				
3/1/18	8:39	LDW18-SS-178	1	sediment	X				
3/1/18	8:39	LDW18-SS-178-FD	1	sediment	X				
2/23/18	11:48	LDW18-SS-179	1	sediment	X				
<b>Total Number of Containers</b>				12	Purchase Order / Statement of Work # PO 2017-0054				
1) Released by: Print name: <u>Ryan</u> Signature: <u>[Signature]</u> Company: <u>ARI</u> Date/Time: <u>3/13/18</u>		1) Rec'd by: Print name: <u>[Signature]</u> Signature: <u>[Signature]</u> Company: <u>[Signature]</u> Date/Time: <u>3/14/18</u>		2) Released by: Print name: _____ Signature: _____ Company: _____ Date/Time: _____		2) Rec'd by: Print name: _____ Signature: _____ Company: _____ Date/Time: _____			

\* Distribution: White copies accompany shipment; Yellow retained by consignee.

**To be completed by Laboratory upon sample receipt:**

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

200 West Mercer Street  
 Suite 401  
 Seattle, WA 98119  
 Tel: (206) 378-1364  
 Fax: (206) 217-9343

**Windward**  
 environmental LLC



# CHAIN-OF-CUSTODY/TEST REQUEST FORM

41802285

Project/Client Name: AOC3 Sediment Ship to: ALS Environmental-Kelso No. AOC3 2017-0054  
 Project Number: Task 4 Attn: Jeff Grindstaff Shipping Date: 03/13/18  
 Contact Name: Amara Vandervoort Shipper: Courier Airbill Number: \_\_\_\_\_  
 Sampled By: TD, KM, NM, JR Form filled out by: A. Vandervoort Turnaround requested: Standard

Sample Collection Date (m/d/y)	Time	Sample Identification	Volume of Sample / # of Containers	Matrix	Test(s) Requested (check test(s) required)				Comments / Instructions [Composite/Bag ID]
					Black Carbon				
2/28/18	14:10	LDW18-SS-180	1	sediment	X				
2/28/18	14:32	LDW18-SS-181	1	sediment	X				
3/1/18	8:03	LDW18-SS-182	1	sediment	X				
3/2/18	12:24	LDW18-SS-183	1	sediment	X				
2/23/18	13:26	LDW18-SS-184	1	sediment	X				
2/28/18	12:27	LDW18-SS-185	1	sediment	X				
2/28/18	12:09	LDW18-SS-186	1	sediment	X				
3/2/18	11:31	LDW18-SS-187	1	sediment	X				
2/28/18	9:15	LDW18-SS-188	1	sediment	X				
<b>Total Number of Containers</b>			10						

\* Distribution: White copies accompany shipment; yellow retained by consignee.

To be completed by Laboratory upon sample receipt:

Date of receipt:	Laboratory W.O. #:
Condition upon receipt:	Time of receipt:
Cooler temperature:	Received by:

200 West Mercer Street  
 Suite 401  
 Seattle, WA 98119  
 Tel: (206) 378-1364  
 Fax: (206) 217-9343





PC Grindstad

### Cooler Receipt and Preservation Form

Client Windward Env. Service Request K18 02285  
 Received: 3/14/18 Opened: 3/14/18 By: BR Unloaded: 3/14/18 By: BR

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered  
 2. Samples were received in: (circle) Cooler Box Envelope Other  
 3. Were custody seals on coolers? NA Y N If yes, how many and where? 1 front 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	Tracking Number	NA	Filed
-0.3	-0.2	-	-	+0.1	351	NA	780034101351	NA	Y

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

NA Y N  
 NA Y N  
 NA Y N  
 NA Y N  
 NA Y N  
 NA Y N  
 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:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp01  
**Lab Code:** K1802285-001

**Service Request:** K1802285  
**Date Collected:** 02/26/18 13:49  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.59	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	38.2	Percent (Solid)	0.089	0.089	1	03/29/18 00:00	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Collected:** 02/26/18  
**Date Received:** 03/14/18  
**Date Analyzed:** 03/29/18 - 04/02/18

**Replicate Sample Summary**  
**General Chemistry Parameters**

**Sample Name:** LDW18-SS-Comp01  
**Lab Code:** K1802285-001

**Units:** Percent (Solid)  
**Basis:** Dry

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>MRL</u>	<u>MDL</u>	<u>Sample Result</u>	<u>Duplicate Sample K1802285-001DUP Result</u>	<u>Average</u>	<u>RPD</u>	<u>RPD Limit</u>
Carbon	GBC Cyc 54 881-890 12 01	0.6	0.25	0.25 U	0.25 U		0	20
Moisture	ASTM D2974-07a	0.093	0.093	38.2	38.2		0	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.

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp02  
**Lab Code:** K1802285-002

**Service Request:** K1802285  
**Date Collected:** 02/28/18 13:02  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	41.5	Percent (Solid)	0.097	0.097	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp03  
**Lab Code:** K1802285-003

**Service Request:** K1802285  
**Date Collected:** 03/06/18 12:49  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	35	Percent (Solid)	0.096	0.096	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp04  
**Lab Code:** K1802285-004

**Service Request:** K1802285  
**Date Collected:** 03/06/18 11:46  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	54.2	Percent (Solid)	0.099	0.099	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp05  
**Lab Code:** K1802285-005

**Service Request:** K1802285  
**Date Collected:** 02/26/18 14:20  
**Date Received:** 03/14/18 10:30

**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	33.3	Percent (Solid)	0.092	0.092	1	03/29/18 00:00	



ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp06  
**Lab Code:** K1802285-006

**Service Request:** K1802285  
**Date Collected:** 03/05/18 13:45  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.26 U	Percent (Solid)	0.63	0.26	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	48.5	Percent (Solid)	0.09	0.09	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp07  
**Lab Code:** K1802285-007

**Service Request:** K1802285  
**Date Collected:** 03/05/18 14:02  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	46.6	Percent (Solid)	0.086	0.086	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp08  
**Lab Code:** K1802285-008

**Service Request:** K1802285  
**Date Collected:** 03/06/18 12:28  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.59	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	44.3	Percent (Solid)	0.09	0.09	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp09  
**Lab Code:** K1802285-009

**Service Request:** K1802285  
**Date Collected:** 03/06/18 14:36  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	50.7	Percent (Solid)	0.096	0.096	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp10  
**Lab Code:** K1802285-010

**Service Request:** K1802285  
**Date Collected:** 03/05/18 14:19  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.58	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	42.1	Percent (Solid)	0.091	0.091	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp11  
**Lab Code:** K1802285-011

**Service Request:** K1802285  
**Date Collected:** 03/06/18 14:57  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	42.4	Percent (Solid)	0.09	0.09	1	03/29/18 00:00	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Windward Environmental, LLC
Project: Duwamish AOC3 Baseline Surface Sediment/Task 4
Sample Matrix: Sediment

Service Request: K1802285
Date Collected: 03/06/18
Date Received: 03/14/18
Date Analyzed: 03/29/18 - 04/02/18

Replicate Sample Summary
General Chemistry Parameters

Sample Name: LDW18-SS-Comp11
Lab Code: K1802285-011

Units: Percent (Solid)
Basis: Dry

Table with 9 columns: Analyte Name, Analysis Method, MRL, MDL, Sample Result, Duplicate Sample Result (K1802285-011DUP), Average, RPD, RPD Limit. Rows include Carbon and Moisture.

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.

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp12  
**Lab Code:** K1802285-012

**Service Request:** K1802285  
**Date Collected:** 03/06/18 15:19  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.6	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	47.5	Percent (Solid)	0.1	0.1	1	03/29/18 00:00	



ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp13  
**Lab Code:** K1802285-013

**Service Request:** K1802285  
**Date Collected:** 03/05/18 15:22  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.59	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	<b>50.9</b>	Percent (Solid)	0.1	0.1	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp14  
**Lab Code:** K1802285-014

**Service Request:** K1802285  
**Date Collected:** 03/06/18 10:40  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.57	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	<b>48.9</b>	Percent (Solid)	0.1	0.1	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp15  
**Lab Code:** K1802285-015

**Service Request:** K1802285  
**Date Collected:** 03/06/18 11:03  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	52.2	Percent (Solid)	0.098	0.098	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp16  
**Lab Code:** K1802285-016

**Service Request:** K1802285  
**Date Collected:** 02/26/18 14:45  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	39.9	Percent (Solid)	0.097	0.097	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp17  
**Lab Code:** K1802285-017

**Service Request:** K1802285  
**Date Collected:** 03/05/18 14:35  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.6	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	44.2	Percent (Solid)	0.083	0.083	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp18  
**Lab Code:** K1802285-018

**Service Request:** K1802285  
**Date Collected:** 02/28/18 13:30  
**Date Received:** 03/14/18 10:30

**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.23 U	Percent (Solid)	0.56	0.23	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	36.1	Percent (Solid)	0.083	0.083	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp19  
**Lab Code:** K1802285-019

**Service Request:** K1802285  
**Date Collected:** 03/05/18 14:52  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	31.1	Percent (Solid)	0.083	0.083	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp20  
**Lab Code:** K1802285-020

**Service Request:** K1802285  
**Date Collected:** 03/09/18 12:12  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.23 U	Percent (Solid)	0.56	0.23	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	44.3	Percent (Solid)	0.089	0.089	1	03/29/18 00:00	



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dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp21  
**Lab Code:** K1802285-021

**Service Request:** K1802285  
**Date Collected:** 03/06/18 11:28  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.58	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	53.6	Percent (Solid)	0.097	0.097	1	03/29/18 00:00	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Windward Environmental, LLC
Project: Duwamish AOC3 Baseline Surface Sediment/Task 4
Sample Matrix: Sediment

Service Request: K1802285
Date Collected: 03/06/18
Date Received: 03/14/18
Date Analyzed: 03/29/18 - 04/02/18

Replicate Sample Summary
General Chemistry Parameters

Sample Name: LDW18-SS-Comp21
Lab Code: K1802285-021

Units: Percent (Solid)
Basis: Dry

Table with 9 columns: Analyte Name, Analysis Method, MRL, MDL, Sample Result, Duplicate Sample Result (K1802285-021DUP), Average, RPD, RPD Limit. Rows include Carbon and Moisture.

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.

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp22  
**Lab Code:** K1802285-022

**Service Request:** K1802285  
**Date Collected:** 02/28/18 13:55  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	47.4	Percent (Solid)	0.095	0.095	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp23  
**Lab Code:** K1802285-023

**Service Request:** K1802285  
**Date Collected:** 02/28/18 14:16  
**Date Received:** 03/14/18 10:30

**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.57	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	37.4	Percent (Solid)	0.09	0.09	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-Comp24  
**Lab Code:** K1802285-024

**Service Request:** K1802285  
**Date Collected:** 03/05/18 15:37  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.58	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	24.7	Percent (Solid)	0.079	0.079	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-169  
**Lab Code:** K1802285-025

**Service Request:** K1802285  
**Date Collected:** 02/23/18 15:15  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.58	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	40.5	Percent (Solid)	0.079	0.079	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-170  
**Lab Code:** K1802285-026

**Service Request:** K1802285  
**Date Collected:** 03/01/18 13:10  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.58	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	26.1	Percent (Solid)	0.081	0.081	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-171  
**Lab Code:** K1802285-027

**Service Request:** K1802285  
**Date Collected:** 03/01/18 10:48  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.57	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	<b>34.9</b>	Percent (Solid)	0.084	0.084	1	03/29/18 00:00	



ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-172  
**Lab Code:** K1802285-028

**Service Request:** K1802285  
**Date Collected:** 03/01/18 12:22  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	57.5	Percent (Solid)	0.08	0.08	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-173  
**Lab Code:** K1802285-029

**Service Request:** K1802285  
**Date Collected:** 03/01/18 10:28  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.61	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	44.4	Percent (Solid)	0.095	0.095	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-174  
**Lab Code:** K1802285-030

**Service Request:** K1802285  
**Date Collected:** 03/01/18 13:34  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	41.5	Percent (Solid)	0.071	0.071	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-175  
**Lab Code:** K1802285-031

**Service Request:** K1802285  
**Date Collected:** 03/01/18 09:51  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.6	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	41	Percent (Solid)	0.094	0.094	1	03/29/18 00:00	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Windward Environmental, LLC
Project: Duwamish AOC3 Baseline Surface Sediment/Task 4
Sample Matrix: Sediment

Service Request: K1802285
Date Collected: 03/01/18
Date Received: 03/14/18
Date Analyzed: 03/29/18 - 04/02/18

Replicate Sample Summary
General Chemistry Parameters

Sample Name: LDW18-SS-175
Lab Code: K1802285-031

Units: Percent (Solid)
Basis: Dry

Table with 9 columns: Analyte Name, Analysis Method, MRL, MDL, Sample Result, Duplicate Sample Result (K1802285-031DUP), Average, RPD, RPD Limit. Rows include Carbon and Moisture.

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.

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-176  
**Lab Code:** K1802285-032

**Service Request:** K1802285  
**Date Collected:** 03/01/18 09:25  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.61	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	32.2	Percent (Solid)	0.085	0.085	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-177  
**Lab Code:** K1802285-033

**Service Request:** K1802285  
**Date Collected:** 03/02/18 07:49  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.58	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	<b>52.8</b>	Percent (Solid)	0.081	0.081	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-178  
**Lab Code:** K1802285-034

**Service Request:** K1802285  
**Date Collected:** 03/01/18 08:39  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.26 U	Percent (Solid)	0.62	0.26	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	55.5	Percent (Solid)	0.087	0.087	1	03/29/18 00:00	



ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-178-FD  
**Lab Code:** K1802285-035

**Service Request:** K1802285  
**Date Collected:** 03/01/18 08:39  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.27 U	Percent (Solid)	0.64	0.27	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	55.2	Percent (Solid)	0.084	0.084	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-179  
**Lab Code:** K1802285-036

**Service Request:** K1802285  
**Date Collected:** 02/23/18 11:48  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.59	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	55.1	Percent (Solid)	0.087	0.087	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-180  
**Lab Code:** K1802285-037

**Service Request:** K1802285  
**Date Collected:** 02/28/18 14:10  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.23 U	Percent (Solid)	0.56	0.23	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	<b>50.8</b>	Percent (Solid)	0.087	0.087	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-181  
**Lab Code:** K1802285-038

**Service Request:** K1802285  
**Date Collected:** 02/28/18 14:32  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.61	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	54.6	Percent (Solid)	0.09	0.09	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-182  
**Lab Code:** K1802285-039

**Service Request:** K1802285  
**Date Collected:** 03/01/18 08:03  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.6	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	43.7	Percent (Solid)	0.094	0.094	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-183  
**Lab Code:** K1802285-040

**Service Request:** K1802285  
**Date Collected:** 03/02/18 12:24  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.59	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	51.3	Percent (Solid)	0.089	0.089	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-184  
**Lab Code:** K1802285-041

**Service Request:** K1802285  
**Date Collected:** 02/23/18 13:26  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.6	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	33.3	Percent (Solid)	0.089	0.089	1	03/29/18 00:00	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Windward Environmental, LLC
Project: Duwamish AOC3 Baseline Surface Sediment/Task 4
Sample Matrix: Sediment

Service Request: K1802285
Date Collected: 02/23/18
Date Received: 03/14/18
Date Analyzed: 03/29/18 - 04/02/18

Replicate Sample Summary
General Chemistry Parameters

Sample Name: LDW18-SS-184
Lab Code: K1802285-041

Units: Percent (Solid)
Basis: Dry

Table with 9 columns: Analyte Name, Analysis Method, MRL, MDL, Sample Result, Duplicate Sample K1802285-041DUP Result, Average, RPD, RPD Limit. Rows include Carbon and Moisture.

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.



ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-185  
**Lab Code:** K1802285-042

**Service Request:** K1802285  
**Date Collected:** 02/28/18 12:27  
**Date Received:** 03/14/18 10:30

**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.23 U	Percent (Solid)	0.56	0.23	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	29.4	Percent (Solid)	0.093	0.093	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-186  
**Lab Code:** K1802285-043

**Service Request:** K1802285  
**Date Collected:** 02/28/18 12:09  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.6	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	36.6	Percent (Solid)	0.087	0.087	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-187  
**Lab Code:** K1802285-044

**Service Request:** K1802285  
**Date Collected:** 03/02/18 11:31  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.24 U	Percent (Solid)	0.58	0.24	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	<b>30</b>	Percent (Solid)	0.086	0.086	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** LDW18-SS-188  
**Lab Code:** K1802285-045

**Service Request:** K1802285  
**Date Collected:** 02/28/18 09:15  
**Date Received:** 03/14/18 10:30  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.23 U	Percent (Solid)	0.55	0.23	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	22.2	Percent (Solid)	0.082	0.082	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** Method Blank  
**Lab Code:** K1802285-MB1

**Service Request:** K1802285  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.6	0.25	1	03/30/18 00:00	
Moisture	ASTM D2974-07a	0.076 U	Percent (Solid)	0.076	0.076	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** Method Blank  
**Lab Code:** K1802285-MB2

**Service Request:** K1802285  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.6	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	0.1 U	Percent (Solid)	0.1	0.1	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment  
**Sample Name:** Method Blank  
**Lab Code:** K1802285-MB3

**Service Request:** K1802285  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** Dry

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Carbon	GBC Cyc 54 881-890 12 01	0.25 U	Percent (Solid)	0.6	0.25	1	04/02/18 00:00	
Moisture	ASTM D2974-07a	0.085 U	Percent (Solid)	0.085	0.085	1	03/29/18 00:00	

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285

**Date Analyzed:** 04/02/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)

**Basis:**Dry

**Lab Control Sample**

K1802285-LCS1

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Carbon	GBC Cyc 54 881-890 12 01	44.6	44.575	100.1	80-120



ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Analyzed:** 03/29/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)  
**Basis:**Dry

**Lab Control Sample**  
K1802285-LCS1

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Moisture	ASTM D2974-07a	15.2	15.21	99.9	85-115

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285

**Date Analyzed:** 04/02/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)

**Basis:**Dry

**Lab Control Sample**

K1802285-LCS2

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Carbon	GBC Cyc 54 881-890 12 01	0.98	1.072	91.4	80-120

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Analyzed:** 03/29/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)  
**Basis:**Dry

**Lab Control Sample**  
K1802285-LCS2

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Moisture	ASTM D2974-07a	18.6	18.62	99.9	85-115

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285

**Date Analyzed:** 04/02/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)

**Basis:**Dry

**Lab Control Sample**

K1802285-LCS3

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Carbon	GBC Cyc 54 881-890 12 01	0.91	1.072	84.9	80-120

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Analyzed:** 03/29/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)  
**Basis:**Dry

**Lab Control Sample**  
K1802285-LCS3

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Moisture	ASTM D2974-07a	17.3	17.32	99.9	85-115

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285

**Date Analyzed:** 04/02/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)

**Basis:**Dry

**Lab Control Sample**

K1802285-LCS4

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Carbon	GBC Cyc 54 881-890 12 01	43.62	44.575	97.9	80-120

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Analyzed:** 03/29/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)  
**Basis:**Dry

**Lab Control Sample**  
K1802285-LCS4

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Moisture	ASTM D2974-07a	10.3	10.33	99.7	85-115

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Analyzed:** 04/02/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)  
**Basis:**Dry

**Lab Control Sample**  
K1802285-LCS5

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Carbon	GBC Cyc 54 881-890 12 01	0.98	1.072	91.4	80-120



ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285

**Date Analyzed:** 03/29/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)

**Basis:**Dry

**Lab Control Sample**

K1802285-LCS5

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Moisture	ASTM D2974-07a	17.4	17.38	100.1	85-115

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Analyzed:** 04/02/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)  
**Basis:**Dry

**Lab Control Sample**  
K1802285-LCS6

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Carbon	GBC Cyc 54 881-890 12 01	0.88	1.072	82.1	80-120

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Analyzed:** 03/29/18

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**Percent (Solid)  
**Basis:**Dry

**Lab Control Sample**  
K1802285-LCS6

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Moisture	ASTM D2974-07a	26.9	26.92	99.9	85-115

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Analyzed:** 04/02/18  
**Date Extracted:** NA

**Lab Control Sample Summary**  
**Carbon**

**Analysis Method:** GBC Cyc 54 881-890 12 01  
**Prep Method:** None

**Units:** Percent (Solid)  
**Basis:** Dry  
**Analysis Lot:** 585568

<b>Sample Name</b>	<b>Lab Code</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Lab Control Sample	K1802285-LCS7	44.29	44.575	99.4	80-120

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Analyzed:** 04/02/18  
**Date Extracted:** NA

**Lab Control Sample Summary**  
**Carbon**

**Analysis Method:** GBC Cyc 54 881-890 12 01  
**Prep Method:** None

**Units:** Percent (Solid)  
**Basis:** Dry  
**Analysis Lot:** 585568

<b>Sample Name</b>	<b>Lab Code</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Lab Control Sample	K1802285-LCS8	1	1.072	93.3	80-120

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Windward Environmental, LLC  
**Project:** Duwamish AOC3 Baseline Surface Sediment/Task 4  
**Sample Matrix:** Sediment

**Service Request:** K1802285  
**Date Analyzed:** 04/02/18  
**Date Extracted:** NA

**Lab Control Sample Summary**  
**Carbon**

**Analysis Method:** GBC Cyc 54 881-890 12 01  
**Prep Method:** None

**Units:** Percent (Solid)  
**Basis:** Dry  
**Analysis Lot:** 585568

<b>Sample Name</b>	<b>Lab Code</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Lab Control Sample	K1802285-LCS9	1.08	1.072	100.7	80-120