APPENDIX G: DATA VALIDATION REPORT

DATA VALIDATION REPORT

Herrington Lake
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SUMMARY

The data validation included 20 sample data groups (SDGs). A 100 percent Level II (2) data validation following USEPA protocols was conducted for all SDGs. Additionally, 20 percent of the data were also reviewed as Level IV (4) which is a more in-depth review of the laboratory process, the handling and analysis of the samples and the reporting of the results. The SDGs included in the data validation, and the validation type, is summarized below.

1: Fish Laboratory Analytical Report (SDG K1712347), Level IV

2: Fish Laboratory Analytical Report (SDG K1712350), Level IV

3: Fish Laboratory Analytical Report (SDG K1712468), Level II

4: Fish Laboratory Analytical Report (SDG K1712469), Level II

5: Fish Laboratory Analytical Report (SDG K1712471), Level II

6: Fish Laboratory Analytical Report (SDG K1712474), Level IV

7: Fish Laboratory Analytical Report (SDG K1712476), Level II

8: Fish Laboratory Analytical Report (SDG K1712477), Level II

9: Fish Laboratory Analytical Report (SDG K1712479), Level II

10: Surface Water Laboratory Analytical Report (SDG K1711263), Level IV

11: Surface Water Laboratory Analytical Report (SDG K1711264), Level II

12: Surface Water Laboratory Analytical Report (SDG K1713449), Level II

13: Sediment Laboratory Analytical Report (SDG K1711369), Level II

14: Sediment Laboratory Analytical Report (SDG K1711372), Level IV

15: Sediment Laboratory Analytical Report (SDG K1711619), Level II

16: Sediment Laboratory Analytical Report (SDG K1712054), Level II

17: Sediment Laboratory Analytical Report (SDG K1712090), Level II

18: Pore Water Laboratory Analytical Report (SDG K1712055), Level IV

19: Pore Water Laboratory Analytical Report (SDG K1712059), Level II

20: Aquatic Plant and Invertebrate Laboratory Analytical Report (SDG K1712478), Level II/IV

Level 2 and Level 4 Validation and Data Flag Transfer

A Level 4 data validation was performed for 20 percent of the samples. The data were reviewed using guidance and quality control criteria documented in the analytical methods, USEPA National Functional Guidelines for Inorganic Data Review (USEPA 2010, 2014). A Level 2 validation includes a review of all quality control data and method requirements for each specific method being validated including holding times, blanks, check samples, duplicates, calibrations. A Level 4 validation includes all of the Level 2 review items and additional review and recalculation of a percentage of the quality control data, instrument data and sample results. Project narratives provide a summary of the data that were qualified with flags (J, UJ) and the reason code (reason for the qualification) for the data following the validation review requirements set forth in the EPA Functional Guidelines.

Upon completion of validation, Validata provided data qualifiers and codes via electronic files to the Ramboll database manager.

Project Narrative Organization

This report is organized as follows and can be navigated via PDF bookmarks:

- Summary
- Project Narrative
- Sample Index
- Data Validation Report – Metals/Mercury
- Data Validation Report – Methyl Mercury/Mercury
- Data Validation Report – Dissolved and Total Organic Carbon
- Data Validation Report – Dissolved and Total Sulfate
- Data Validation Report – Arsenic Speciation
- Data Validation Report – Selenium Speciation
- Field Duplicate Summary

Overall Conclusions for Herrington Lake Data Validation

The data validation is performed to assign data assessment qualifiers for assistance in data interpretation. Data were assigned qualifiers (J, UJ) per the EPA National Functional Guidelines for Inorganic Data Review (EPA 2010, 2014) and numerical codes to help interpret the data exceedances. There were no data results that were qualified as rejected (r flag) during validation of the data. The data validation demonstrated that data quality met the USEPA National Functional Guidelines and is considered valid for use for site evaluation and risk assessment purposes.

PROJECT NARRATIVE

Data Validation

This report summarizes the results of the data validation performed on sediment, porewater, surface water and tissue samples for the Herrington Lake project. A complete list of samples is provided in the Sample Index below. Samples were analyzed by ALS Environmental, Kelso, Washington and ALS Burnaby Vancouver Canada.

ANALYSIS	METHOD	Reviewer	Overall Assessment
Selenium Speciation +4, +6, selenocyanate, unk Se species	Miekeley Spect. Acta B 60 (2005) 633-641	C. Jensen	Data usable as reported and/or qualified
Arsenic Speciation III, V, Inorganic	1632A	C. Jensen	Data usable as reported and/or qualified
Total and Dissolved Metals (As,B,Cd,Fe, Pb,,Mg,Se,Zn)	200.8/6020A/6010C	C. Jensen	Data usable as reported and/or qualified
Mercury	7470/7471B	C. Jensen	Data usable as reported and/or qualified
Dissolved Mercury	1631E	C. Jensen	Data usable as reported and/or qualified
Total and Dissolved Methyl mercury	1630, ALS SOP	C. Jensen	Data usable as reported and/or qualified
Total and Dissolved Organic Carbon	9060	C. Jensen	Data usable as reported and/or qualified
Total and Dissolved Sulfate	300.0	C. Jensen	Data usable as reported and/or qualified

The data were reviewed using guidance and quality control criteria documented in the analytical methods; *USEPA National Functional Guidelines for Inorganic Data Review* (EPA, 2010 & 2014).

The goal of data validation is to assign data assessment qualifiers for assistance in data interpretation. Results assigned as estimated (J or UJ), data may be used for site evaluation and risk assessment purposes but reasons for data qualification should be taken into consideration when interpreting sample concentrations. There were data assigned J and UJ flags during validation. There were no data assigned an R flag (rejected data). All data are considered usable for site evaluation purposes. Unqualified data implies the data meet the data quality objectives as stated in the documents and methods referenced above. A summary of the data qualifiers used in validation are included in Appendix A. All validation worksheets and result Form 1s are provided in Appendix B.

DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables for a level 2 or level 4 review. A level 4 validation was conducted on twenty percent of the samples, specifically indicated by Ramboll on the chain-of-custody documentation.

TECHNICAL DATA VALIDATION

The QC requirements that were reviewed for a level 2 are listed below.

Sample Receipt, Preservation, and Holding Times	Matrix Spikes/Matrix Spike Duplicates (MS/MSD)
Laboratory Blanks	Field Duplicates
Interference Check Samples	Calibrations
Low level check samples	Serial Dilutions
Field Blanks	Target Analyte List
Internal Standards 200.8	Reporting Limits
Laboratory Control Samples (LCS)	Reported Results

Additionally, for the level 4 reviews the following were also included:

Recalculation of QC (MS/LCS/Duplicates/serial dilution, interference checks, OPRs, QCSs, low calibration checks, post spikes)
Recalculation of calibration differences
Compliance check of calibrations
Review of raw instrument data

SAMPLE INDEX

T and D = analyzed for total and dissolved analytes
T = analyzed for total analytes
D = analyzed for dissolved analytes
x – analyzed
x – not analyzed due to absence of sample or incorrect preservative (1) no unpreserved container per lab

Sample ID	Lab ID	Metals 200.8/ 6010 C/6020	MeHg 1630/ ALS SOP	Hg 7470A 7471B	Sulfate 300.0	DissHg 1631E	Organic Carbon 9060	As spec	Se spec
SDG K1711264									
SW-003(100)-LHL2-171006	K1711264-001	T,D	T,D	T	T,D	x	T,D		
SW-001(25)-LHL2-171006	K1711264-002	T,D	T,D	T	T,D	x	T,D		
SW-002(50)-LHL2-171006	K1711264-003	T,D	T,D	T	T,D	x	T,D		
SW-001(20)-LHL1-171006	K1711264-004	T,D	T,D	T	T,D	x	T,D		
SW-002(60)-LHL1-171006	K1711264-005	T,D	T,D	T	T,D	x	T,D		
SW-001(20)-LHL6-171007	K1711264-006	T,D	T,D	T	T,D	x	T,D		
SW-003(100)-LHL4-171007	K1711264-007	T,D	T,D	T	T,D	x	T,D		
SW-002(70)-LHL4-171007	K1711264-008	T,D	T,D	T	T,D	x	T,D		
SW-001(20)-LHL4-171007	K1711264-009	T,D	T,D	T	T,D	x	T,D		
SW-001(10)-DR1-171007	K1711264-010	T,D	T,D	T	T,D	x	T,D		
SW-003(100)-LHL5-171007	K1711264-011	T,D	T,D	T	T,D	x	T,D		
SW-002(70)-LHL5-171007	K1711264-012	T,D	T,D	T	T,D	x	T,D		
SW-001(20)-LHL5-171007	K1711264-013	T,D	T,D	T	T,D	x	T,D		
SW-003(100)-LHL6-171007	K1711264-014	T,D	T,D	T	T,D	x	T,D		
SW-002(70)-LHL6-171007	K1711264-015	T,D	T,D	T	T,D	x	T,D		
SW-001(10)-HQ1-171004	K1711264-016	T,D	T,D	T	T,D	x	T,D		
SW-001(10)-HI1-171005	K1711264-017	T,D	T,D	T	T,D	x	T,D		
SW-001(20)-LHL3-171006	K1711264-018	T,D	T,D	T	T,D	x	T,D		
SW-003(100)-LH34-171006	K1711264-019	T,D	T,D	T	T,D	x	T,D		
SW-002(70)-LHL3-171006	K1711264-020	T,D	T,D	T	T,D	x	T,D		
SW-003(100)-LHL4-171007	K1711264-007	T,D	T,D	T	T,D	x	T,D		
SW-003(100)-LHL4-171007	K1711264-007	T,D	T,D	T	T,D	x	T,D		
SW-003(100)-LHL4-171007	K1711264-007	T,D	T,D	T	T,D	x	T,D		
SW-003(100)-LHL4-171007	K1711264-007	T,D	T,D	T	T,D	x	T,D		
K17112059/L2020526									
PW001-CI1C-171103	K1712059-001	x	x	x	x	x	x	x	x
PW001-CURDS2A-171104	K1712059-002	x	x	x	x	x	x	x	x
PW001-CURDS2B-171103	K1712059-003	x	x	x	x	x	x	x	x
PW001-CURDS2C-171103	K1712059-004	x	x	x	x	x	x	x	x
PW001-CI2A-171104	K1712059-005	x	x	x	x	x	x	x	x
PW001-CI2C-171103	K1712059-006	x	x	x	x	x	x	x	x
PW001-CI3C-171103	K1712059-007	x	x	x	x	x	x	x	x
PW001-HQ1A-171104	K1712059-008	x	x	x	x	x	x	x	x
PW001-HQ1B-171104	K1712059-009	x	x	x	x	x	x	x	x
PW001-HQ1C-171104	K1712059-010	x	x	x	x	x	x	x	x
PW001-HI1A-171102	K1712059-011	x	x	x	x (1)	x	x	x	x
PW001-HI1B-171103	K1712059-012	x	x	x	x	x	x	x	x
PW001-HI1C-171101	K1712059-013	x	x	x	x (1)	x	x	x	x
PW001-DUP-171104	K1712059-014	x	x	x	x	x	x	x	x
K1711619									
SD-001(17)-H21B-171011	K1711619-001	x	x	x	x		x		
SD-001(20)-H21A-171011	K1711619-002	x	x	x	x		x		
SD-001(19)-CI4C-171012	K1711619-003	x	x	x	x		x		
SD-001(24)-LHL3C-171012	K1711619-004	x	x	x	x		x		
SD-001(17)-LHL3B-171012	K1711619-005	x	x	x	x		x		
SD-001(19)-LHL4C-171012	K1711619-006	x	x	x	x		x		
SD-001(1)-DR1-171016	K1711619-007	x	x	x	x		x		
SD-001(12)-CURDS1A-171011	K1711619-008	x	x	x	x		x		
SD-001(13)-HQ1C-171011	K1711619-009	x	x	x	x		x		
SD-001(20)-LHL1C-171012	K1711619-010	x	x	x	x		x		
SD-001(20)-LHL1B-171012	K1711619-011	x	x	x	x		x		
SD-001(22)-LHL4B-171012	K1711619-012	x	x	x	x		x		

Sample ID	Lab ID	Metals 200.8/6010C/6020	MeHg 1630/ALS SOP	Hg 7470A 7471B	Sulfate 300.0	DissHg 1631E	Organic Carbon 9060	As spec	Se spec
SD-001(21)-LHL5C-171012	K1711619-013	x	x	x	x		x		
SD-001(16)-LHL5B-171012	K1711619-014	x	x	x	x		x		
SD-001(20)-LHL6B-171012	K1711619-015	x	x	x	x		x		
K1712055									
PW001-CURDSNB-171103	K1712055-001	x	x	x	x	x	x	x	x
PW001-CURDS1-171103	K1712055-002	x	x	x	x	x	x	x	x
K1711369									
DUP-005-171011	K1711369-001	x	x	x	x		x		
DUP-006-171011	K1711369-002	x	x	x	x		x		
SD-001(15)-CI1B-171011	K1711369-003	x	x	x	x		x		
SD-001(16)-CI1A-171011	K1711369-004	x	x	x	x		x		
SD-001(20)-CI4B-171012	K1711369-005	x	x	x	x		x		
SD-001(20)-LHL2B-171012	K1711369-006	x	x	x	x		x		
SD-001(20)-LHL2C-171012	K1711369-007	x	x	x	x		x		
SD-001(20)-LHL6C-171012	K1711369-008	x	x	x	x		x		
K1711263									
SW-001(5)-CI1-171014	K1711263-001	T,D	T,D	T	T,D	x	T,D		
SW-001(10)-CI2-171014	K1711263-002	T,D	T,D	T	T,D	x	T,D		
SW-001(10)-CI3-171014	K1711263-006	T,D	T,D	T	T,D	x	T,D		
SW-001(70)-CI4-171014	K1711263-007	T,D	T,D	T	T,D	x	T,D		
SW-002(20)-CI4-171014	K1711263-008	T,D	T,D	T	T,D	x	T,D		
DUP-01-171014	K1711263-009	T,D	T,D	T	T,D	x	T,D		
DUP-02-171014	K1711263-010	T,D	T,D	T	T,D	x	T,D		
DUP-03-171014	K1711263-011	T,D	T,D	T	T,D	x	T,D		
K1712090									
	K1712090-001	x	x	x	x		x		
	K1712090-002	x	x	x	x		x		
K1712347									
FF-002(BG)-LHL3-171005	K1712347-002	x	x	x				x	
FWB-002(BG)-LHL3-171005	K1712347-003	x	x	x				x	
FF-001(BG)-LHL1-171011	K1712347-005	x	x	x				x	
FWB-001(BG)-LHL1-171011	K1712347-006	x	x	x				x	
FF-001(BG)-LHL5-171011	K1712347-008	x	x	x				x	
FWB-001(BG)-LHL5-171011	K1712347-009	x	x	x				x	
FF-002(BG)-LHL5-171011	K1712347-011	x	x	x				x	
FWB-002(BG)-LHL5-171011	K1712347-012	x	x	x				x	
FF-001(BG)-LHL6-171011	K1712347-014	x	x	x				x	
FWB-001(BG)-LHL6-171011	K1712347-015	x	x	x				x	
FF-002(BG)-LHL6-171011	K1712347-017	x	x	x				x	
FWB-002(BG)-LHL6-171011	K1712347-018	x	x	x				x	
FF-001(BG)-DR-171014	K1712347-020	x	x	x				x	
FWB-001(BG)-DR-171014	K1712347-021	x	x	x				x	
FF-001(BG)-MHL3-171014	K1712347-023	x	x	x				x	
FWB-001(BG)-MHL3-171014	K1712347-024	x	x	x				x	
FF-001(BG)-MHL1-171015	K1712347-029	x	x	x				x	
FWB-001(BG)-MHL1-171015	K1712347-030	x	x	x				x	
FF-002(BG)-MHL1-171015	K1712347-032	x	x	x				x	
FWB-002(BG)-MHL1-171015	K1712347-033	x	x	x				x	
FF-002(BG)-MHL3-171014	K1712347-026	x	x	x				x	
FWB-002(BG)-MHL3-171014	K1712347-027	x	x	x				x	
FF-001(BG)-DR-171016	K1712347-035	x	x	x				x	
FWB-001(BG)-DR-171016	K1712347-036	x	x	x				x	

Sample ID	Lab ID	Metals 200.8/6010C/6020	MeHg 1630/ALS SOP	Hg 7470A 7471B	Sulfate 300.0	DissHg 1631E	Organic Carbon 9060	As spec	Se spec
FF-002(GS)-DR-171016	K1712347-038	x	x	x				x	
FWB-002(GS)-DR-171016	K1712347-039	x	x	x				x	
K1712350									
FF-001(BG)-LHL4-171003	K1712350-002	x	x	x				x	
FWB-001(BG)-LHL4-171003	K1712350-003	x	x	x				x	
FF-002(BG)-LHL4-171003	K1712350-005	x	x	x				x	
FWB-002(BG)-LHL4-171003	K1712350-006	x	x	x				x	
FF-001(BG)-CI-171004	K1712350-008	x	x	x				x	
FWB-001(BG)-CI-171004	K1712350-009	x	x	x				x	
FF-001(BG)-CI-171004-FD	K1712350-011	x	x	x				x	
FWB-001(BG)-CI-171004-FD	K1712350-012	x	x	x				x	
FF-002(BG)-CI-171004	K1712350-014	x	x	x				x	
FWB-002(BG)-CI-171004	K1712350-015	x	x	x				x	
FF-002(BG)-CI-171004-FD	K1712350-017	x	x	x				x	
FWB-002(BG)-CI-171004-FD	K1712350-018	x	x	x				x	
FF-001(BG)-HQ-171004	K1712350-020	x	x	x				x	
FWB-001(BG)-HQ-171004	K1712350-021	x	x	x				x	
FF-002(BG)-HQ-171004	K1712350-023	x	x	x				x	
FWB-002(BG)-HQ-171004	K1712350-024	x	x	x				x	
FF-002(BG)-HQ-171004-FD	K1712350-026	x	x	x				x	
FWB-002(BG)-HQ-171004-FD	K1712350-027	x	x	x				x	
FF-002(BG)-LHL1-171004	K1712350-029	x	x	x				x	
FWB-002(BG)-LHL1-171004	K1712350-030	x	x	x				x	
FF-001(BG)-LHL2-171005	K1712350-032	x	x	x				x	
FWB-001(BG)-LHL2-171005	K1712350-033	x	x	x				x	
FF-002(BG)-LHL2-171005	K1712350-035	x	x	x				x	
FWB-002(BG)-LHL2-171005	K1712350-036	x	x	x				x	
FF-001(BG)-LHL3-171005	K1712350-038	x	x	x				x	
FWB-001(BG)-LHL3-171005	K1712350-039	x	x	x				x	
K1713449									
SW001(25)LHL2-171211	K1713449-001	T,D	T,D	T	T,D	x	T,D		
SW001(25)LHL1-171211	K1713449-002	T,D	T,D	T	T,D	x	T,D		
SW001(2)CI1-171211	K1713449-003	T,D	T,D	T	T,D	x	T,D		
SW001(4)CI2-171211	K1713449-004	T,D	T,D	T	T,D	x	T,D		
SW001(9)CI3-171211	K1713449-005	T,D	T,D	T	T,D	x	T,D		
SW001(9)HQ1-171211	K1713449-006	T,D	T,D	T	T,D	x	T,D		
SW001(3)HI1-171211	K1713449-007	T,D	T,D	T	T,D	x	T,D		
DUP-001-171212	K1713449-008	T,D	T,D	T	T,D	x	T,D		
SW001(25)CI4-171212	K1713449-009	T,D	T,D	T	T,D	x	T,D		
SW001(25)LHL3-171212	K1713449-010	T,D	T,D	T	T,D	x	T,D		
SW001(25)LHL4-171211	K1713449-011	T,D	T,D	T	T,D	x	T,D		
SW001(25)LHL5-171212	K1713449-012	T,D	T,D	T	T,D	x	T,D		
SW001(25)LHL6-171212	K1713449-013	T,D	T,D	T	T,D	x	T,D		
EQUIP BLANK 001-171212	K1713449-014	T,D	T,D	T	T,D	x	T,D		
K1712478									
AV-001-CI1-171004	K1712478-001	x	x	x					
AI-001-CI1-171004	K1712478-002	x	x	x					
AV-001-CI2-171005	K1712478-003	x	x	x					
AV-001-CI3-171005	K1712478-004	x	x	x					
AV-001-CI4-171005	K1712478-005	x	x	x					
AV-001-CI4-171005-FD	K1712478-006	x	x	x					
AI-001-CI2-171005	K1712478-007	x	x	x					
AI-001-CI3-171005	K1712478-008	x	x	x					
AI-001-CI3-171005-FD	K1712478-009	x	x	x					
AI-001-CI4-171005	K1712478-010	x	x	x					
AV-001-HQ-171006	K1712478-011	x		x					
AI-001-HQ-171006	K1712478-012	x	x	x					
AV-001-DR-171007	K1712478-013	x	x	x					
AI-001-DR-171007	K1712478-014	x	x	x					
AI-001-LHL1-171012	K1712478-015	x	x	x					
AI-001-LHL1-171012-FD	K1712478-016	x	x	x					

Sample ID	Lab ID	Metals 200.8/6010C/6020	MeHg 1630/ALS SOP	Hg 7470A 7471B	Sulfate 300.0	DissHg 1631E	Organic Carbon 9060	As spec	Se spec
AV-001-LHL1-171012	K1712478-017	x	x	x					
AV-001-LHL2-171012	K1712478-018	x	x	x					
AV-001-LHL2-171012	K1712478-019	x	x	x					
AV-001-LHL3-171012	K1712478-020	x	x	x					
AI-001-LHL3-171012	K1712478-021	x	x	x					
AV-001-LHL4-171012	K1712478-022	x	x	x					
AV-001-LHL5-171012	K1712478-023	x	x	x					
AI-001-LHL4-171012	K1712478-024	x	x	x					
AI-001-LHL5-171012	K1712478-025	x	x	x					
AV-001-LHL6-171012	K1712478-026	x	x	x					
AI-001-LHL6-171012	K1712478-027	x	x	x					
K1712468									
FF-001(FHC)-LHL2-171005	K1712468-002	x	x	x				x	
FWB-001(FHC)-LHL2-171005	K1712468-003	x	x	x				x	
FF-001(CC)-LHL5-171007	K1712468-005	x	x	x				x	
FWB-001(CC)-LHL5-171007	K1712468-006	x	x	x				x	
FF-001(FHC)-LHL4-171012	K1712468-009	x	x	x				x	
FWB-001(FHC)-LHL4-171012	K1712468-010	x	x	x				x	
FF-002(FHC)-MHL1-171014	K1712468-012	x	x	x				x	
FWB-002(FHC)-MHL1-171014	K1712468-013	x	x	x				x	
FF-002(CC)-MHL3-171014	K1712468-015	x	x	x				x	
FWB-002(CC)-MHL3-171014	K1712468-016	x	x	x				x	
FF-001(SS)-DR-171016	K1712468-018	x	x	x				x	
FWB-001(SS)-DR-171016	K1712468-019	x	x	x				x	
FF-001(HS)-DR-171016	K1712468-021	x	x	x				x	
FWB-001(HS)-DR-171016	K1712468-022	x	x	x				x	
FO-001(HS)-DR-171016	K1712468-023	x							
FO-001(CC)-LHL5-171007	K1712468-007	x							
K1712469									
FF-002(KB)-LHL3-171004	K1712469-002	x	x	x				x	
FF-001(CC)-LHL2-171005	K1712469-006	x	x	x				x	
FWB-001(CC)-LHL2-171007	K1712469-007	x	x	x				x	
FF-001(LMB)-LHL2-171005	K1712469-009	x	x	x				x	
FWB-001(LMB)-LHL2-171005	K1712469-010	x	x	x				x	
FF-001(LMB)-LHL2-171005-FD	K1712469-012	x	x	x				x	
FWB-001(LMB)-LHL2-171005-FD	K1712469-013	x	x	x				x	
FF-001(CC)-LHL4-171012	K1712469-015	x	x	x				x	
FWB-001(CC)-LHL4-171012	K1712469-016	x	x	x				x	
FWB-002(KB)-LHL3-171004	K1712469-003	x	x	x				x	
FF-001(FHC)-CI-171013	K1712469-018	x	x	x				x	
FWB-001FHC)-CI-171013	K1712469-019	x	x	x				x	
FF-001(CC)-CI-171013	K1712469-022	x	x	x				x	
FWB-001(CC)-CI-171013	K1712469-023	x	x	x				x	
FO-002(KB)-LHL3-171004	K1712469-004	x							
FO-001(FHC)-CI-171013	K1712469-020	x							
K1712471									
FF-001(CC)-LHL1-171005	K1712471-002	x	x	x				x	
FWB-001(CC)-LHL1-171005	K1712471-003	x	x	x				x	
FF-001(FHC)-MHL1-171014	K1712471-005	x	x	x				x	
FWB-001(FHC)-MHL1-171014	K1712471-006	x	x	x				x	
FF-001(KB)-LHL1-171005	K1712471-009	x	x	x				x	

Sample ID	Lab ID	Metals 200.8/6010C/6020	MeHg 1630/ALS SOP	Hg 7470A 7471B	Sulfate 300.0	DissHg 1631E	Organic Carbon 9060	As spec	Se spec
FWB-001(CC)-MHL1-171014	K1712471-010	x	x	x				x	
FF-001(CC)-MHL3-171014	K1712471-013	x	x	x				x	
FWB-001(CC)-MHL3-171014	K1712471-014	x	x	x				x	
FF-001(LMB)-MHL1-171015	K1712471-017	x	x	x				x	
FWB-001(LMB)-MHL1-171015	K1712471-018	x	x	x				x	
FF-001(LMB)-DR-171016	K1712471-020	x	x	x				x	
FWB-001(LMB)-DR-171016	K1712471-021	x	x	x				x	
FO-001(FHC)-MHL1-171014	K1712471-007	x							
FO-001(KB)-MHL1-171014	K1712471-011	x							
FO-001(CC)-MHL3-171014	K1712471-015	x							
K1712474									
FF-001(CC)-LHL6-171007	K1712474-002	x	x	x				x	
FWB-001(CC)-LHL6-171007	K1712474-003	x	x	x				x	
FF-002(CC)-LHL3-171016	K1712474-006	x	x	x				x	
FWB-002(CC)-LHL3-171016	K1712474-007	x	x	x				x	
FO-001(CC)-LHL6-171007	K1712474-004	x							
FO-002(CC)-LHL3-171016	K1712474-008	x							
K1712476									
FF-001(KB)-LHL3-171003	K1712476-002	x	x	x				x	
FF-002(LMB)-CI-171004	K1712476-014	x	x	x				x	
FF-001(BT)-DR-171016	K1712476-028	x	x	x				x	
FWB-001(BT)-DR-171016	K1712476-029	x	x	x				x	
FWB-001(KB)-LHL3-171003	K1712476-003	x	x	x				x	
FWB-002(LMB)-CI-171004	K1712476-015	x	x	x				x	
FF-001(LMB)-LHL4-171003	K1712476-006	x	x	x				x	
FWB-001(LMB)-LHL4-171003	K1712476-007	x	x	x				x	
FF-001(KB)-LHL4-171003	K1712476-010	x	x	x				x	
FWB-001(KB)-LHL4-171003	K1712476-011	x	x	x				x	
FF-001(KB)-LHL2-171005	K1712476-017	x	x	x				x	
FWB-001(KB)-LHL2-171005	K1712476-018	x	x	x				x	
FF-001(FHC)-LHL1-171011	K1712476-021	x	x	x				x	
FWB-001(FHC)-LHL1-171011	K1712476-022	x	x	x				x	
FF-001(LMB)-LHL6-171011	K1712476-024	x	x	x				x	
FWB-001(LMB)-LHL6-171011	K1712476-025	x	x	x				x	
FF-002(LMB)-CI-171004-FD	K1712476-032	x	x	x				x	
FWB-002(LMB)-CI-171004-FD	K1712476-033	x	x	x				x	
FO-001(KB)-LHL3-171003	K1712476-004	x							
FO-001(LMB)-LHL4-171003	K1712476-008	x							
FO-001(KB)-LHL4-171003	K1712476-012	x							
FO-001(KB)-LHL2-171005	K1712476-019	x							
FO-001(LMB)-LHL6-171011	K1712476-026	x							
FO-001(BT)-DR-171016	K1712476-030	x							
K1712477									
FF-001(LMB)-LHL1-171005	K1712477-002	x	x	x				x	
FWB-001(LMB)-LHL1-171005	K1712476-003	x	x	x				x	
FF-002(LMB)-LHL1-171005	K1712477-006	x	x	x				x	

Sample ID	Lab ID	Metals 200.8/6010C/6020	MeHg 1630/ALS SOP	Hg 7470A 7471B	Sulfate 300.0	DissHg 1631E	Organic Carbon 9060	As spec	Se spec
FWB-002(LMB)-LHL1-171005	K1712476-007	x	x	x				x	
FF-002(CC)-LHL5-171007	K1712477-009	x	x	x				x	
FWB-002(CC)-LHL5-171007	K1712476-010	x	x	x				x	
FF-001(LMB)-MHL3-171014	K1712477-012	x	x	x				x	
FWB-001(LMB)-MHL3-171014	K1712476-013	x	x	x				x	
FF-002(LMB)-MHL3-171014	K1712477-016	x	x	x				x	
FWB-002(LMB)-MHL3-171014	K1712476-017	x	x	x				x	
FO-001(LMB)-LHL1-171015	K1712477-004	x							
FO-001(LMB)-MHL3-171014	K1712477-014	x							
K1712479									
FF-001(LMB)-CI-171004	K1712479-002	x	x	x				x	
FWB-001(LMB)-CI-171004	K1712479-003	x	x	x				x	
FF-001(CC)-LHL3-171005	K1712479-006	x	x	x				x	
FWB-001(CC)LHL3-171005	K1712479-007	x	x	x				x	
FF-002(CC)-LHL6-171007	K1712479-012	x	x	x				x	
FWB-002(CC)-LHL6-171007	K1712479-013	x	x	x				x	
FF-001(CC)-LHL3-171005-FD	K1712479-009	x	x	x				x	
FWB-001(CC)-LHL3-171005-FD	K1712479-010	x	x	x				x	
FF-001(LMB)-LHL5-171007	K1712479-015	x	x	x				x	
FWB-001(LMB)-LHL5-171007	K1712479-016	x	x	x				x	
FF-002(LMB)-LHL5-171007	K1712479-019	x	x	x				x	
FWB-002(LMB)-LHL5-171007	K1712479-020	x	x	x				x	
FF-001(KB)-LHL6-171007	K1712479-022	x	x	x				x	
FWB-001(KB)-LHL6-171007	K1712479-023	x	x	x				x	
FO-001-(LMB)-CI-171004	K1712479-004	x							
FO-001-(LMB)-LHL5-171007	K1712479-017	x							
FO-001-(KB)-LHL6-171007	K1712479-024	x							

DATA VALIDATION REPORT
Total Metals/Mercury - Method 6010C/6020A/7471B
Dissolved Metals/Mercury – Method 200.8/7470

This report documents the review of analytical data from the analyses of samples and the associated laboratory and field quality control (QC) samples. Refer to the Sample Index for a complete list of samples.

SDG	MATRIX	NUMBER OF SAMPLES	VALIDATION LEVEL
K1711372	Sediment	8	4
K1712090	Sediment	2	2
K1711369	Sediment	8	2
K1711619	Sediment	15	2
K1711264	Surface Water	20 total 20 dissolved	2
K1711263	Surface Water	11 total 8 dissolved	4
K1712059	Pore Water	14 dissolved	2
K1712055	Pore Water	2 dissolved	4
K1713449	Surface Water	14 total 14 dissolved	2
K1712350	Tissue	26 dry	4
K1712347	Tissue	26 dry	2
K1712478	Biota	27 dry	2
K1712468	Tissue	16 dry	2
K1712469	Tissue	16 dry	2
K1712471	Tissue	15 dry	2
K1712474	Tissue	6 dry	4
K1712476	Tissue	18 dry 6 dry Se only	2 4
K1712477	Tissue	12 dry	2
K1712479	Tissue	17 dry	2

Sample Receipt, Preservation, and Holding Times

As stated in validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 2°C - 6°C and metals must be analyzed within 6 months, mercury within 28 days from collection. All sample holding times were met.

The cooler temperatures for the project were -22.1, -21, -19, -12, -12.9, -11.3, -10.4, 0, 0.1, 0.3, 0.4, 0.5, 1.0, 1.4, 1.6, 1.7, 2.0, 2.1, 2.2, 2.2, 2.3, 2.5, 3.1, 3.2, 3.4, 5.1,4.5, 7.9, 8.5, 9.4, 10.6 °C. The laboratory recorded raw cooler temperatures and also corrected cooler temperatures that accounted for specific thermometer variance. The corrected cooler temperatures were used for review and determination of sample temperature compliance. The temperature blanks were reviewed however they did not vary significantly from the corrected cooler temperatures which were used for review. Data were not qualified for temperatures below the lower range. The tissue samples arrived to the laboratory frozen and kept frozen until preparation and analysis. The elevated cooler temperatures were associated with SDG K1711264.

For surface water SDG K1711264, the cooler temperatures were above the higher end of the range for all samples except a subset that were received within the 2-6 °C range. Since the field samples were preserved and stored on wet ice, sample integrity was maintained and data were not flagged for elevated temperatures. The samples were placed in laboratory refrigeration upon receipt and login to further maintain the sample integrity.

For SDG K1712468 the laboratory noted "received a sample not on COC F0-001(KB)-LHL3-17003 biota #9 corresponds w/ FUN-001(KB)-LHL3-171003". Neither of these samples are in this data package. The ovary data were reported in SDG K1712476.

Blanks

The method blanks and calibration blanks contained low levels of target analytes (magnesium, iron, boron, zinc) in the sediment and tissue analyses. Data were not qualified if the associated field sample concentrations were sufficiently elevated above the blank concentrations. The following summarizes the qualification of data due to associated blank contamination:

For surface water SDG K1711264 the following field samples were qualified as undetected and footnote 6 for associated blank contamination for dissolved cadmium (.01 J and .08 J ug/L) for samples SW-003(100)-LHL2-171006, SW-001(25)-LHL2-171006, SW-001(10)-HI1-171005, SW-001(10)-HQ1-171004, SW-001(20)-LHL5-171007, SW-002(70)-LHL5-171007, SW-002(50)-LHL2-171006, SW-001(20)-LHL3-171006, SW-003(100)-LHL6-171007, SW-001(20)-LHL4-171007, SW-002(70)-LHL4-171007, SW-001(20)-LHL6-171007, SW-001(20)-LHL1-171006, SW-002(60)-LHL1-171006, SW-003(100)-LHL3-171006 and SW-002(70)-LHL3-171006.

For surface water SDG K1711264 the following field samples were qualified as J+ and footnote 5B for associated blank contamination for total mercury (-.029 J ug/L) for samples SW-001(20)-LHL4-171007, SW-002(70)-LHL5-171007, SW-001(20)-LHL5-171007 and SW-003(100)-LHL6-171007.

For surface water SDG K1711263 the following field samples were qualified as undetected and footnote 6 for associated blank contamination for zinc (.4 J and .8 J ug/L) for the following samples:

- Dissolved: SW-001(10)-CI2-171014, SW-001(10)-CI3-171014, SW-001(70)-CI4-171014, SW-002(20)-CI4-171014, DUP-01-171014, DUP-02-171014, DUP-03-171014

- Total: SW-002(20)-CI4-171014

For surface water SDG K1711263 the following field samples were qualified as undetected and footnote 6 for associated blank contamination for cadmium (.005 J ug/L) for the following samples:

- Dissolved: SW-001(5)-CI1-171014, SW-001(10)-CI2-171014, SW-001(10)-CI3-171014, SW-001(70)-CI4-171014, SW-002(20)-CI4-171014, DUP-01-171014, DUP-02-171014, DUP-03-171014, SW-001(10)-CI2-171014

- Total: SW-001(10)-CI3-171014

For surface water SDG K1711263 one equipment blank, EB-003-171015, contained an anomalous concentration of total zinc at 59 ug/L which was not used in the evaluation of the associated data. The contamination source of the total zinc could not be determined during review of the data. The remaining two equipment blank samples contained similar, very low concentrations of total zinc that were used to qualify the data.

For surface water SDG K1711263 the following field samples were qualified as undetected and footnote 6 for associated blank contamination for boron (1.3 J ug/L) for samples EB-001-171015, EB-002-171015, and EB-003-171015.

For pore water SDG K1712059 the following field samples were qualified as undetected and footnote 6 for associated blank contamination for dissolved zinc (.5 J ug/L) PW001-CI1C-171103 and PW001-CURDS2C-171103.

For surface water SDG K1713449 the following field samples were qualified as undetected and footnote 6 for associated blank contamination for iron (1.9 J, .3 J and .4 J ug/L) for the following samples:

- Dissolved: SW001(9)HQ1-171211, SW001(25)LHL3-171212
- Total: Equip Blank 001-171212

For surface water SDG K1713449 the following field samples were qualified as undetected and footnote 6 for associated blank contamination for zinc (1.1 J, 1.6 J and 1.4 J ug/L) for the following samples:

- Dissolved: SW001(25)LHL2-171211, SW001(4)CI2-171211, SW001(9)CI3-171211, SW001(9)HQ1-171211, SW001(25)LHL3-171212

- Total: SW001(25)LHL2-171211, SW001(25)LHL1-171211, SW001(9)CI3-171211, SW001(9)HQ1-171211, SW001(3)HI1-171211, SW001(25)LHL4-171211, SW001(25)LHL5-171212, SW001(25)LHL6-171212, Equip Blank 001-171212

For surface water SDG K1713449 the following field samples were qualified as undetected and footnote 6 for associated blank contamination for mercury (.02 J ug/L) for the following samples:

- Total: SW001(9)CI3-171211, SW001(25)LHL5-171212, Equip Blank 001-171212

For surface water SDG K1713449 the following field samples were qualified as undetected and footnote 6 for associated blank contamination for magnesium (1 J and 0.9 J ug/L) for the following samples:

- Total: Equip Blank 001-171212

For tissue SDG K1712350 the following samples were qualified as undetected and footnote 6 for boron (.6 J mg/Kg) to indicate initial calibration blank contamination: FF-002(BG)-LHL1-171004, FF-002(BG)-HQ-171004-FD, FF-002(BG)-HQ-171004, FF-001(BG)-LHL4-171003, FF-002(BG)-LHL4-171003, FF-001(BG)-HQ-171004, FF-002(BG)-LHL2-171005, FF-001(BG)-LHL3-171005.

For tissue SDG K1712350 the following samples were qualified as undetected and footnote 6 for cadmium (.007 J mg/Kg) to indicate initial calibration blank contamination: FF-001(BG)-LHL3-171005, FF-002(BG)-LHL1-171004, FF-001(BG)-LHL2-171005.

For biota SDG K1712478 the following field samples were qualified as undetected and footnote 9 to indicate precision exceedance: AI-001-LHL3-171012, AVI-001-LHL4-171012, AI-001-LHL5-171012.

For tissue SDG K1712347 the following samples were qualified as undetected and footnote 6 for lead (.008 J mg/Kg) to indicate method calibration blank contamination: FF-002(BG)-MHL1-171015, FF-001(BG)-LHL1-171011, FF-001(BG)-LHL5-171011, FF-002(BG)-LHL5-171011, FF-001(BG)-LHL6-171011, FF-002(BG)-LHL6-171011, FF-001(BG)-DR-171014, FF-001(BG)-MHL3-171014, FF-002(BG)-MHL3-171014, FF-001(BG)-MHL1-171015.

For tissue SDG K1712350 the following samples were qualified as undetected and footnote 6 for lead (.007 J ug/L raw) to indicate initial calibration blank contamination: FF-001(BG)-LHL4-171003, FF-002(BG)-LHL4-171003, FF-001(BG)-CI-171004, FF-001(BG)-CI-171004-FD, FF-002(BG)-CI-171004-FD, FF-001(BG)-LHL2-171005, FF-002(BG)-LHL2-171005, FF-001(BG)-LHL3-171005.

For surface water SDG K1713449 the majority of the lead results were qualified as undetected and footnote 6 for lead (.029 J ug/L) to indicate equipment blank contamination.

For biota SDG K1712478 the following field samples were qualified as undetected and footnote 6 for associated blank contamination for mercury (.004 mg/Kg) for the following samples: AV-001-CI1-171004, AI-001-CI1-171004, AV-001-CI2-171005, AV-001-CI3-171005, AV-001-CI4-171005, AV-001-CI4-171005-FD, AI-001-CI2-171005, AI-001-CI3-171005, AI-001-CI3-171005-FD, AI-001-CI4-171005, AI-001-CI4-171005, AV-001-HQ-171006, AI-001-HQ-171006, AV-001-DR-171007, AI-001-DR-171007, AI-001-LHL1-171012, AI-001-LHL1-171012-FD, AV-001-LHL1-171012, AV-001-LHL2-171012, AV-001-LHL2-171012, AV-001-LHL3-171012.

For tissue SDG K1712474 the following samples were qualified as undetected and footnote 6 for boron (.25 J mg/Kg) to method blank contamination: FF-002(CC)-LHL3-171016.

Calibration

The analytical instrumentation were calibrated per the methodology. No problems were noted.

Low level check

For the low level check samples, the laboratory followed the specified analytical method. No problems were noted.

Internal Standards

Per method 200.8, internal standards were analyzed with the samples with acceptable results.

Interference check samples

Interference check samples were analyzed per the method and the required frequency. No problems were noted.

Matrix Spike/Matrix Spike Duplicates

For sediment SDG K1711372, the mercury matrix spike was outside limits (low %R) which resulted in estimated qualification of mercury and footnote 8 for parent sample DUP-004-171011. The remaining samples were not qualified since the laboratory analyzed a second matrix spike with acceptable recovery.

For sediment SDG K1711369, the mercury matrix spike was outside limits (low %R) which resulted in estimated qualification of mercury and footnote 8 for all samples in the batch. Additionally, magnesium recovered above limits, resulting in estimated qualification of all samples in the batch.

For tissue SDG K1712468, the mercury matrix spike and spike duplicate were low for batch 3427-05 which resulted in estimated qualification of mercury and footnote 8 for all samples in the batch.

For tissue SDG K1712469, the selenium matrix spike recovered above limits for selenium for batch 2459-06 which resulted in estimated qualification of selenium and footnote 8 for detected results in the batch.

For tissue SDG K1712471, the mercury matrix spike recovered below limits for mercury for batch 3457-05 which resulted in estimated qualification of mercury and footnote 8 for detected results in the batch.

For tissue SDG K1712474, the selenium matrix spike recovered above limits for selenium for batch 2459-05 and zinc recovered above limits for batch 2777-06 which resulted in estimated qualification of selenium and footnote 8 for FF-002(CC)-LHL3-171016 and zinc for sample FWB-002(CC)-LHL3-171016.

For tissue SDG K1712476, the mercury matrix spike was outside limits (low %R, 54%) which resulted in estimated qualification of mercury and footnote 8 for parent sample FF-001(LMB)-LHL6-171011 only. The remaining samples were not qualified since the laboratory analyzed a second matrix spike with acceptable recovery.

Post Digestion Spikes

The laboratory performed post digestions spikes with acceptable recoveries.

Laboratory Duplicates

For sediment SDG K1711372, the iron relative percent difference (%RPD) was outside limits (RPD 20%), resulting in estimated qualification of iron and footnote 9 for the sample batch.

For sediment SDG K1711369, the arsenic, iron and zinc %RPD were outside limits (RPD 20%), resulting in estimated qualification of arsenic, iron and zinc and footnote 9 for the sample batch.

For tissue SDG K1712347 the iron %RPD was outside limits (48%, limit 20%), resulting in estimated qualification of iron and footnote 9 for sample FWB-001(BG)-MHL3-171014.

For tissue SDG K1712469, the magnesium and zinc %RPDs were outside limits (RPD 20%), resulting in estimated qualification of magnesium and zinc and footnote 9 for the sample batch.

For tissue SDG K1712474, the magnesium and selenium %RPDs were outside limits (RPD 20%), resulting in estimated qualification of magnesium and selenium and footnote 9 for sample FF-002(CC)-LHL3-171016.

For tissue SDG K1712479, the lead %RPD was outside limits (RPD 20%), resulting in estimated qualification of lead and footnote 9 for samples FF-001(CC)-LHL3-171005-FD, FWB-001(CC)-LHL3-171005-FD, FF-002(CC)-LHL6-171007, FWB-002(CC)-LHL6-171007, FF-001(LMB)-LHL5-171007, FWB-001(LMB)-LHL5-171007, FF-002(LMB)-LHL5-171007, FWB-002(LMB)-LHL5-171007, FF-001(KB)-LHL6-171007, FWB-001(KB)-LHL6-171007.

Laboratory Control Samples

The laboratory analyzed laboratory control samples at the required frequency. Accuracy was met.

Standard Reference Materials

For the tissue and biota samples, the laboratory analyzed standard reference materials NRCC DORM4 and NRCC TORT 3. Recoveries were acceptable.

Serial Dilution

The laboratory performed serial dilution analysis at the required frequency. No problems were noted.

Field Duplicates

Field duplicate samples and relative percent differences (RPDs) are summarized in Table 1. Field duplicate RPDs that exceeded criteria were not qualified since there are no validation requirements for field duplicate precision exceedance.

Target Analyte List

The sampling plan was reviewed and compared to the analyte list reported. Lead was not on the custody forms for a subgroup of the data and was added at a later date, resulting in revisions to the data packages.

Reported Results
Results reported were deemed acceptable.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical methods. Accuracy was acceptable as demonstrated by the laboratory control samples, low level check samples, interference check samples, serial dilutions and standard reference material analyses. Precision was met with the exception of laboratory duplicate RPD exceedances as noted above. Accuracy was met with the exception of low matrix spike recoveries which resulted in estimated qualification of target analytes. Data are acceptable for use.

DATA VALIDATION REPORT
Methyl Mercury, Mercury – 1630/1631E/ALS SOP

This report documents the review of analytical data from the analyses of field samples and the associated laboratory and field quality control (QC) samples. Refer to the Sample Index for a complete list of samples.

SDG	Matrix	NUMBER OF SAMPLES	VALIDATION LEVEL
K1711372	Sediment	8	4
K1712090	Sediment	2	2
K1711369	Sediment	8	2
K1711619	Sediment	15	2
K1711264	Surface Water	20 dissolved Hg 20 total methyl mercury 20 dissolved methyl mercury	2
K1711263	Surface Water	11 total methyl mercury 8 dissolved methyl mercury	4
K1712059	Pore Water	13 dissolved mercury 14 dissolved methyl mercury	2
K1712055	Pore Water	2 dissolved mercury 2 dissolved methyl mercury	4
K1713449	Surface Water	13 dissolved mercury 13 dissolved methyl mercury 14 total methyl mercury	2
K1712350	Tissue	26 dry, methyl mercury	4
K1712347	Tissue	26 dry, methyl mercury	2
K1712478	Biota	26 dry, methyl mercury	2
K1712468	Tissue	14 dry, methyl mercury	2
K1712469	Tissue	14 dry, methyl mercury	2
K1712471	Tissue	12 dry, methyl mercury	2
K1712474	Tissue	4 dry	4
K1712476	Tissue	18 dry	2
K1712477	Tissue	10 dry	2
K1712479	Tissue	14 dry	2

Sample Receipt, Preservation, and Holding Times

As stated in validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 2°C - 6°C and mercury must be analyzed within 28 days from collection, methyl mercury 48 hours if unpreserved, 6 months if preserved. The following were noted:

The cooler temperatures for the project were -22.1, -21, -19, -12, -12.9, -11.3, -10.4, 0, 0.1, 0.3, 0.4, 0.5, 1.0, 1.4, 1.6, 1.7, 2.0, 2.1, 2.2, 2.2, 2.3, 2.5, 3.1, 3.2, 3.4, 5.1, 4.5, 7.9, 8.5, 9.4, 10.6 °C. The laboratory recorded raw cooler temperatures and also corrected cooler temperatures that accounted for specific thermometer variance. The corrected cooler temperatures were used for review and determination of sample temperature compliance. The temperature blanks were reviewed however they did not vary significantly from the corrected cooler temperatures which were used for review. Data were not qualified for temperatures below the lower range. The tissue samples arrived to the laboratory frozen and kept frozen until preparation and analysis. The elevated cooler temperatures were associated with SDG K1711264.

For surface water SDG K1711264, the cooler temperatures were above the higher end of the range for all samples except a subset that were received within the 2-6 °C range. Field samples that were not preserved for method 1631 dissolved mercury as indicated by the laboratory on their cooler receipt and preservation form were qualified as estimated and footnote 1 to indicate preservation discrepancies as follows: all samples except SW-003(100)-LHL2-171006, SW-001(25)-LHL2-171006, SW-002(50)-LHL2-171006, SW-001(20)-LHL1-171006 and SW-002(60)-LHL1-171006. For surface water SDG K1711263 the laboratory noted the COC was not marked for total methyl mercury however the laboratory received the bottles for this analysis and analyzed them.

For pore water SDG K1712059, the laboratory noted it did not receive a dissolved mercury sample for PW001-HI1C-171101 therefore there was no result reported for dissolved mercury by method 1631E.

For surface water SDG K1713449 the laboratory noted “Client has provided bottles for Hg- LL-Total yet this analysis is not marked on the COC. (Will log in on hold).” The samples were not analyzed for this method.

For biota SDG K1712478 the laboratory noted “received sample not on COC ‘FO-001(KB)LHL3-171003 Biota #9 – corresponds with FUN-001(KB)LHL3-171003”. Neither of these samples were included in this SDG. Additionally, methyl mercury for sample AV-001-HQ-171006 was listed on the COC to be analyzed for methyl mercury, however was not reported on the result forms for this SDG.

Blanks

The method blanks were all reported as undetected for target compounds with the following exceptions:

For sediment SDG K1711372 methyl mercury was detected in the blank at a concentration of 0.13J ng/g which resulted in U qualification and footnote 6 for

samples DUP-004-171011, SD-001(13)-CI2C-171011, SD-001(17)-CI2B-171011, SD-001(20)-CI2A-171011 and SD-001(12)-CI1C-171011.

For sediment SDG K1711369 methyl mercury was detected in the blank at a concentration of 0.13J ng/g which resulted in U qualification and footnote 6 for samples DUP-005-171011, SD-001(16)-CI1A-171011, SD-001(20)-LHL2C-171012, DUP-006-171011 and SD-001(20)-LHL2B-171012.

For surface water SDG K1711264 dissolved mercury was detected in all method blanks at concentrations ranging from 0.06 J to 0.20 J ng/L which resulted in U qualification and footnote 6 for samples SW-003(100)-LHL5-171007, SW-001(10)-HQ1-171004, SW-001(10)-HI1-171005, SW-001(20)-LHL3-171006, SW-003(100)-LHL3-171006, SW-002(70)-LHL3-171006, SW-003(100)-LHL2-171006, SW-001(25)-LHL2-171006, SW-001(20)-LHL1-171006, SW-002(60)-LHL1-171006 and SW-001(10)-DR1-171007.

For surface water SDG K1711263 total methyl mercury was detected in equipment blank EB-002-171015 at a concentration of 0.08 ng/L. The associated field sample concentrations were sufficiently elevated so data qualification was not made.

For surface water SDG K1711263 dissolved mercury was detected in the method blanks at concentrations of 0.32 and 0.18 ng/L. The associated field sample concentrations were sufficiently elevated so data qualification was not made.

For pore water SDG K1712059 dissolved methyl mercury was detected in a method blank at a concentration of 0.05 J ng/L which results in U qualification and footnote 6 for dissolved methyl mercury for samples PW001-CURDS2A-171104, PW001-CI3C-171103 and PW001-DUP-171104.

For surface water SDG K1713449 dissolved mercury was detected in the method blanks at concentrations of 0.28 J and .34 J ng/L which results in U qualification and footnote 6 for dissolved mercury for samples SW001(25)LHL2-171211, SW001(3)HI1-171211, DUP-001-171212, SW001(25)CI4-171212, SW001(25)LHL4-171212, SW001(25)LHL5-171212, SW001(25)LHL6-171212.

Calibration

The laboratory analyzed the initial and continuing calibration standards at the required frequency. No problems were noted.

Matrix Spike/Matrix Spike Duplicates

The laboratory analyzed batch matrix spike/matrix spike duplicate (MS/MSD) samples at the required frequency. Accuracy and precision were met with the following exceptions:

For surface water SDG K1711264 the matrix spike recovered low for total methyl mercury for the MS and MSD (34%, 29%, limits 65-135) resulting in estimated qualification and reason code 8 for samples SW-003(100)-LHL2-171006, SW-001(25)-LHL2-171006, SW-002(50)-LHL2-171006, SW-001(20)-LHL1-171006 and SW-002(60)-LHL1-171006. Additionally one matrix spike/spike duplicate RPD exceeded the limit of 20% (29%) for total methyl mercury, resulting in estimated qualification and reason code 9 for samples SW-001(20)-LHL6-171007, SW-

003(100)-LHL4-171007, SW-002(70)-LHL4-171007, SW-001(20)-LHL4-171007, SW-001(10)-DR1-171007, SW-003(100)-LHL5-171007, SW-002(70)-LHL5-171007, SW-001(20)-LHL5-171007, SW-003(100)-LHL6-171007 and SW-002(70)-LHL6-171007.

For surface water SDG K1711263 the matrix spike recovered low and the RPD between the MS and MSD was exceeded for total methyl mercury resulting in estimated qualification and reason codes 8 and 9 for parent sample SW-001(70)-CI4-171014. Since the laboratory analyzed two matrix spikes for the batch, only the parent sample was qualified.

For pore water SDG K1712059 the RPD between the MS and MSD was exceeded (23%, limit 20%) for dissolved methyl mercury resulting in estimated qualification and reason code 9 for all samples in the batch: PW001-CI1C-171103, PW001-CURDS2A-171104, PW001-CURDS2B-171103, PW001-CURDS2C-171103, PW001-CI2A-171104, PW001-CI2C-171103, PW001-CI3C-171103, PW001-HQ1A-171104, PW001-HQ1B-171104, PW001-HQ1C-171104, PW001-HI1A-171102, PW001-HI1B-171103, PW001-HI1C-171101 and PW001-DUP-171104.

For surface water SDG K1713449 the matrix spike recovered low for total methyl mercury for the MS (43%, 29%, limits 65-135) resulting in estimated qualification and reason code 8 for samples SW001(25)LHL4-171211, SW001(25)LHL5-171212, SW001(25)LHL6-171212, EQUIP Blank 001-171212.

For tissue SDG K1712474 the matrix spike/spike duplicate RPD (48%, limit 35%) between the MS and MSD was exceeded for total methyl mercury resulting in estimated qualification and reason code 9 for parent sample FWB-002(CC)-LHL3-171016.

Standard Reference Material

For the tissue samples, the laboratory analyzed standard reference material NRCC Tort 3.

OPR and QCS Samples

The laboratory analyzed ongoing precision and recovery samples at the required frequency with no problems noted. The laboratory analyzed quality control samples at the required frequency with no problems noted.

Field Duplicates

Field duplicate samples and relative percent differences (RPDs) are summarized in Table 1. Field duplicate RPDs that exceeded criteria were not qualified since there are no validation requirements for field duplicate precision exceedance.

Target Analyte List

The sampling plan was reviewed and compared to the analyte list reported. All analytes listed in the sampling plan were reported for this dataset.

Reported Results

Results reported were deemed acceptable.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. Several samples were qualified as U for methyl mercury due to associated blank contamination. Accuracy and precision were acceptable with the exception of data qualification due to matrix spikes and relative percent differences exceeding control limits. All data are acceptable for use.

DATA VALIDATION REPORT
Dissolved and Total Organic Carbon – 9060

This report documents the review of analytical data from the analyses of field samples and the associated laboratory and field quality control (QC) samples. Refer to the Sample Index for a complete list of samples.

SDG	Matrix	NUMBER OF SAMPLES	VALIDATION LEVEL
K1711372	Sediment	8	4
K1712090	Sediment	2	2
K1711369	Sediment	8	2
K1711619	Sediment	15	2
K1711264	Surface Water	20 total, 1 broken no sample, 20 dissolved	2
K1711263	Surface Water	8 dissolved 8 total	4
K1712059	Pore Water	10 dissolved	2
K1712055	Pore Water	2 dissolved	4
K1713449	Surface Water	13 dissolved 14 total	2

Sample Receipt, Preservation, and Holding Times

As stated in validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 2°C - 6°C and organic carbon (total and dissolved) must be analyzed within 28 days from collection. The holding times were met.

The cooler temperatures were 0, 0.3, 0.4, 0.5, 1.0, 1.4, 1.6, 1.7, 2.0, 2.1, 2.2, 2.3, 2.5, 3.1, 3.2, 3.4, 5.1,4.5, 7.9, 8.5, 9.4, 10.6 °C. Data were not qualified for temperatures below the lower range. The laboratory recorded raw cooler temperatures and also corrected cooler temperatures that accounted for specific thermometer variance. The corrected cooler temperatures were used for review and determination of sample temperature compliance. The temperature blanks were reviewed however they did not vary significantly from the corrected cooler temperatures which were used for review. Data were not qualified for temperatures below the lower range.

For surface water SDG K1711264, the cooler temperatures were above the higher end of the range for all samples except a subset that were received within the 2-6 °C range. Since the samples were preserved and wet ice was present, the Total Organic Carbon samples were not qualified for elevated cooler temperatures. Sample integrity was maintained and data were not flagged for elevated temperatures. The samples were placed in laboratory refrigeration upon receipt and login to further maintain the sample integrity. The laboratory noted one sample was broken for TOC, therefore there was no sample result for SW-002(50)-LHL2-171006.

For pore water SDG K1712059 the laboratory notes it did not receive a dissolved organic carbon bottle for the following samples: PW001-HI1A-171102, PW001-HI1C-171101, PW001-CURDS2A-171104 and PW001-DUP-171104. The field duplicate pair could not be evaluated since the duplicate sample was not present.

For pore water SDG K1712055 the laboratory did not receive a sample for dissolved organic carbon for PW001-CURDS1-171103 therefore no analysis or result was reported.

Methodology: The QAPP for Herrington Lake specifies the Lloyd Kahn method for total Organic Carbon. The laboratory analyzed the samples using method 9060. Data were not qualified for this method difference.

Blanks

The method blanks were all reported as undetected for target compounds.

Calibration

The laboratory analyzed calibration standards at the required frequency. No problems were noted.

Laboratory Control Samples

The laboratory analyzed laboratory control samples at the required frequency. No problems were noted.

Laboratory Duplicates

The laboratory analyzed laboratory duplicate samples at the required frequency. Precision was met. No problems were noted.

Matrix Spike/Matrix Spike Duplicates

The laboratory analyzed batch matrix spike/matrix spike duplicate (MS/MSD) pairs with acceptable recoveries. Accuracy and precision were met.

Field Duplicates

Field duplicate samples and relative percent differences (RPDs) are summarized in Table 1. Field duplicate RPDs that exceeded criteria were not qualified since there are no validation requirements for field duplicate precision exceedance.

Target Analyte List

The sampling plan was reviewed and compared to the analyte list reported. All analytes listed in the sampling plan were reported for this dataset.

Reported Results

Results reported were deemed acceptable.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. Accuracy and precision were acceptable as demonstrated by analysis of quality control samples. All data are acceptable for use.

DATA VALIDATION REPORT
Total and Dissolved Sulfate – 300.0

This report documents the review of analytical data from the analyses of field samples and the associated laboratory and field quality control (QC) samples. Refer to the Sample Index for a complete list of samples.

SDG	Matrix	NUMBER OF SAMPLES	VALIDATION LEVEL
K1711372	Sediment	8	4
K1712090	Sediment	2	2
K1711369	Sediment	8	2
K1711619	Sediment	15	2
K1711264	Surface Water	20 total, 20 dissolved	2
K1711263	Surface Water	8 total, 8 dissolved	4
K1712059	Pore Water	12 dissolved	2
K1712055	Pore Water	2 dissolved	4
K1713449	Surface Water	13 dissolved 14 total	2

Sample Receipt, Preservation, and Holding Times

As stated in validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 2°C - 6°C and sulfate must be analyzed within 28 days from collection.

The cooler temperatures were 0, 0.3, 0.4, 0.5, 1.0, 1.4, 1.6, 1.7, 2.0, 2.1, 2.2, 2.3, 2.5, 3.1, 3.2, 3.4, 5.1,4.5, 7.9, 8.5, 9.4, 10.6 °C. Data were not qualified for temperatures

below the lower range. The laboratory recorded raw cooler temperatures and also corrected cooler temperatures that accounted for specific thermometer variance. The corrected cooler temperatures were used for review and determination of sample temperature compliance. The temperature blanks were reviewed however they did not vary significantly from the corrected cooler temperatures which were used for review. Data were not qualified for temperatures below the lower range.

For surface water SDG K1711264, the cooler temperatures were above the higher end of the range for all samples except a subset that were received within the 2-6 °C range. Since the samples were preserved and wet ice was present, sulfate samples were not qualified for elevated cooler temperatures. Sample integrity was maintained and data were not flagged for elevated temperatures. The samples were placed in laboratory refrigeration upon receipt and login to further maintain the sample integrity.

The holding times were met with the following exceptions:

For sediment SDG K1712090, sample SD-001(76)-CI4A-171102 was analyzed for sulfate outside of the holding time due to dilutions needed for analysis. Therefore, sulfate was qualified as estimated and assigned footnote 1 to indicate holding time exceedance.

The laboratory indicated the following discrepancies during login of the field samples:

For sediment SDG K1711619, the samples names on the bottle differed from the chain-of-custody documentation (COC) as follows: bottle SD-001(17)-HQ1B-171011/ vs. COC SD-001(17)-H21B-171011; and bottle SD-001(21)-HQ1A-171011/ vs. COC SD-001(20)-H21A-171011. The laboratory noted it identified the correct samples by the collection times.

For pore water SDG K1712059 the laboratory indicated they did not receive an unpreserved sample container for PW001-HI1C-171101 and PW001-HI1A-171102. Therefore, there are no dissolved sulfate results for these two samples.

For pore water SDG K1712055 the laboratory indicated they did not receive an unpreserved sample container for PW001-CURDS1-171103. Therefore, there is no dissolved sulfate results for this sample.

Blanks

The method blanks were all reported as undetected for target compounds with the following exceptions:

For surface water SDG K1711264 there were slight detections of sulfate in the method blanks. Since the associated samples were sufficiently elevated, no qualification was made to the data.

For surface water SDG K1713449 there were slight detections of sulfate in the equipment blank, however, since the associated samples were sufficiently elevated, no qualification was made to the data.

Calibration

The laboratory analyzed the initial and continuing calibration standards at the required frequency. No problems were noted.

Matrix Spike/Matrix Spike Duplicates

The laboratory analyzed matrix spike/matrix spike duplicate (MS/MSD) pairs per the analytical method. If an MS/MSD pair was not analyzed, the laboratory analyzed an LC/LCSD pair to demonstrate accuracy and precision. No problems were noted.

Laboratory control samples

Laboratory control samples were analyzed as required by the method. Recoveries were acceptable.

Laboratory Duplicates

Laboratory duplicate samples were analyzed at the required frequency with acceptable results.

Field Duplicates

Field duplicate samples and relative percent differences (RPDs) are summarized in Table 1. Field duplicate RPDs that exceeded criteria were not qualified since there are no validation requirements for field duplicate precision exceedance.

Target Analyte List

The sampling plan was reviewed and compared to the analyte list reported. All analytes listed in the sampling plan were reported for this dataset.

Reported Results

Results reported were deemed acceptable.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. Accuracy and precision were acceptable as demonstrated by batch QC. All data are acceptable for use.

DATA VALIDATION REPORT
Arsenic Speciation – 1632A

This report documents the review of analytical data from the analyses of field samples and the associated laboratory and field quality control (QC) samples. Refer to the Sample Index for a complete list of samples.

SDG	Matrix	NUMBER OF SAMPLES	VALIDATION LEVEL
K1712059	Pore Water	16 dissolved	2
K1712055	Pore Water	2 dissolved	4
K1712350	Tissue	26 dry As III 26 dry total Inorganic	4
K1712347	Tissue	26 dry As III 26 dry total Inorganic	2
K1712468	Tissue	14 dry AsIII 14 dry total Inorganic	2
K1712469	Tissue	14 dry AsIII 14 dry total Inorganic	2
K1712471	Tissue	12 dry AsIII 12 dry total Inorganic	2
K1712474	Tissue	4 dry AsIII 4 dry total Inorganic	4
K1712476	Tissue	18 dry AsIII 18 dry total Inorganic	2
K1712477	Tissue	10 dry AsIII 10 dry total Inorganic	2
K1712479	Tissue	14 dry AsIII 14 dry total Inorganic	2

Sample Receipt, Preservation, and Holding Times

As stated in validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 2°C - 6°C and must be analyzed within 6 months from collection. The holding times were met.

The cooler temperatures for the project were -22.1, -21, -19, -12, -12.9, -11.3, -10.4, 0, 0.1, 0.3, 0.4, 0.5, 1.0, 1.4, 1.6, 1.7, 2.0, 2.1, 2.2, 2.2, 2.3, 2.5, 3.1, 3.2, 3.4, 5.1, 4.5, 7.9, 8.5, 9.4, 10.6 °C. The laboratory recorded raw cooler temperatures and also corrected cooler temperatures that accounted for specific thermometer variance. The corrected cooler temperatures were used for review and determination of sample temperature compliance. The temperature blanks were reviewed however they did not vary significantly from the corrected cooler temperatures which were used for review. Data were not qualified for temperatures below the lower range. The tissue samples arrived to the laboratory frozen and kept frozen until preparation and analysis. The elevated cooler temperatures were associated with SDG K1711264.

Blanks

The method blanks were all reported as undetected for target compounds with the following exceptions:

For pore water SDG K1712059 two method blanks contained arsenic III at concentrations of .0127 J and .0126 J ug/L, resulting in U qualification and footnote 6 for sample PW001-CI1C-171103.

For pore water SDG K1712055 the method blank contained arsenic III at concentrations of .0127 and .0126ug/L, resulting in U qualification and footnote 6 for sample PW001-CURDSNB-171103.

For tissue SDG K1712471, total inorganic arsenic was reported in the method blank at a concentration of .016 ug/g, resulting in U qualification and footnote 6 for sample FWB-001(FHC)-MHL1-171014.

For tissue SDG K1712476, total inorganic arsenic was reported in the method blank at a concentration of .017 ug/g, resulting in U qualification and footnote 6 for samples FWB-001(KB)-LHL2-171005 and FWB-002(LMB)-CI-171004-FD.

For tissue SDG K1712477, total inorganic arsenic was reported in the method blank at a concentration of .016 ug/g, resulting in U qualification and footnote 6 for sample FF-002(CC)-LHL5-171007.
For tissue SDG K1712479, total inorganic arsenic was reported in the method blank at a concentration of .017 ug/g, resulting in U qualification and footnote 6 for sample FWB-001(CC)-LHL3-171005-FD.

Calibration

The laboratory analyzed the initial and continuing calibration standards at the required frequency. No problems were noted.

Matrix Spike/Matrix Spike Duplicates

The laboratory analyzed batch matrix spike/matrix spike duplicate (MS/MSD) pairs for this data set. Accuracy and precision were met.

For pore water SDG K1712059 the laboratory noted three containers were received for PW001-HI1A-171102 and an investigation was performed after the initial matrix spike recovered at 391%. The laboratory determined that the arsenic in each bottle varied, therefore an MS/MSD was not performed and batch QC results were reported. Three separate result forms are reported for the three bottles received.

For tissue SDG K1712350 the MS recovered low (42%, 36%, limit 50-150) resulting in estimated qualification and footnote 8 for inorganic arsenic for samples FF-001(BG)-LHL2-171005, FF-001(BG)-LHL3-171005, FWB-001(BG)-LHL2-171005, FWB-001(BG)-LHL3-171005, FF-002(BG)-LHL2-171005, FWB-002(BG)-LHL2-171005.

For tissue SDG K1712350 the MS recovered high (174%, 185%, limit 30-170) resulting in estimated qualification and footnote 8 for arsenic III for detections only for samples extracted on 12/27/17: samples FWB-002(BG)-LHL1-171004, FWB-001(BG)-CI-171004, FWB-001(BG)-CI-171004-FD, FWB-002(BG)-CI-171004, FWB-002(BG)-CI-171004-FD, FF-002(BG)-CI-171004-FD, FWB-001(BG)-HQ-171004, FWB-002(BG)-HQ-171004, FWB-002(BG)-HQ-171004-FD.

For tissue SDG K1712347 the MS recovered low (34%, 37% for 12/13/17 data, 42%, 36% for 12/20/17 data, limit 50-150) resulting in estimated qualification and footnote 8 for inorganic arsenic for samples FF-002(BG)-LHL5-171011 and FF-002(BG)-MHL3-171014.

For tissue SDG K1712468 the MS and MSD recovered low (18%, 14%, 9%, 9%; limit 50-150) resulting in estimated qualification and footnote 8 for parent samples FF-001(FHC)-LHL2-171005 and FF-001(SS)-DR-171016.

For tissue SDG K1712471 the MS and MSD recovered low (9%, 9%; limit 50-150) resulting in estimated qualification and footnote 8 for total inorganic arsenic for parent sample FWB-001(LMB)-MHL1-171015.

For tissue SDG K1712474 the total inorganic MS and MSD recovered low (38%, 48%; limit 50-150), however, since there was a second matrix spike set that recovered within limits and the parent sample of the failing spike was not in this dataset, no qualification was made. Additionally the arsenic III matrix spike recovered above limits, and no data qualification was necessary since the associated field samples were undetected for arsenic III.

For tissue SDG K1712476 the MS and MSD recovered low (30%, 25%; limit 50-150) resulting in estimated qualification and footnote 8 for total inorganic arsenic for parent sample FF-001(LMB)-LHL6-171011.

For tissue SDG K1712479 the MS and MSD recovered low (38%, 48%; limit 50-150) resulting in estimated qualification and footnote 8 for total inorganic arsenic for parent sample FF-002(CC)-LHL6-171007.

Field Duplicates

Field duplicate samples and relative percent differences (RPDs) are summarized in Table 1. Field duplicate RPDs that exceeded criteria were not qualified since there are no validation requirements for field duplicate precision exceedance.

Target Analyte List

The sampling plan was reviewed and compared to the analyte list reported. All analytes listed in the sampling plan were reported for this dataset. The arsenic V is a calculation only.

Reported Results

Results reported were deemed acceptable.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. Accuracy and precision were acceptable with the exception of matrix spike exceedances resulting in data qualification. All data are acceptable for use.

DATA VALIDATION REPORT
Selenium Speciation – HPLC/CCMS

This report documents the review of analytical data from the analyses of water samples and the associated laboratory and field quality control (QC) samples. Refer to the Sample Index for a complete list of samples.

SDG	Matrix	NUMBER OF SAMPLES	VALIDATION LEVEL
K1712055	Pore Water	2	4
K1712059	Pore Water	14	2

Sample Receipt, Preservation, and Holding Times

As stated in validation guidance documents, sample shipping coolers should arrive at the laboratory within the advisory temperature range of 2°C - 6°C and analyzed within 6 months from collection. The holding times were met. The cooler temperatures were 0.3, 2.1 °C. Data were not qualified for temperatures below the lower range.

Blanks

The method blanks were all reported as undetected for target compounds.

Calibration

The laboratory analyzed the initial and continuing calibration standards at the required frequency. No problems were noted.

Matrix Spike/Matrix Spike Duplicates

The laboratory analyzed batch matrix spike/matrix spike duplicate (MS/MSD) pairs for this data set. Accuracy and precision were met.

Field Duplicates

Field duplicate samples and relative percent differences (RPDs) are summarized in Table 1. Field duplicate RPDs that exceeded criteria were not qualified since there are no validation requirements for field duplicate precision exceedance.

Target Analyte List

The sampling plan was reviewed and compared to the analyte list reported. All analytes listed in the sampling plan were reported for this dataset.

Reported Results

Results reported were deemed acceptable.

OVERALL ASSESSMENT

As determined by this evaluation, the laboratory followed the specified analytical method. Accuracy and precision were acceptable as demonstrated by batch QC. All data are acceptable for use.

Table 1 Field Duplicate Summary

Analyte	Parent Sample	Duplicate Sample	RPD	Comment
	SW001(25)CI4-1712121	DUP-001-171212	RPD	Non-filtered
Sulfate	31.2	30.8	1.3%	
As	1.49	1.59	6.5%	
B	317	316	0.3%	
Cd	0.037	0.04	7.8%	
Fe	63.9	67.8	5.9%	
Mg	11400	11400	0.0%	
Hg	0	0	0.0%	
Se	0.8	0.8	0.0%	
Zn	6.7	2.2	101.1%	out
MeHg	0.04	0.05	22.2%	within 1RL
TOC	3.16	3.2	1.3%	
	SW001(25)CI4-1712121	DUP-001-171212	RPD	filtered
Sulfate	31.8	31.7	0.3%	
As	1.39	1.38	0.7%	
B	302	324	7.0%	
Cd	0.023	0.029	23.1%	within 1RL
Fe	3.9	3.8	2.6%	
Mg	11500	11300	1.8%	
Hg	0	0	0.0%	
Se	0.8	0.8	0.0%	
Zn	2.2	3.4	42.9%	within 1RL
MeHg	0.03	0.04	28.6%	within 1RL
DOC	3.33	3.42	2.7%	
	SW-001(5)-CI1	DUP-01-171014	RPD	Non-filtered
Sulfate	63.6	52.1	19.9%	
As	1.74	1.39	22.4%	within 1RL
B	391	452	14.5%	
Cd	0.156	0.019	156.6%	out
Fe	142	53.2	91.0%	out
Mg	12200	11000	10.3%	
Hg	7.78	3.03	87.9%	out
Se	2.1	1.3	47.1%	within 1RL
Zn	9.8	2.9	108.7%	out
MeHg	0.86	0.2	124.5%	out
TOC	4.64	3.55	26.6%	out
	SW-001(5)-CI1	DUP-01-171014	RPD	Filtered

Analyte	Parent Sample	Duplicate Sample	RPD	Comment
Sulfate	64.5	51.5	22.4%	out
As	1.44	1.41	2.1%	
B	552	442	22.1%	out
Cd	0	0	0.0%	
Fe	77.1	16.9	128.1%	out
Mg	11800	11200	5.2%	
Se	2	0	200.0%	out
Zn	2.8	0	200.0%	out
Diss Hg	1710	535	104.7%	out
MeHg	0.59	0.23	87.8%	out
DOC	4.07	3.57	13.1%	
	SW-001(10)-CI2	DUP-02-171014	RPD	Non-filtered
Sulfate	59.3	64.3	8.1%	
As	1.59	1.72	7.9%	
B	450	426	5.5%	
Cd	0.028	0.017	48.9%	within 1RL
Fe	99.2	140	34.1%	out
Mg	11900	11900	0.0%	
Hg	4.28	5.02	15.9%	
Se	1.7	2.1	21.1%	within 1RL
Zn	3.3	4.2	24.0%	within 1RL
MeHg	0.18	0.39	73.7%	out
TOC	3.59	3.44	4.3%	
	SW-001(10)-CI2	DUP-02-171014	RPD	Filtered
Sulfate	59.3	64.7	8.7%	
As	1.42	1.53	7.5%	
B	461	461	0.0%	
Cd	0	0	0.0%	
Fe	47.7	86.3	57.6%	out
Mg	11700	12100	3.4%	
Se	1.7	2.2	25.6%	within 1RL
Zn	1.2	1.7	34.5%	within 1RL
Diss Hg	715	1100	42.4%	out
MeHg	0.12	0.27	76.9%	out
DOC	3.57	3.64	1.9%	
	SW-001(10)-CI3	DUP-03-171014	RPD	Non-filtered
Sulfate	53	61.1	14.2%	
As	1.58	1.68	6.1%	
B	536	459	15.5%	

Analyte	Parent Sample	Duplicate Sample	RPD	Comment
Cd	0.011	0.019	53.3%	within 1RL
Fe	62.9	114	57.8%	out
Mg	11400	11500	0.9%	
Hg	6.46	5.69	12.7%	
Se	1.4	2	35.3%	within 1RL
Zn	2.3	4.5	64.7%	out
MeHg	0.59	0.34	53.8%	out
	SW-001(10)-CI3	DUP-03-171014	RPD	Filtered
Sulfate	53.5	61.7	14.2%	
As	1.36	1.51	10.5%	
B	441	467	5.7%	
Cd	0	0	0.0%	
Fe	23.7	57.2	82.8%	out
Mg	11300	11400	0.9%	
Se	1.4	2.2	44.4%	within 1RL
Zn	0	1.5	200.0%	within 1RL
Diss Hg	970	1500	42.9%	out
DOC	3.86	3.85	0.3%	
	SD-001(13)-CI2C	DUP-04	RPD	
Sulfate	124	88	34.0%	
As	32	27.6	14.8%	
B	7.92	7.42	6.5%	
Cd	0.367	0.338	8.2%	
Fe	35100	36000	2.5%	
Mg	2980	2980	0.0%	
Se	1.4	1.3	7.4%	
Zn	71.9	65.7	9.0%	
Hg	0.047	0.059	22.6%	
MeHg	0	0	0.0%	
TOC	1.17	1.37	15.7%	
Pb	24	24	0.0%	
	SD-001(12)-CI1C	DUP-05	RPD	
Sulfate	106	176	49.6%	out
As	35.6	70.5	65.8%	out
B	8.86	6.38	32.5%	
Cd	0.472	0.625	27.9%	
Fe	35200	64000	58.1%	out
Mg	1790	1720	4.0%	
Hg	0.05	0.053	5.8%	

Analyte	Parent Sample	Duplicate Sample	RPD	Comment
Se	1.4	1.4	0.0%	
Zn	112	114	1.8%	
MeHg	0	0.05	200.0%	within 2RL
TOC	1.62	1.51	7.0%	
Pb	27	38.3	34.6%	
	SD-001(15)-CI1B	DUP-06	RPD	
Sulfate	1120	980	13.3%	
As	64.7	90.7	33.5%	
B	13.4	20.5	41.9%	out
Cd	1.62	2.26	33.0%	
Fe	40800	38700	5.3%	
Mg	2990	2910	2.7%	
Hg	0.058	0.056	3.5%	
Se	3.4	4.5	27.8%	
Zn	76.3	124	47.6%	out
MeHg	0	0.06	200.0%	within 2RL
TOC	1.73	2.5	36.4%	out
Pb	26	27	3.8%	
	SD-001(76)-CI4A	SD-DUP-009-171102	RPD	
Sulfate	2090	2630	22.9%	
As	120	123	2.5%	
B	46.6	43.5	6.9%	
Cd	3.35	3.19	4.9%	
Fe	35200	35200	0.0%	
Mg	4930	4900	0.6%	
Hg	0.143	0.14	2.1%	
Se	9.2	8.8	4.4%	
Zn	121	118	2.5%	
MeHg	0	0.3	200.0%	within 2RL
TOC	3.02	3	0.7%	
	AV-001-CI4	AV-001-CI4-171005	RPD	
As	4.07	3.98	2.2%	
B	90.5	98.9	8.9%	
Cd	1.05	1.15	9.1%	
Fe	2690	2820	4.7%	
Mg	4810	4910	2.1%	
Hg	0.023	0.025	8.3%	
Se	1.67	1.7	1.8%	
Zn	42.5	45.1	5.9%	

Analyte	Parent Sample	Duplicate Sample	RPD	Comment
MeHg	0	0	0.0%	
Pb	4.83	6.2	24.8%	
	AI-001-CI3	AI-001-CI3-171005	RPD	
As	1.12	1.2	6.9%	
B	8.07	8.03	0.5%	
Cd	0.876	1.06	19.0%	
Fe	130	125	3.9%	
Mg	3310	3060	7.8%	
Hg	0.022	0.033	40.0%	within 2RL
Se	1.87	2.3	20.6%	
Zn	62.9	61.8	1.8%	
MeHg	25	29.7	17.2%	
Pb	0.149	0.139	6.9%	
	AI-001-LHL1	AI-001-LHL1-171012	RPD	
As	1.41	1.77	22.6%	
B	9.31	9.12	2.1%	
Cd	0.204	0.282	32.1%	
Fe	154	264	52.6%	out
Mg	3480	3870	10.6%	
Hg	0.029	0.037	24.2%	
Se	2.08	2.35	12.2%	
Zn	74.8	83.1	10.5%	
MeHg	43.3	45.1	4.1%	
Pb	0.259	0.16	47.3%	within 2RL
	FUN-001(BG)-CI	FUN-001(BG)-CI-171004	RPD	
	FF-001(BG)-CI-171004	FF-001(BG)-CI-171004-FD		
AsIII	0	0	0.0%	
Total Inorg As	0	0.02	200.0%	within 2RL
MeHg	118	120	1.7%	
As	0.39	0.45	14.3%	
B	0.66	0.8	19.2%	
Cd	0.04	0.045	11.8%	
Fe	19.1	20.2	5.6%	
Mg	959	1080	11.9%	
Hg	0.11	0.105	4.7%	
Se	8.91	10.2	13.5%	
Zn	35.8	42.4	16.9%	
Pb	0	0	0.0%	

Analyte	Parent Sample	Duplicate Sample	RPD	Comment
	FWB-001(BG)-CI-171004	FWB-001(BG)-CI-171004-FD	RPD	
AsIII	0.21	0.24	13.3%	
Total Inorg As	0.274	0.277	1.1%	
MeHg	27.8	26.8	3.7%	
As	0.71	0.78	9.4%	
B	2.97	3.17	6.5%	
Cd	0.316	0.357	12.2%	
Fe	130	153	16.3%	
Mg	1900	1950	2.6%	
Hg	0.032	0.031	3.2%	
Se	5.08	5.78	12.9%	
Zn	84.4	92.4	9.0%	
Pb	0.127	0.159	22.4%	
	FUN-002(BG)-CI-171004	FUN-002(BG)-CI-171004-FD	RPD	
	FF-002(BG)-CI-171004	FF-002(BG)-CI-171004-FD		
AsIII	0	0	0.0%	
Total Inorg As	0.018	0	200.0%	within 2RL
MeHg	101	114	12.1%	
As	0.5	0.46	8.3%	
B	2.44	2.26	7.7%	
Cd	0.038	0.036	5.4%	
Fe	13.3	16.7	22.7%	
Mg	1200	1090	9.6%	
Hg	0.091	0.089	2.2%	
Se	10.6	9.18	14.4%	
Zn	35.4	42.4	18.0%	
Pb	0	0	0.0%	
	FWB-002(BG)-CI-171004	FWB-002(BG)-CI-171004-FD		
AsIII	0.3	0.32	6.5%	
Total Inorg As	0.402	0.402	0.0%	
MeHg	32.2	25.5	23.2%	
As	0.98	1	2.0%	
B	6.33	6.52	3.0%	
Cd	0.3	0.317	5.5%	
Fe	197	216	9.2%	
Mg	2100	2110	0.5%	
Hg	0.027	0.028	3.6%	
Se	4.99	5.19	3.9%	
Zn	77.2	76.5	0.9%	
Pb	0.208	0.204	1.9%	

Analyte	Parent Sample	Duplicate Sample	RPD	Comment
	FUN-002(LMB)-CI	FUN-002(LMB)-CI-171004	RPD	
v	FF-002(LMB)-CI-171004	FF-002(LMB)-CI-171004-FD		
AsIII	0	0	0.0%	
Total Inorg As	0	0	0.0%	
MeHg	527	568	7.5%	
As	0.89	0.82	8.2%	
B	0	0	0.0%	
Cd	0.014	0.015	6.9%	
Fe	8.05	7.56	6.3%	
Mg	1320	1160	12.9%	
Hg	0.423	0.425	0.5%	
Se	5.98	5.33	11.5%	
Zn	50.6	50.4	0.4%	
Pb	0.005	0.008	0.0%	
	FWB-002(LMB)-CI-171004	FWB-002(LMB)-CI-171004-FD	RPD	
AsIII	0	0	0.0%	
Total Inorg As	0.025	0	200.0%	within 2RL
MeHg	186	142	26.8%	
As	0.91	0.78	15.4%	
B	0.5	0.53	5.8%	
Cd	0.36	0.262	31.5%	
Fe	338	221	41.9%	out
Mg	2280	2060	10.1%	
Hg	0.158	0.138	13.5%	
Se	2.79	2.52	10.2%	
Zn	82.8	75.3	9.5%	
Pb	0.072	0.059	19.8%	
	FUN-002(BG)-HQ	FUN-002(BG)-HQ-171004	RPD	
v	FF-002(BG)-HQ-171004	FF-002(BG)-HQ-171004-FD		
AsIII	0	0	0.0%	
Total Inorg As	0	0	0.0%	
MeHg	126	79.5	45.3%	out
As	0.3	0.33	9.5%	
B	0.34	0.36	5.7%	
Cd	0.031	0.034	9.2%	
Fe	25.5	11.4	76.4%	out
Mg	1050	1160	10.0%	
Hg	0.147	0.136	7.8%	
Se	6.99	6.27	10.9%	
Zn	53	51.6	2.7%	

Analyte	Parent Sample	Duplicate Sample	RPD	Comment
Pb	0	0	0.0%	
	FWB-002(BG)-HQ-171004	FWB-002(BG)-HQ-171004-FD	RPD	
AsIII	0.17	0.13	26.7%	
Total Inorg As	0.161	0.133	19.0%	
MeHg	42.8	24.5	54.4%	within 2RL
As	0.53	0.53	0.0%	
B	1.47	1.5	2.0%	
Cd	0.131	0.114	13.9%	
Fe	120	126	4.9%	
Mg	2430	2230	8.6%	
Hg	0.066	0.053	21.8%	
Se	3.8	3.78	0.5%	
Zn	127	128	0.8%	
Pb	0.118	0.116	1.7%	
	FUN-001(LMB)-LHL2	FUN-001(LMB)-LHL2-171005	RPD	
	FF-001(LMB)-LHL2-171005	FF-001(LMB)-LHL2-171005-FD		
AsIII	0	0	0.0%	
Total Inorg As	0	0	0.0%	
MeHg	445	427	4.1%	
As	1.41	1.48	4.8%	
B	0	0	0.0%	
Cd	0.007	0.005	33.3%	
Fe	9.8	10.1	3.0%	
Mg	1030	1080	4.7%	
Hg	0.374	0.32	15.6%	
Se	4.31	4.3	0.2%	
Zn	30.8	31.3	1.6%	
Pb	0.004	0.004	0.0%	
	FWB-001(LMB)-LHL2-171005	FWB-001(LMB)-LHL2-171005-FD	RPD	
AsIII	0	0	0.0%	
Total Inorg As	0	0	0.0%	
MeHg	142	125	12.7%	
As	1.37	1.52	10.4%	
B	0	0	0.0%	
Cd	0.039	0.04	2.5%	
Fe	41.2	43	4.3%	
Mg	2000	1420	33.9%	
Hg	0.099	0.11	10.5%	

Analyte	Parent Sample	Duplicate Sample	RPD	Comment
Se	2.3	2.61	12.6%	
Zn	50.8	51.2	0.8%	
Pb	0.025	0.021	17.4%	
	FWB-001(CC)-LHL3-171005	FWB-001(CC)-LHL3-171005-FD	RPD	
AsIII	0	0	0.0%	
Total Inorg As	0.022	0.023	4.4%	
MeHg	44	86.5	65.1%	out
As	0.14	0.14	0.0%	
B	0.68	0.81	17.4%	
Cd	0.087	0.05	54.0%	within 2RL
Fe	511	410	21.9%	
Mg	1540	1280	18.4%	
Hg	0.128	0.078	48.5%	out
Se	2.57	2.32	10.2%	
Zn	81.7	80.5	1.5%	
Pb	0.109	0.071	42.2%	within 2RL
	FF-001(CC)-LHL3-171005	FF-001(CC)-LHL3-171005-FD	RPD	
AsIII	0	0	0.0%	
Total Inorg As	0	0	0.0%	
MeHg	220	280	24.0%	
As	0.11	0.11	0.0%	
B	0	0	0.0%	
Cd	0.004	0.004	0.0%	
Fe	28.2	24.5	14.0%	
Mg	922	962	4.2%	
Hg	0.203	0.213	4.8%	
Se	2.7	2.6	3.8%	
Zn	41.9	39.4	6.2%	
Pb	0.017	0.013	26.7%	
	PW001-HQ1C-171104	PW001-DUP-171104	RPD	
Selenium +4	0.12	0	200.0%	within 1RL
Selenium +6	0.4	0	200.0%	within 1RL
Selenocyanate	0	0	0.0%	
Unk Selenium species	0	0	0.0%	
ASIII	0.0642	0.0486	27.7%	within 1RL
AsV	0.491	0.475	3.3%	
Inorganic As	0.555	0.524	5.7%	
As	1.14	1.05	8.2%	
B	304	310	2.0%	

Analyte	Parent Sample	Duplicate Sample	RPD	Comment
Cd	0	0	0.0%	
Fe	30.4	20.9	37.0%	out
Mg	10200	10400	1.9%	
Hg	0	0	0.0%	
Se	0.8	0.8	0.0%	
Zn	2.5	4.8	63.0%	out
Diss Hg	1.03	1.29	22.4%	out
Diss MeHg	0	0	0.0%	
sulfate	39.3	39.5	0.5%	
DissOrganic Carbon	2.86	no sample	NA	

Field Duplicate Criteria: a control limit of 20% for waters, 35% for solids for the Relative Percent Difference (RPD) if results are >5x the MRL. If <MRL, a control limit of 1RL for water and 2RL for solids between the values was used. There are no data qualification requirements for field duplicate results that exceed the control limits. The field duplicates provide information for the data user.

APPENDIX A
DATA QUALIFIER DEFINITIONS
REASON CODES

DATA VALIDATION QUALIFIER CODES
Based on National Functional Guidelines

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

NJ - The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated numerical value represents the approximate concentration.

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

DATA QUALIFIER REASON CODES

Group	Code	Reason for Qualification
Sample Handling	1	Improper Sample Handling or Sample Preservation (i.e., headspace, cooler)
Instrument Performance	24	Instrument Performance (i.e., tune, resolution, retention time window, endrin breakdown, lock-mass)
Instrument Performance	5A	Initial Calibration (RF, %RSD, r2)
Instrument Performance	5B	Calibration Verification (CCV, CCAL; RF, %D, %R) Use bias flags (H,L)1 where appropriate
Instrument Performance	5C	Initial Calibration Verification (ICV %D, %R) Use bias flags (H,L)1 where appropriate
Blank Contamination	7	Field Blank Contamination (Equipment Rinsate, Trip Blank, etc.)
Blank Contamination	6	Lab Blank Contamination (i.e., method blank, instrument blank, etc.) Use low bias flag (L)1 for negative instrument blanks
Precision and Accuracy	8	Matrix Spike (MS and/or MSD) Recoveries Use bias flags (H,L)1 where appropriate
Precision and Accuracy	9	Precision (all replicates: LCS/LCSD, MS/MSD, Lab Replicate, Field Replicate)
Precision and Accuracy	10	Laboratory Control Sample Recoveries (a.k.a. Blank Spikes) Use bias flags (H,L)1 where appropriate
Precision and Accuracy	12	Reference Material Use bias flags (H,L)1 where appropriate
Precision and Accuracy	13	Surrogate Spike Recoveries (a.k.a. labeled compounds, recovery standards) Use bias flags (H,L)1 where appropriate
Interferences	16	ICP/ICP-MS Serial Dilution Percent Difference
Interferences	17	ICP/ICP-MS Interference Check Standard Recovery Use bias flags (H,L)1 where appropriate
Interferences	19	Internal Standard Performance (i.e., area, retention time, recovery)
Interferences	22	Elevated Detection Limit due to Interference (i.e., chemical and/or matrix)
Interferences	23	Bias from Matrix Interference (i.e. diphenyl ether, PCB/pesticides)
Identification and Quantitation	2	Chromatographic pattern in sample does not match pattern of calibration standard
Identification and Quantitation	3	2nd column confirmation (RPD or %D)
Identification and Quantitation	4	Tentatively Identified Compound (TIC) (associated with NJ only)
Identification and Quantitation	20	Calibration Range or Linear Range Exceeded
Identification and Quantitation	25	Compound Identification (i.e., ion ratio, retention time, relative abundance, etc.)
Miscellaneous	11	A more appropriate result is reported (multiple reported analyses i.e., dilutions, reextractions, etc. Associated with “R” and “DNR” only)
Miscellaneous	14	Other (See DV report for details)
Miscellaneous	26	Method QC information not provided

APPENDIX B
DATA VALIDATION CHECKLISTS AND RESULT FORMS

Fish LVL 4

VALIDATION WORKSHEET

Method: Total Metals, Mercury
Date Reviewed: 4.9.18
Sample Collection Dates: 10.7 - 10.16.17
SDG: K1712474
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(CC)-LHL6-171027	2 FWB-001(CC)-LHL6-171007	3 FF-002(CC)-LHL3-171016	4 FWB-002(CC)-LHL3-171016	5 FD-001(CC)-LHL6-171007	6 FD-002(CC)-LHL3-171016	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→	→	→														
Holding Times	~~A~~	→	→	→	→	→														
Initial Calibration	A	→	→	→	→	→														
Continuing Calibration	A	→	→	→	→	→														
Method Blanks ①	A	A	X	A	→	→														
LCS	A	→	→	→	→	→														
~~Surrogate %R or duplicate RPD~~ MS/MSD: ②	A	A	X	A	A	A														
			X																	
Reporting Limits	A	→	→	→	→	→														
Completeness of Analyte List	A	→	→	→	→	→														
Field Duplicate Pair :																				
Equip /Field Blank																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SDG 10.7 - 10.16.17 — metals — Hg

prep 3.16.18 — 3.26.18

run 3.20.18 — 3.27.18

SRM DORM-4, TORT 3

MS Se high 128 (75-125) batch 2459-05
Zn high 134 batch 2777-06
J 8 FWB-002(CC)-LHL3-171016
J, 8 FF-002(CC)-LHL3-171016.

MB • Fe .25 J } ext. 2/26/18 B U 6 FF-002(CC)-LHL3-171016.
Fe .1 J }
Fe .4 J ext 3.16

② Hg + Se out batch 2459-05 J 9 FF-002(CC)-LHL3-171016.

SDG K1712474	Analyte Metals/Hg	
Project: Hew Lake		
Date: 4.9.18	.002 .3g 30ml	
Sample ID FF-002(cc)-LHL3-17040	Lab reported -054	mg/Kg mg/L
		ug/L
Calulation Hg 5.32 x 1000 = 533	533	
Sample ID FWB-002(cc)-LHL3-17040	Lab reported -007	mg/Kg mg/L
		ug/L
Calulation Hg 7.43 x 1000 = 743	743	
Sample ID FWB-001(cc)-LHL6-17040	Lab reported .053	mg/Kg mg/L
Hg 8.5 x 1000 = 850	854	ug/L
Calulation		
Sample ID FD-002(cc)-LHL6-17040	Lab reported .004 .30g 30ml	mg/Kg mg/L
Se 11.602 /2 = 5.8		ug/L
Calulation		
Sample ID FF-002(cc)-LHL3-17040	Lab reported .006 .30g 30ml	mg/Kg mg/L
b 4.65 /2 = 2.32	.24	ug/L
Calulation		
Cd .011 /2 = .005	.005	
Sample ID Fe 21.85/2 = 10.92	Lab reported 10.9	mg/Kg mg/L
Pb .008 /2 = .004	.004	ug/L
Calulation		
Sample ID FWB-002(cc)-LHL3-17040	Lab reported .154 mg/kg	mg/Kg mg/L
Hg .168 x 2 = 1.57		ug/L
Calulation .787 / 5.12 = 154		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

SDG: K1712474

ICB B .5J ug/L) no flag
CCB Cd .0005J ug/L

Project: Herr Lake

Date: 4.9.18

Method: Metals | Hg

ICV %R	13200/12580 = 1.05	lab reported	105
CCV %R	4.9/5 = .98	lab reported	98
LCS	Ag 174/167 = 1.04 Hg 52.5/50 = 1.05	lab reported	105 105
ICS %R	Se 24.7/25 = .988	lab reported	99
MS %R	Se As 116.6 19.2 − .26/16.6 = 1.14	lab reported	115
MS/MSD %RPD		lab reported	
Duplicate %D	Hg $\frac{790-859}{790+859/2} = \frac{-69}{824} = .083$	lab reported	8
High Std Check	dup	lab reported	
Low Cal Check	Hg $\frac{.171-.164}{.171+.164/2} = \frac{.007}{.167} = .04$	lab reported	4
Serial D %	.044/.04 = 1.1	lab reported	111
Sample Recalculation	Se $\frac{13\ 12}{13} = .08$	lab reported	10
other (moisture)		lab reported	
	post spike Se 71−135 = 1.14		115

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712474
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(CC)-LHL6-171007	**Basis:**	Dry
Lab Code:	K1712474-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.11 J**	mg/Kg	0.50	0.02	5	03/20/18 18:19	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 18:19	03/16/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/20/18 18:19	03/16/18	
Iron	6020A	**12.9**	mg/Kg	1.0	0.09	5	03/20/18 18:19	03/16/18	
Lead	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/20/18 18:19	03/16/18	
Magnesium	6010C	**799**	mg/Kg	1.0	0.5	1	03/26/18 12:56	03/16/18	
Mercury	7471B	**0.505**	mg/Kg	0.019	0.004	2	03/27/18 12:26	03/26/18	
Selenium	6020A	**1.5**	mg/Kg	1.0	0.03	5	03/20/18 18:19	03/16/18	
Zinc	6020A	**25.7**	mg/Kg	0.50	0.08	5	03/20/18 18:19	03/16/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712474
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(CC)-LHL6-171007	**Basis:**	Dry
Lab Code:	K1712474-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.14 J**	mg/Kg	0.50	0.02	5	03/20/18 18:22	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 18:22	03/16/18	
Cadmium	6020A	**0.033**	mg/Kg	0.020	0.003	5	03/20/18 18:22	03/16/18	
Iron	6020A	**43.5**	mg/Kg	0.99	0.09	5	03/20/18 18:22	03/16/18	
Lead	6020A	**0.129**	mg/Kg	0.020	0.003	5	03/20/18 18:22	03/16/18	
Magnesium	6010C	**844**	mg/Kg	0.99	0.50	1	03/26/18 12:59	03/16/18	
Mercury	7471B	**0.171**	mg/Kg	0.019	0.004	2	03/27/18 12:29	03/26/18	
Selenium	6020A	**1.28**	mg/Kg	0.99	0.03	5	03/20/18 18:22	03/16/18	
Zinc	6020A	**46.1**	mg/Kg	0.50	0.08	5	03/20/18 18:22	03/16/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712474
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(CC)-LHL6-171007	**Basis:**	Dry
Lab Code:	K1712474-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**5.78**	mg/Kg	1.00	0.03	5	12/29/17 15:30	12/28/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712474
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-002(CC)-LHL3-171016	**Basis:**	Dry
Lab Code:	K1712474-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.11 J**	mg/Kg	0.50	0.02	5	03/05/18 12:16	02/26/18	
Boron	6020A	**0.24** J U4	mg/Kg	0.50	0.20	5	03/05/18 12:16	02/26/18	
Cadmium	6020A	**0.005 J**	mg/Kg	0.020	0.003	5	03/05/18 12:16	02/26/18	
Iron	6020A	**10.9**	mg/Kg	1.0	0.09	5	03/05/18 12:16	02/26/18	
Lead	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/05/18 12:16	02/26/18	
Magnesium	6010C	**533** J9	mg/Kg	1.0	0.5	1	03/07/18 10:59	02/26/18	
Mercury	7471B	**0.288**	mg/Kg	0.019	0.004	2	03/08/18 16:08	03/08/18	
Selenium	6020A	**1.3** J9,8	mg/Kg	1.0	0.03	5	03/05/18 12:16	02/26/18	
Zinc	6020A	**22.3**	mg/Kg	0.50	0.08	5	03/05/18 12:16	02/26/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712474
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-002(CC)-LHL3-171016	**Basis:**	Dry
Lab Code:	K1712474-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.11 J**	mg/Kg	0.50	0.02	5	03/05/18 13:17	03/02/18	
Boron	6020A	**0.55**	mg/Kg	0.50	0.20	5	03/05/18 13:17	03/02/18	
Cadmium	6020A	**0.079**	mg/Kg	0.020	0.003	5	03/05/18 13:17	03/02/18	
Iron	6020A	**81.6**	mg/Kg	1.00	0.09	5	03/05/18 13:17	03/02/18	
Lead	6020A	**0.159**	mg/Kg	0.020	0.003	5	03/05/18 13:17	03/02/18	
Magnesium	6010C	**741**	mg/Kg	1.00	0.5	1	03/07/18 11:12	03/02/18	
Mercury	7471B	**0.154**	mg/Kg	0.020	0.004	2	03/07/18 12:10	03/05/18	
Selenium	6020A	**1.65** J	mg/Kg	1.00	0.03	5	03/05/18 13:17	03/02/18	
Zinc	6020A	**59.9** J	mg/Kg	0.50	0.08	5	03/05/18 13:17	03/02/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712474
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-002(CC)-LHL3-171016	**Basis:**	Dry
Lab Code:	K1712474-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**6.59**	mg/Kg	1.00	0.03	5	12/29/17 15:32	12/28/17	

Fish LVL 4

VALIDATION WORKSHEET

Method: Methyl Mercury
Date Reviewed: 4.9.18
Sample Collection Dates: 10.7 - 10.16.17
SDG: K1712474
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(CC)-LHL6-171007	2 FWB-001(CC)-LHL6-171007	3 FF-002(CC)-LHL3-171014	4 FWB-002(CC)-LHL3-171014	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A →																			
Holding Times	A →																			
Initial Calibration	A →																			
Continuing Calibration																				
Method Blanks	A →																			
LCS / QCS	A →																			
Surrogate %R or duplicate RPD																				
MS/MSD: (1)	A	A	A	X																
Reporting Limits	A →																			
Completeness of Analyte List	A →																			
Field Duplicate Pair :																				
Equip /Field Blank																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Spl 10.7.17 - 10.16.17
Prep 3.20.18 22618 3.5.18
Run 3.29.18 22718 3.6.18

OPRs - ok

(1) MS/MSD RPD high 735 (488) parent spl -007 FWB-002(CC)-LHL3-171014 J8

9

SDG: K1712474

Project: Hex Cr.

Date: 4.9.18

Method: Meth. ALS SOP

ICV %R	~~CC~~ ICAL 20.5/20 = 1.07 97.5/100 = .97	lab reported 108 97
CCV %R OPR:	111/108 1.1.	lab reported 111
LCS/LCS TOR T3	122/137 = .89	lab reported 89
ICS %R		lab reported
MS %R Batch	2480 - 207 / 1992 = .99	lab reported 99
MS/MSD %RPD	2480 - 2470 / 2480 + 2470/2 = 10/2475 = .12	lab reported 12
Duplicate %D		lab reported
~~High Std Check~~ MS-007	2330 - 1430 / 2330 + 1430/2 = 900/1880 = .477	lab reported MS/MSD RPD Out - 2474-007
Low Cal Check		lab reported
Serial D %		lab reported 3
Sample Recalculation		lab reported
other (moisture)		lab reported

SDG 1471254	Analyte Methyl Mercury	
Project: Herr. Lake		
Date: 4.9.18		
	28	
Sample ID FF-002(LL)-UH23-170116	Lab reported 284	mg/Kg mg/L .67
71.9 / .257 = 284.	.251 25% vol ult.	ug/L
Calulation	50 Vol .05	.38
		20 ml
Sample ID FWSP-002(LL)-UH23-170116	Lab reported 107 104	mg/Kg mg/L
		ug/L
Calulation 26.6 / ~~.845~~ .254 = 104	/ .845	
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712474
Date Collected: 10/07-16/17
Date Received: 11/16/17-01/19/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL6-171007	K1712474-002	10.0	4.0	1	03/28/18	03/29/18	717	
FWB-001(CC)-LHL6-171007	K1712474-003	9.9	4.0	1	03/28/18	03/29/18	188	
Method Blank 1	K1712474-MB1	10.0	4.0	1	03/28/18	03/29/18	ND	
Method Blank 2	K1712474-MB2	10.0	4.0	1	03/28/18	03/29/18	ND	
Method Blank 3	K1712474-MB3	10.0	4.0	1	03/28/18	03/29/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712474
Date Collected: 10/07-16/17
Date Received: 11/16/17-01/19/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(CC)-LHL3-171016	K1712474-006	10.0	4.0	1	02/26/18	02/27/18	286	
Method Blank 1	K1712474-MB1	10.0	4.0	1	02/26/18	02/27/18	ND	
Method Blank 2	K1712474-MB2	10.0	4.0	1	02/27/18	02/27/18	ND	
Method Blank 3	K1712474-MB3	10.0	4.0	1	02/28/18	02/27/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712474
Date Collected: 10/07-16/17
Date Received: 11/16/17-01/19/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FWB-002(CC)-LHL3-171016	K1712474-007	9.8	3.9	1	03/05/18	03/06/18	104	J B9
Method Blank 1	K1712474-MB1	10.0	4.0	1	03/05/18	03/06/18	ND	
Method Blank 2	K1712474-MB2	10.0	4.0	1	03/05/18	03/06/18	ND	
Method Blank 3	K1712474-MB3	10.0	4.0	1	03/05/18	03/06/18	ND	

1632A

FISH LVL 4

VALIDATION WORKSHEET

Method: arsenic III

Date Reviewed: 4.9.18

Sample Collection Dates: 10.7 - 10.16.17

SDG: K1712474

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1 FF-001(cc)-LHL6-171007	2 FWB-001(cc)-LHL6-171007	3 FF-002(cc)-LHL3-171014	4 FWB-002(cc)-LHL3-171014	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria																				
Completeness of Analyses	A	→	→	→																
Holding Times	A	→	→	→																
Initial Calibration	A	→	→	→																
Continuing Calibration	A	→	→	→	Cal ver ok															
Method Blanks	A	→	→	→																
LCS																				
Surrogate %R or duplicate RPD																				
MS/MSD: (1)	A	→	→	→																
Reporting Limits	A	→	→	→																
Completeness of Analyte List	A	→	→	→																
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

35

frozen

SM 10.7 - 10.16.17

prep 3.28.18 3.718

run 3.29.18 3818

(1) ms batch QC high MSH ~~ASW~~ 2479.012 extr. 3/28/18 no flag, NDin spls

SDG K1712474	Analyte AS (V)	
Project: HEW Yh		
Date: 4.9.18		
Sample ID FF.001(CC).LHL6.17007	Lab reported -002 ND ug/kg	mg/Kg mg/L
Vow Q 3.6		ug/L
Calulation .63 x 10 = 3.6 /100 = .036 MDL .04 < MDL.		
.869 x 2		
Sample ID FWB.001(CC).LHL6.17007 -003	Lab reported ND ug/kg	mg/Kg mg/L
0		ug/L
Calulation 0		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

SDG: K1712474

Project: Hew Ln

Date: 4.9.18

Method: 1632

ICV %R		lab reported
CCV %R	cal ver .207/.2 = 1.03	lab reported 103
LCS		lab reported
ICS %R	OPR .188/.2 = .94	lab reported 94
MS %R	1.1/.6 = 1.83 .985/.590 = 1.65	lab reported 165 * 183 MSH CCV ASW
MS/MSD %RPD	$\frac{1.1-.949}{1.1+.949/2} = \frac{.151}{1.02} = .14$	lab reported 14
Duplicate %D		lab reported
High Std Check		lab reported
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712474
Date Collected: 10/07/17
Date Received: 11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL6-171007	K1712474-002	0.080	0.040	1	03/28/18	03/29/18	ND	
FWB-001(CC)-LHL6-171007	K1712474-003	0.080	0.040	1	03/28/18	03/29/18	ND	
Method Blank 1	K1712474-MB1	0.080	0.040	1	03/28/18	03/29/18	ND	
Method Blank 2	K1712474-MB2	0.080	0.040	1	03/28/18	03/29/18	ND	
Method Blank 3	K1712474-MB3	0.080	0.040	1	03/28/18	03/29/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712474
Date Collected: 10/16/17
Date Received: 11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(CC)-LHL3-171016	K1712474-006	0.079	0.040	1	03/07/18	03/08/18	ND	
FWB-002(CC)-LHL3-171016	K1712474-007	0.079	0.040	1	03/07/18	03/08/18	ND	
Method Blank 1	K1712474-MB1	0.080	0.040	1	03/07/18	03/08/18	ND	
Method Blank 2	K1712474-MB2	0.080	0.040	1	03/07/18	03/08/18	ND	
Method Blank 3	K1712474-MB3	0.080	0.040	1	03/07/18	03/08/18	ND	

Fish LCL 4

1632A

VALIDATION WORKSHEET

Method: Total Inorganic Arsenic
Date Reviewed: 4.9.18
Sample Collection Dates: 10.7 - 10.16.17

SDG: K1712474
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(cc)-LHL6-171007	2 FWB-001(cc)-LHL6-171007	3 FF-002(cc)-LHL3-171014	4 FWB-002(cc)-LHL3-171014	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→																
Holding Times	A	→	→	→																
Initial Calibration	A	→	→	→																
Continuing Calibration	A	→	→	→		cal ver.														
Method Blanks	A	→	→	→																
LCS																				
Surrogate %R or duplicate RPD																				
MS/MSD: (1)	A	→	→	→																
Reporting Limits	A	→	→	→																
Completeness of Analyte List	A	→	→	→																
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

OPRD - ok no flags

spl 10.7. - 10.16.17
prep 3.28.18 3.7.18
run 3.30.18 3.9.18

(1) MS+MSDL 38%, 48% (50-150) batch 247A.012 extr. 3/28/18
second batch MS ok. no flags.
parent spl not in batch.

SDG: 1C1712474

Project: Herr Lake

Date: 4.9.18

Method: 1632A T. As.

ICV %R	.42/.5 = .84	10.64/10 = 1.06	lab reported	106 84
CCV %R	.192/.2 = 96	.188/.2 = 94	lab reported	96 94
LCS			lab reported	
ICS %R			lab reported	
MS %R	.46/1.2 = .38	1.15 − .03/1.18 = 94	lab reported	38 94 flag matrix
MS/MSD %RPD	$\frac{1.21-1.25}{1.21+1.25/2} = \frac{.04}{1.23} = .035$		lab reported	3
Duplicate %D			lab reported	
~~High Std Check~~ QPR	~~.188/.2 = 94~~	.393/.4 = .98	lab reported	~~94~~ 98
Low Cal Check			lab reported	
Serial D %			lab reported	
Sample Recalculation			lab reported	
other (moisture)			lab reported	

SDG 1617124774	Analyte T. Inorg. As	
Project: Herr Lake		
Date: 4.9.18		
	~~.007~~	
Sample ID FWB.002(cc).UH23.17016	Lab reported ND	mg/Kg mg/L
		ug/L
Calulation .65 X 10 = 12.89	mg/g .012 ug/g	
.252 x2 .65X10	= 15.45 .005	
.546x2		
Sample ID FF.001(cc).UH26.17007	Lab reported ND	mg/Kg mg/L
	1000 = .001 g	ug/L
Calulation .07 x10 = 1.39		
.251 x2		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712474
Date Collected: 10/07/17
Date Received: 11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL6-171007	K1712474-002	0.040	0.014	1	03/28/18	03/30/18	ND	
FWB-001(CC)-LHL6-171007	K1712474-003	0.040	0.014	1	03/28/18	03/30/18	ND	
Method Blank 1	K1712474-MB1	0.040	0.014	1	03/28/18	03/30/18	ND	
Method Blank 2	K1712474-MB2	0.040	0.014	1	03/28/18	03/30/18	ND	
Method Blank 3	K1712474-MB3	0.040	0.014	1	03/28/18	03/30/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712474
Date Collected: 10/16/17
Date Received: 11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(CC)-LHL3-171016	K1712474-006	0.040	0.014	1	03/07/18	03/09/18	ND	
FWB-002(CC)-LHL3-171016	K1712474-007	0.040	0.014	1	03/07/18	03/09/18	ND	
Method Blank 1	K1712474-MB1	0.040	0.014	1	03/07/18	03/09/18	ND	
Method Blank 2	K1712474-MB2	0.040	0.014	1	03/07/18	03/09/18	ND	
Method Blank 3	K1712474-MB3	0.040	0.014	1	03/07/18	03/09/18	ND	

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83679

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004

SR# K1712474

COC Set 1 of 1

COC# BIOTA #4

Project Name: KD-HERRINGTON LAKE | Project Number: 0342643A

Project Manager: MARY SORENSEN

Company: RAMBOLL ENVIRON

Address: 1600 PARKWOOD CIR, SUITE 310, ATL, GA

Phone #: 770.548.1799 | email: msorensen@ramboll.com

Sampler Signature: [signature] | Sampler Printed Name: KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D 300.0 / SO4	28D 7471B / Hg	180D 1630 Modified / Methyl Hg	180D 6010C / Metals T	180D 6020A / Metals T	1 1632/As INOR	2 1632/As 3	3 1632/As 5	4 PSTH [illegible]	5 LIPIDS	Remarks
1. FUN-001(CC)-LHL6-171007	171007	10-7-17	1000	T	2		X	X	X	X	X	X	X	X	X	
2. FO-001(CC)-LHL6-171007	171007	10-7-17	1000	↓	1				X	X				X	X	*Se ONLY
3. FUN-002(CC)-LHL3-171016	171016	10-16-17	1000	↓	1		X	X	X	X	X	X	X	X	X	
4. FO-002(CC)-LHL3-171016	171016	10-16-17	1000	↓	1				X	X				X	X	*Se ONLY
5.																
6.																
7.																
8.																
9.																
10.																

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- ___ II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- X IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.# ____________

Bill To: ____________

Turnaround Requirements

___ 24 hr. ___ 48 hr.

X 5 Day Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____ (Circle One)

Special Instructions/Comments:

*FISH TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP

**EACH FISH TO BE SPLIT INTO FILLET (FF) + REMAINS (FWB) AND COMPOSITED ACCORDING TO EMAIL INSTRUCTIONS

	Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	[signature]	[signature] CODY GRAVES				
Printed Name	KATRINA LEIGH	ALS				
Firm	RAMBOLL					
Date/Time	11/14/17 1800	11/16/17 0930				

ALS

PC MH

Cooler Receipt and Preservation Form

ient RAMBOLL ENVIRON Service Request K17 12474

eceived: 11-16-17 Opened: 11-16-17 By: ASP Unloaded: 11-16-17 By: ASP/CG

Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*

Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*

Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

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
-11.2	-11.3	NA	NA	-0.1	356	83679	7884 7816 1592	
2.2	2.2	NA	NA	0.0	391	83679	7884 7816 1629	
-13.0	-12.9	NA	NA	+0.1	376	83679	7884 7816 1618	
-19.0	-19.0	NA	NA	0.0	379	83679	7884 7816 1607	
-12.0	-12.0	NA	NA	0.0	373	83679	7884 7816 1630	

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) CG 11/16

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: Received sample not on COC - "FO-001(KB)LHL3-171003" (Bota#9 - corresponds w/ FUN-001(KB)-LHL3-171003.

7/25/16

Page 1 of 2

ALS

PC MH

Cooler Receipt and Preservation Form

lient Rambell Service Request K17 12474

eceived: 11/16/17 Opened: 11/16/17 By: CG Unloaded: 11/16/17 By: CG/DP

. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*

. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*

. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

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
-21.0	-21.1	/	/	-0.1	349	83679	7884 7816 1640	
-22.0	-22.1	/	/	-0.1	328		1651	
-10.4	-10.4	/	/	0.0	325		1581	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* *Wet Ice* (*Dry Ice*) *Sleeves* _____

5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N

6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N

If applicable, tissue samples were received: (*Frozen*) *Partially Thawed* *Thawed*

7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N

8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y (N)

9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N

10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N

11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N

12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: See Pg. 1.

7/25/16

Page 2 *of* 2

200.8 SW lvl 4

VALIDATION WORKSHEET

Method: Total + Dissolved Metals/Hg 7470

Date Reviewed: 11.30.17

Sample Collection Dates: 10.14.17

SDG: K1711263

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SW 001(5) CI1.171014	2 SW 001(5) CI1.171014	3 001(10) CI2.171014	4 001(10) CI2.171014	5 EB.001.171015	6 EB002.171015	7 EB 003 171015	8 SW 001(60) CI3.171014	9 SW 001(10) CI3.171014	10 SW 001(70) CI4.171014	11 SW 001(70) CI4.171014	12 SW 002(70) CI4.171014	13 SW 002(70) CI4.171014	14 DUP.01.171014	15 DUP.01.171014	16 DUP.02.171014	17 DUP.02.171014	18 DUP.03.171014	19 DUP.03.171014	20
Completeness of Analyses	T	D	T	D	T	T	T	T	D	T	D	T	D	T	D	T	D	T	D	
Holding Times	A →																		→	
Initial Calibration	A →																		→	
Continuing Calibration	A →																		→	
Method Blanks ①	A	X	A	X	A	A	A	X	X	A	X	X	X	A	X	A	X	A	X	
LCS	A →																		→	
Surrogate %R or duplicate RPD	A →																		→	
MS/MSD:	A →																		→	
Reporting Limits ①	A →																		→	
Completeness of Analyte List	A →																		→	
Field Duplicate Pair :																				
Equip /Field Blank ②					X	X	X													

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

	Total	Diss	Hg
spl	10.14.17	10.14.17	10.14.17
Dates: prep	10.26, 10.27	10.26.17	10.27.17
run	11.1 + 11.2	11.1.17	11.2.17

①②	EB1	EB2	EB3
Co	1.J	.7J	.6J
Fe	.6J	1.4J	2.1
Mg	3J	(31)	10J
Zn	.4J	.8J	(59)
Hg		1.58	

} See attached for Qual

① RL QAP says 6020, run 200.8
Hg 7470 ✓

11 Total
8 Diss

② Fe MRL in QAPP, listed on F1 as 2 ug/L

Shaw 128 LLC

IC171263

EB Metals highest Blank used to flag data U, 6 of data is also a J value

	EB1	EB2	EB3
Bo	1.J	.7J	.6J
Fe	.6J	1.4J	2.1
Mg	3J	31	10J
Zn	.4J	.8J	59
Hg	ND	1.58	ND

U, 6 — SW.001(10)CI2.171014 diss, SW.001(10)CI3.171014 diss
diss SW.001(70)-CI4.171014
total SW.002(20) CI4.171014
diss SW.002(20) CI4. 171014 diss DUP.01.171014
diss DUP.02.171014 diss DUP.03.171014

Zinc in EB-003.171015 Hg not used - grossly high.

ICB Bo 1.3J EB-001.171015 EB002.171015 EB.003.171015
Cd .005J U, 6 SW.001(5)CI1.171014 diss SW.001(10)-CI2.171014(D)
Mg +J (I)SW.001(10)CI3.171014 SW.001(10)CI3.171014(D)
(D)SW.001(70)CI4.171014 SW.002(20) CI4.171014(I)
CCB Mg 1J (I)DUP.01.171014 DUP.02.171014 - again DUP3. again
(diss)SW.001(10).CI2.171014 J+D J+D

CCB5 has Bo @ -.828J .001
has Mg @ 1.4, 1.2 . EB is 42

CCB7 has Mg .11J

SDG: K1711263

Project: Herr Lake

Date: 11.3.17 -007 Ag rule Ba, Hg-MS -ok

Method: 200.8/ 7470A

ICV %R	As 25.9/25= 1.03 Ba 24.8/25= .99	lab reported 103 99
CCV %R	Fe 25.1/25=1. Hg 5.05/5= 1.0	lab reported 100 101
LCS	54.8/50=1.10	lab reported 110
ICS %R		lab reported
MS %R	Diss As 56.3-1.92/50= 1.087	lab reported 109
MS/MSD %RPD	Diss Ba Cu 28.4-.02/25=1.135	lab reported 114
Duplicate %D	Mes $\frac{1.92-1.94}{1.92+1.94/2} = \frac{.02}{1.93} \cdot 010$ Total As $\frac{2.65-2.55}{2.65+2.55/2} = \frac{.1}{2.60} = .038$	lab reported 4 1
High Std Check		lab reported
Low Cal Check	dup Hg Total $\frac{1.96-2.03}{1.96+2.03/2} = \frac{-.07}{1.995} = .035$	lab reported 4
~~Serial D %~~	MS Hg 7.68-1.96/5= 1.14	lab reported 114
Sample Recalculation		lab reported
other (moisture)	IS:	lab reported

Low check B 1.5/2= .75 77

Zn 2.2/2= 1.1

Serial D Hg $\frac{2-1.9}{2+1.9/2} = \frac{.2}{1.95} = .1$ %D=10

SDG 171124	Analyte Metals/Hg	
Project: New Lake		
Date: 11.30.17		
Sample ID SW.001(5)CI1.171014	Lab reported As 1.74 ✓	mg/Kg mg/L
		ug/L
Calulation 19.558x20=391 20x	Ba 391 ✓	
Sample ID	Lab reported Hg 7.78 ✓	mg/Kg mg/L
		ug/L
Calulation	Zn 9.8 ✓	
Sample ID SW.001(5)CI1.171014 DISS	Lab reported As 1.44 ✓	mg/Kg mg/L
		ug/L
Calulation	Cd .016J ✓	
Sample ID	Lab reported Mg 11800 ✓	mg/Kg mg/L
		ug/L
Calulation	Se 2.0 ✓	
Sample ID T.SW.001(10)CI2.171014	Lab reported As 1.59 ✓	mg/Kg mg/L
	Cd .028 ✓	ug/L
Calulation	Fe 99. ✓	
	Se 1.74 ✓	
Sample ID ~~005~~ T EB.003.171015	Lab reported Fe 2.1 ✓	mg/Kg mg/L
on p.403 p.397 validated	Mg 10J ✓	ug/L
Calulation	Zn 59 ✓	
	B .6 ✓	
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 10:00
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	SW-001(5)-CI1-171014	**Basis:**	NA
Lab Code:	K1711263-001		

LVLY

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.74**	ug/L	0.50	0.08	1	11/01/17 14:11	10/26/17	
Boron	200.8	**391**	ug/L	40	4	20	11/01/17 16:01	10/26/17	
Cadmium	200.8	**0.156**	ug/L	0.020	0.005	1	11/01/17 14:11	10/26/17	
Iron	200.8	**142**	ug/L	2.0	0.3	1	11/01/17 14:11	10/26/17	
Magnesium	200.8	**12200**	ug/L	10	0.7	1	11/01/17 14:11	10/26/17	
Mercury	7470A	**7.78**	ug/L	0.20	0.02	1	11/02/17 10:59	10/27/17	
Selenium	200.8	**2.1**	ug/L	1.0	0.2	1	11/01/17 14:11	10/26/17	
Zinc	200.8	**9.8**	ug/L	2.0	0.3	1	11/01/17 14:11	10/26/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 10:45
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	SW-001(10)-CI2-171014	**Basis:**	NA
Lab Code:	K1711263-002		

N U

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.59**	ug/L	0.50	0.08	1	11/01/17 14:13	10/26/17	
Boron	200.8	**450**	ug/L	40	4	20	11/01/17 16:02	10/26/17	
Cadmium	200.8	**0.028**	ug/L	0.020	0.005	1	11/01/17 14:13	10/26/17	
Iron	200.8	**99.2**	ug/L	2.0	0.3	1	11/01/17 14:13	10/26/17	
Magnesium	200.8	**11900**	ug/L	10	0.7	1	11/01/17 14:13	10/26/17	
Mercury	7470A	**4.28**	ug/L	0.20	0.02	1	11/02/17 11:01	10/27/17	
Selenium	200.8	**1.7**	ug/L	1.0	0.2	1	11/01/17 14:13	10/26/17	
Zinc	200.8	**3.3**	ug/L	2.0	0.3	1	11/01/17 14:13	10/26/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/15/17 14:00
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	EB-001-171015	**Basis:**	NA
Lab Code:	K1711263-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	ND U	ug/L	0.50	0.08	1	11/01/17 14:15	10/26/17	
Boron	200.8	**1.0** J	ug/L	2.0	0.2	1	11/01/17 14:32	10/26/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/01/17 14:15	10/26/17	
Iron	200.8	**0.6** J	ug/L	2.0	0.3	1	11/01/17 14:15	10/26/17	
Magnesium	200.8	**3** J	ug/L	10	0.7	1	11/01/17 14:15	10/26/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/02/17 11:02	10/27/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/01/17 14:15	10/26/17	
Zinc	200.8	**0.4** J	ug/L	2.0	0.3	1	11/01/17 14:15	10/26/17	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/15/17 14:30
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	EB-002-171015	**Basis:**	NA
Lab Code:	K1711263-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	ND U	ug/L	0.50	0.08	1	11/01/17 14:16	10/26/17	
Boron	200.8	**0.7** JU	ug/L	2.0	0.2	1	11/01/17 14:34	10/26/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/01/17 14:16	10/26/17	
Iron	200.8	**1.4 J**	ug/L	2.0	0.3	1	11/01/17 14:16	10/26/17	
Magnesium	200.8	**31**	ug/L	10	0.7	1	11/01/17 14:16	10/26/17	
Mercury	7470A	**1.58**	ug/L	0.20	0.02	1	11/02/17 11:04	10/27/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/01/17 14:16	10/26/17	
Zinc	200.8	**0.8 J**	ug/L	2.0	0.3	1	11/01/17 14:16	10/26/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/15/17 15:00
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	EB-003-171015	**Basis:**	NA
Lab Code:	K1711263-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	ND U	ug/L	0.50	0.08	1	11/01/17 14:18	10/26/17	
Boron	200.8	**0.6** ~~J~~ U	ug/L	2.0	0.2	1	11/01/17 14:35	10/26/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/01/17 14:18	10/26/17	
Iron	200.8	**2.1**	ug/L	2.0	0.3	1	11/01/17 14:18	10/26/17	
Magnesium	200.8	**10 J**	ug/L	10	0.7	1	11/01/17 14:18	10/26/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/02/17 11:06	10/27/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/01/17 14:18	10/26/17	
Zinc	200.8	**59.0**	ug/L	2.0	0.3	1	11/01/17 14:18	10/26/17	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 11:15
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	SW-001(10)-CI3-171014	**Basis:**	NA
Lab Code:	K1711263-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.58**	ug/L	0.50	0.08	1	11/01/17 17:21	10/26/17	
Boron	200.8	**536**	ug/L	40	4	20	11/01/17 16:25	10/26/17	
Cadmium	200.8	**0.011** BU 4	ug/L	0.020	0.005	1	11/01/17 17:21	10/26/17	
Iron	200.8	**62.9**	ug/L	2.0	0.3	1	11/01/17 17:21	10/26/17	
Magnesium	200.8	**11400**	ug/L	10	0.7	1	11/01/17 17:21	10/26/17	
Mercury	7470A	**6.46**	ug/L	0.20	0.02	1	11/02/17 11:07	10/27/17	
Selenium	200.8	**1.4**	ug/L	1.0	0.2	1	11/01/17 17:21	10/26/17	
Zinc	200.8	**2.3**	ug/L	2.0	0.3	1	11/01/17 17:21	10/26/17	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 12:17
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	SW-001(70)-CI4-171014	**Basis:**	NA
Lab Code:	K1711263-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**2.65**	ug/L	0.50	0.08	1	11/01/17 17:23	10/26/17	
Boron	200.8	**401**	ug/L	40	4	20	11/01/17 16:06	10/26/17	
Cadmium	200.8	**0.073**	ug/L	0.020	0.005	1	11/01/17 17:23	10/26/17	
Iron	200.8	**148**	ug/L	2.0	0.3	1	11/01/17 17:23	10/26/17	
Magnesium	200.8	**11700**	ug/L	10	0.7	1	11/01/17 17:23	10/26/17	
Mercury	7470A	**1.96**	ug/L	0.20	0.02	1	11/02/17 11:09	10/27/17	
Selenium	200.8	**1.6**	ug/L	1.0	0.2	1	11/01/17 17:23	10/26/17	
Zinc	200.8	**4.2**	ug/L	2.0	0.3	1	11/01/17 17:23	10/26/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 12:45
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	SW-002(20)-CI4-171014	**Basis:**	NA
Lab Code:	K1711263-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.34**	ug/L	0.50	0.08	1	11/01/17 17:28	10/26/17	
Boron	200.8	**425**	ug/L	40	4	20	11/01/17 16:11	10/26/17	
Cadmium	200.8	**0.029**	ug/L	0.020	0.005	1	11/01/17 17:28	10/26/17	
Iron	200.8	**39.8**	ug/L	2.0	0.3	1	11/01/17 17:28	10/26/17	
Magnesium	200.8	**10900**	ug/L	10	0.7	1	11/01/17 17:28	10/26/17	
Mercury	7470A	**3.19**	ug/L	0.20	0.02	1	11/02/17 11:19	10/27/17	
Selenium	200.8	**1.0**	ug/L	1.0	0.2	1	11/01/17 17:28	10/26/17	
Zinc	200.8	**1.8** JV 4	ug/L	2.0	0.3	1	11/01/17 17:28	10/26/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 08:00
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	DUP-01-171014	**Basis:**	NA
Lab Code:	K1711263-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.39**	ug/L	0.50	0.08	1	11/01/17 17:33	10/26/17	
Boron	200.8	**452**	ug/L	40	4	20	11/01/17 16:16	10/26/17	
Cadmium	200.8	**0.019** JV 6	ug/L	0.020	0.005	1	11/01/17 17:33	10/26/17	
Iron	200.8	**53.2**	ug/L	2.0	0.3	1	11/01/17 17:33	10/26/17	
Magnesium	200.8	**11000**	ug/L	10	0.7	1	11/01/17 17:33	10/26/17	
Mercury	7470A	**3.03**	ug/L	0.20	0.02	1	11/02/17 11:23	10/27/17	
Selenium	200.8	**1.3**	ug/L	1.0	0.2	1	11/01/17 17:33	10/26/17	
Zinc	200.8	**2.9**	ug/L	2.0	0.3	1	11/01/17 17:33	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 08:00
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	DUP-02-171014	**Basis:**	NA
Lab Code:	K1711263-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.72**	ug/L	0.50	0.08	1	11/01/17 17:35	10/26/17	
Boron	200.8	**426**	ug/L	40	4	20	11/01/17 16:21	10/26/17	
Cadmium	200.8	**0.017** J V	ug/L	0.020	0.005	1	11/01/17 17:35	10/26/17	
Iron	200.8	**140**	ug/L	2.0	0.3	1	11/01/17 17:35	10/26/17	
Magnesium	200.8	**11900**	ug/L	10	0.7	1	11/01/17 17:35	10/26/17	
Mercury	7470A	**5.02**	ug/L	0.20	0.02	1	11/02/17 11:25	10/27/17	
Selenium	200.8	**2.1**	ug/L	1.0	0.2	1	11/01/17 17:35	10/26/17	
Zinc	200.8	**4.2**	ug/L	2.0	0.3	1	11/01/17 17:35	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 08:00
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	DUP-03-171014	**Basis:**	NA
Lab Code:	K1711263-011		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.68**	ug/L	0.50	0.08	1	11/01/17 17:37	10/26/17	
Boron	200.8	**459**	ug/L	40	4	20	11/01/17 16:23	10/26/17	
Cadmium	200.8	**0.019** J U Q	ug/L	0.020	0.005	1	11/01/17 17:37	10/26/17	
Iron	200.8	**114**	ug/L	2.0	0.3	1	11/01/17 17:37	10/26/17	
Magnesium	200.8	**11500**	ug/L	10	0.7	1	11/01/17 17:37	10/26/17	
Mercury	7470A	**5.69**	ug/L	0.20	0.02	1	11/02/17 11:27	10/27/17	
Selenium	200.8	**2.0**	ug/L	1.0	0.2	1	11/01/17 17:37	10/26/17	
Zinc	200.8	**4.5**	ug/L	2.0	0.3	1	11/01/17 17:37	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 10:00
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	SW-001(5)-CI1-171014	**Basis:**	NA
Lab Code:	K1711263-001		

LVL 4

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.44**	ug/L	0.50	0.08	1	11/01/17 17:42	10/26/17	
Boron	200.8	**552**	ug/L	40	4	20	11/01/17 16:26	10/26/17	
Cadmium	200.8	**0.016** J V 6	ug/L	0.020	0.005	1	11/01/17 17:42	10/26/17	
Iron	200.8	**77.1**	ug/L	2.0	0.3	1	11/01/17 17:42	10/26/17	
Magnesium	200.8	**11800**	ug/L	10	0.7	1	11/01/17 17:42	10/26/17	
Selenium	200.8	**2.0**	ug/L	1.0	0.2	1	11/01/17 17:42	10/26/17	
Zinc	200.8	**2.8**	ug/L	2.0	0.3	1	11/01/17 17:42	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 10:45
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	SW-001(10)-CI2-171014	**Basis:**	NA
Lab Code:	K1711263-002		

1 V J 4

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.42**	ug/L	0.50	0.08	1	11/01/17 17:43	10/26/17	
Boron	200.8	**461**	ug/L	40	4	20	11/01/17 16:28	10/26/17	
Cadmium	200.8	**0.010** J V 4	ug/L	0.020	0.005	1	11/01/17 17:43	10/26/17	
Iron	200.8	**47.7**	ug/L	2.0	0.3	1	11/01/17 17:43	10/26/17	
Magnesium	200.8	**11700**	ug/L	10	0.7	1	11/01/17 17:43	10/26/17	
Selenium	200.8	**1.7**	ug/L	1.0	0.2	1	11/01/17 17:43	10/26/17	
Zinc	200.8	**1.2** J V 6	ug/L	2.0	0.3	1	11/01/17 17:43	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 11:15
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	SW-001(10)-CI3-171014	**Basis:**	NA
Lab Code:	K1711263-006		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.36**	ug/L	0.50	0.08	1	11/01/17 17:45	10/26/17	
Boron	200.8	**441**	ug/L	40	4	20	11/01/17 16:30	10/26/17	
Cadmium	200.8	**0.008** JV 4	ug/L	0.020	0.005	1	11/01/17 17:45	10/26/17	
Iron	200.8	**23.7**	ug/L	2.0	0.3	1	11/01/17 17:45	10/26/17	
Magnesium	200.8	**11300**	ug/L	10	0.7	1	11/01/17 17:45	10/26/17	
Selenium	200.8	**1.4**	ug/L	1.0	0.2	1	11/01/17 17:45	10/26/17	
Zinc	200.8	**0.7** JV 4	ug/L	2.0	0.3	1	11/01/17 17:45	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 12:17
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	SW-001(70)-CI4-171014	**Basis:**	NA
Lab Code:	K1711263-007		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.92**	ug/L	0.50	0.08	1	11/01/17 17:47	10/26/17	
Boron	200.8	**458**	ug/L	40	4	20	11/01/17 16:31	10/26/17	
Cadmium	200.8	**0.007** JU b	ug/L	0.020	0.005	1	11/01/17 17:47	10/26/17	
Iron	200.8	**29.0**	ug/L	2.0	0.3	1	11/01/17 17:47	10/26/17	
Magnesium	200.8	**11700**	ug/L	10	0.7	1	11/01/17 17:47	10/26/17	
Selenium	200.8	**1.5**	ug/L	1.0	0.2	1	11/01/17 17:47	10/26/17	
Zinc	200.8	**1.4** JU b	ug/L	2.0	0.3	1	11/01/17 17:47	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 12:45
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	SW-002(20)-CI4-171014	**Basis:**	NA
Lab Code:	K1711263-008		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.30**	ug/L	0.50	0.08	1	11/01/17 17:52	10/26/17	
Boron	200.8	**435**	ug/L	40	4	20	11/01/17 16:37	10/26/17	
Cadmium	200.8	**0.012** J U 4	ug/L	0.020	0.005	1	11/01/17 17:52	10/26/17	
Iron	200.8	**7.8**	ug/L	2.0	0.3	1	11/01/17 17:52	10/26/17	
Magnesium	200.8	**10700**	ug/L	10	0.7	1	11/01/17 17:52	10/26/17	
Selenium	200.8	**0.9 J**	ug/L	1.0	0.2	1	11/01/17 17:52	10/26/17	
Zinc	200.8	**0.9** J U 6	ug/L	2.0	0.3	1	11/01/17 17:52	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 08:00
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	DUP-01-171014	**Basis:**	NA
Lab Code:	K1711263-009		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.41**	ug/L	0.50	0.08	1	11/01/17 17:57	10/26/17	
Boron	200.8	**442**	ug/L	40	4	20	11/01/17 17:11	10/26/17	
Cadmium	200.8	**0.007** J (U by)	ug/L	0.020	0.005	1	11/01/17 17:57	10/26/17	
Iron	200.8	**16.9**	ug/L	2.0	0.3	1	11/01/17 17:57	10/26/17	
Magnesium	200.8	**11200**	ug/L	10	0.7	1	11/01/17 17:57	10/26/17	
Selenium	200.8	**1.2**	ug/L	1.0	0.2	1	11/01/17 17:57	10/26/17	
Zinc	200.8	**0.5** J (U by)	ug/L	2.0	0.3	1	11/01/17 17:57	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 08:00
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	DUP-02-171014	**Basis:**	NA
Lab Code:	K1711263-010		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.53**	ug/L	0.50	0.08	1	11/01/17 18:02	10/26/17	
Boron	200.8	**461**	ug/L	40	4	20	11/01/17 17:13	10/26/17	
Cadmium	200.8	**0.017** BU U	ug/L	0.020	0.005	1	11/01/17 18:02	10/26/17	
Iron	200.8	**86.3**	ug/L	2.0	0.3	1	11/01/17 18:02	10/26/17	
Magnesium	200.8	**12100**	ug/L	10	0.7	1	11/01/17 18:02	10/26/17	
Selenium	200.8	**2.2**	ug/L	1.0	0.2	1	11/01/17 18:02	10/26/17	
Zinc	200.8	**1.7** BV U	ug/L	2.0	0.3	1	11/01/17 18:02	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17 08:00
Sample Matrix:	Surface Water	**Date Received:**	10/17/17 09:30
Sample Name:	DUP-03-171014	**Basis:**	NA
Lab Code:	K1711263-011		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.51**	ug/L	0.50	0.08	1	11/01/17 18:04	10/26/17	
Boron	200.8	**467**	ug/L	40	4	20	11/01/17 17:14	10/26/17	
Cadmium	200.8	**0.009** J U Q	ug/L	0.020	0.005	1	11/01/17 18:04	10/26/17	
Iron	200.8	**57.2**	ug/L	2.0	0.3	1	11/01/17 18:04	10/26/17	
Magnesium	200.8	**11400**	ug/L	10	0.7	1	11/01/17 18:04	10/26/17	
Selenium	200.8	**2.2**	ug/L	1.0	0.2	1	11/01/17 18:04	10/26/17	
Zinc	200.8	**1.5** J U Q	ug/L	2.0	0.3	1	11/01/17 18:04	10/26/17	

SW 1UL 4

VALIDATION WORKSHEET

Method: Methyl Mercury Total + Diss. 1630
Date Reviewed: 11.30.17
Sample Collection Dates: 10.14.17

SDG: 1L171263
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SW001(5)CI1.171014	2 + (10)CI2.171014	3 EB.001.171015	4 .002.	5 .003.	6 SW.001(10)CI3.171014	7 001(30)CI4.171014	8 001(70)CI4.171014	9 DUP.01.171014	10 .02.	11 .03.	12	13 SW001(5)CI1.171014	14 001(10)CI2.171014	15 001(10)CI3.171014	16 001(70)CI4.171014	17 002(70)CI4.171014	18 DUP.01.171014	19 .02.171014	20 + .03.171014
Completeness of Analyses	TOTAL												DISS							
Holding Times	A												A							
Initial Calibration	A												A							
Continuing Calibration																				
Method Blanks	A												A							
LCS OGS	A												A							
~~Surrogate %R or duplicate RPD~~	A												A							
MS/MSD: ⓓ	~~A~~						~~X~~	A					A							
Reporting Limits ✓	A												A							
Completeness of Analyte List	A												A							
Field Duplicate Pair :																				
Equip /Field Blank																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

HT lowest % pres. 48 hr. cryles.

	Total	Diss
Spl	10.14.17	10.14.17
Prep	10.26.17	10.26.17
Run	10.27.17	10.27.17

- EB .002 Total Meth. Hg .085 no flag to data.

FDS

Total Meth Hg MSL, RPD out add J1&J, 8, 9 since lab ran 2 spikes -.057 only point out SW001(70)CI4.171014

OPR - ok

- COC not marked for total Meth Hg, lab recd. bottles for it and ran it

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Analytical Report

Client: Ramboll Environ US Corporation
Project: RU-Herrington Lake/02-42643A
Sample Matrix: Surface water

Service Request: K1711263
Date Collected: 10/14/17
Date Received: 10/17/17

Methyl Mercury

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW-001(5)-CI1-171014	K1711263-001	0.1	0.03	1	10/26/17	10/27/17	0.86	J
SW-001(10)-CI2-171014	K1711263-002	0.1	0.03	1	10/26/17	10/27/17	0.18	J
EB-001-171015	K1711263-003	0.1	0.03	1	10/26/17	10/27/17	ND	UJ
EB-002-171015	K1711263-004	0.1	0.03	1	10/26/17	10/27/17	0.08	J
EB-003-171015	K1711263-005	0.1	0.03	1	10/26/17	10/27/17	ND	UJ
SW-001(10)-CI3-171014	K1711263-006	0.1	0.03	1	10/26/17	10/27/17	0.59	J
SW-001(70)-CI4-171014	K1711263-007	0.1	0.03	1	10/26/17	10/27/17	0.20	J
SW-002(20)-CI4-171014	K1711263-008	0.1	0.03	1	10/26/17	10/27/17	0.61	J
DUP-01-171014	K1711263-009	0.1	0.03	1	10/26/17	10/27/17	0.20	J
DUP-02-171014	K1711263-010	0.1	0.03	1	10/26/17	10/27/17	0.39	J
DUP-03-171014	K1711263-011	0.1	0.03	1	10/26/17	10/27/17	0.27	J
Method Blank 1	K1711263-MB1	0.1	0.03	1	10/26/17	10/27/17	ND	
Method Blank 2	K1711263-MB2	0.1	0.03	1	10/26/17	10/27/17	ND	
Method Blank 3	K1711263-MB3	0.1	0.03	1	10/26/17	10/27/17	ND	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17
Sample Matrix:	Surface water	**Date Received:**	10/17/17

Dissolved Methyl Mercury

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW-001(5)-CI1-171014	K1711263-001	0.1	0.03	1	10/26/17	10/27/17	0.59	
SW-001(10)-CI2-171014	K1711263-002	0.1	0.03	1	10/26/17	10/27/17	0.12	
SW-001(10)-CI3-171014	K1711263-006	0.1	0.03	1	10/26/17	10/27/17	0.16	
SW-001(70)-CI4-171014	K1711263-007	0.1	0.03	1	10/26/17	10/27/17	0.29	
SW-002(20)-CI4-171014	K1711263-008	0.1	0.03	1	10/26/17	10/27/17	0.14	
DUP-01-171014	K1711263-009	0.1	0.03	1	10/26/17	10/27/17	0.23	
DUP-02-171014	K1711263-010	0.1	0.03	1	10/26/17	10/27/17	0.27	
DUP-03-171014	K1711263-011	0.1	0.03	1	10/26/17	10/27/17	0.34	

SDG 1C17112G3	Analyte T+Diss Methyl Mercury	
Project: Rail Lake		
Date: 11.30.17		
Total Sample ID SW-001(5) CI1-171014 .859	Lab reported .86 ng/L	mg/Kg mg/L ug/L
Calulation		
Total Sample ID SW-001(10)CI1-171014 Raw .178	Lab reported .18 ng/L	mg/Kg mg/L ug/L
Calulation		
Diss Sample ID SW001(5) CI1-171014 .588	Lab reported .59 ng/L	mg/Kg mg/L ug/L
Calulation		
Diss Sample ID SW-001(10)CI2-171014 .12	Lab reported .12 ng/L	mg/Kg mg/L ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L ug/L
Calulation		

SDG: 1C1711263

Project: Herr. Lake

Date: 11.30.17

Method: 1630

ICV %R	2.44 / 2 = 1.22	lab reported	122
CCV %R		lab reported	
LCS	QCS 124/100 = 1.24	lab reported	124
~~ICS~~ %R	OPR 1.78/200 = .89	lab reported	89
MS %R	1.31 − .2/2 = .54	lab reported	007 MS low. (65-135) MSL, RPD out
MS/MSD %RPD	$\frac{1.31 - 2.14}{1.31 + 2.14/2} = \frac{-.83}{1.72} = .48$	lab reported	48 @ out.
Duplicate %D	$\frac{.29 - .25}{.29 + .25/2} \rightarrow \frac{.04}{.27} = .15$	lab reported	15
High Std Check		lab reported	
Low Cal Check		lab reported	
Serial D %		lab reported	
Sample Recalculation		lab reported	
other (moisture)		lab reported	

total Mn/Fe

008 MS ok

GW Level 4

VALIDATION WORKSHEET

Method: DRO Hg 1631E
Date Reviewed: 11.30.17
Sample Collection Dates: 10.14.17

SDG: 161711263
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 GW-001(5)-CH-171014	2 GW-001(10)-CI2-171014	3 001(10)CI3-171014	4 001(70)CI4-171014	5 002(70)CI4-171014	6 DUP-01-171014	7 -02-	8 -03-	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→	→	→	→	→												
Holding Times	A	→	→	→	→	→	→	→		90 d.										
Initial Calibration	A	→	→	→	→	→	→	→												
Continuing Calibration																				
Method Blanks (1)	A	→	→	→	→	→	→	→												
~~LCS~~ QCS	A	→	→	→	→	→	→	→												
Surrogate %R or ~~duplicate RPD~~ ~~MS/MSD:~~	A	→	→	→	→	→	→	→												
Reporting Limits	A	→	→	→	→	→	→	→												
Completeness of Analyte List	A	→	→	→	→	→	→	→												
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

MB3 .32 J
.18 J

MRLs too low to qual data

OPR-ok

Spl 10.14.17
Prep 10.24.17
Run 10.25.17

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17
Sample Matrix:	Surface water	**Date Received:**	10/17/17

Mercury, Dissolved

Prep Method: METHOD
Analysis Method: 1631E
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW-001(5)-CI1-171014	K1711263-001	12.5	1.5	25	10/24/17	10/25/17	1710	
SW-001(10)-CI2-171014	K1711263-002	12.5	1.5	25	10/24/17	10/25/17	715	
SW-001(10)-CI3-171014	K1711263-006	12.5	1.5	25	10/24/17	10/25/17	970	
SW-001(70)-CI4-171014	K1711263-007	0.5	0.06	1	10/24/17	10/25/17	319	
SW-002(20)-CI4-171014	K1711263-008	12.5	1.5	25	10/24/17	10/25/17	522	
DUP-01-171014	K1711263-009	12.5	1.5	25	10/24/17	10/25/17	535	
DUP-02-171014	K1711263-010	12.5	1.5	25	10/24/17	10/25/17	1100	
DUP-03-171014	K1711263-011	12.5	1.5	25	10/24/17	10/25/17	1500	
Method Blank 1	K1711263-MB1	0.5	0.06	1	10/24/17	10/25/17	ND	
Method Blank 2	K1711263-MB2	0.5	0.06	1	10/24/17	10/25/17	0.32	J
Method Blank 3	K1711263-MB3	0.5	0.06	1	10/24/17	10/25/17	0.18	J

SDG 1C17112K3	Analyte 1631E low Hg	
Project: Fish. Lake		
Date: 11.30.17		
Hg diss		
Sample ID SW.001(5)CII.171014	Lab reported 1710 ng/L	mg/Kg mg/L
RPW. 1710		ug/L 5.88
Calulation		
Sample ID SW.001(10)CII.171014	Lab reported 715 ng/L	mg/Kg mg/L
715		ug/L 2.33
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

SDG: K1711263

Project: Hem. Lake

Date: 11.30.17

Method: 1631E

ICV %R	5ppb 4.95/5 = .99 100ppb 101/100 = 1.01	lab reported 99 101
CCV %R		lab reported
~~LCS~~ QCS	5.18/5 = 1.04	lab reported 104
~~ICS %R~~ OPR	5.35/5 = 1.07	lab reported 107
MS %R	369 - 319/50 = 1.00	lab reported 100 ~~109~~
MS/MSD %RPD	$\frac{369-369}{369+369/2} = 0$	lab reported 0
Duplicate %D		lab reported
High Std Check		lab reported
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation	All attached	lab reported
other (moisture)		lab reported

IVI 4 SW

VALIDATION WORKSHEET

Method: TOC 9060

Date Reviewed: 11.30.17

Sample Collection Dates: 10.14.17

SDG: K1711263

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	SW-001 (5)-CC. 171014	SW-001 (10)-CC2-171014	(10) C13.	(70) C14	SW-002 (70) C14	DUP-01-171014	.02.	.03.												
Completeness of Analyses	A																			
Holding Times	A				28d.															
Initial Calibration																				
Continuing Calibration	A																			
Method Blanks	A																			
LCS	A																			
Surrogate %R or duplicate RPD	A																			
MS/MSD: 007 only	A																			
Reporting Limits	A																			
Completeness of Analyte List	A																			
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

~~Use~~ QAPP says Lloyd Kahn.

SPL 10.14.17

MM 10.8, 11.9.17

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17
Sample Matrix:	Surface Water	**Date Received:**	10/17/17
Analysis Method:	9060	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW-001(5)-CI1-171014	K1711263-001	**4.64**	0.50	0.07	1	11/08/17 23:37	
SW-001(10)-CI2-171014	K1711263-002	**3.59**	0.50	0.07	1	11/09/17 00:32	
SW-001(10)-CI3-171014	K1711263-006	**3.55**	0.50	0.07	1	11/09/17 01:27	
SW-001(70)-CI4-171014	K1711263-007	**3.94**	0.50	0.07	1	11/09/17 03:19	
SW-002(20)-CI4-171014	K1711263-008	**3.40**	0.50	0.07	1	11/09/17 04:29	
DUP-01-171014	K1711263-009	**3.55**	0.50	0.07	1	11/09/17 05:38	
DUP-02-171014	K1711263-010	**3.44**	0.50	0.07	1	11/09/17 06:33	
DUP-03-171014	K1711263-011	**3.49**	0.50	0.07	1	11/09/17 07:28	
Method Blank	K1711263-MB1	ND U	0.50	0.07	1	11/08/17 16:10	
Method Blank	K1711263-MB2	ND U	0.50	0.07	1	11/09/17 02:51	

SDG K1711263	Analyte TOC	
Project: Hew. Lake		
Date: 11.30.17		
001 Sample ID SW.001(5)CI1.171014 MW 4.65	Lab reported 4.64	mg/Kg mg/L ug/L
Calulation		
002 Sample ID SW.001(10)CI2.171014 3.5	Lab reported 3.59	mg/Kg mg/L ug/L
Calulation		
008 Sample ID SW.002(20)CI4.171014 3.3	Lab reported 3.4	mg/Kg mg/L ug/L
Calulation		
010 Sample ID DUP.02.171014 3.38	Lab reported 3.44	mg/Kg mg/L ug/L
Calulation		
011 Sample ID DUP.03.171014 3.4	Lab reported 3.49	mg/Kg mg/L ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L ug/L
Calulation		

SDG: K1711263

Project: Herr. Lake CCB- ND

Date: 11.30.17

Method: 9060

ICV %R		lab reported
CCV %R	24.2 / 25 = 1.05	lab reported 105
LCS	25.2 / 24 = 1.05	lab reported 105
ICS %R		lab reported
MS %R	30.4 - 3.94 / 25 = 1.058	lab reported 106
MS/MSD %RPD		lab reported
Duplicate %D	$\frac{4.64 - 4.58}{4.64 + 4.58/2} = \frac{.06}{4.61} = .013$ 1.3	lab reported 2
High Std Check		lab reported
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported

SW LVL 2

VALIDATION WORKSHEET

Method: TOC Total

Date Reviewed: 12.9.17

Sample Collection Dates: 10.4 – 10.7.17

SDG: K1711264

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria	SW·002(100)·LHL2·171004	·001(25)·LHL2·	·002(50)·LHL2·	·001(20)·LHL4·	·002(40)·LHL4·	001(20)·LHL6·171007	·002(100)·LHL4·	·002(20)·LHL4·	·001(20)·LHL4·	·001(10)·DIL·	·002(100)·LHL5·	·002(20)·LHL5·	·001(20)·LHL5·	·002(100)·LHL6·	·002(20)·LHL6·A	·001(0)·HGI·171004	·001(10)·HGI·171005	·001(20)·LHL3·171005	·002(100)·LHL2·	·002(20)·LHL2·
Sample results	A	X																		
Holding Times	A																			
Completion	A		X																	
Method Blanks	A																			
LCS	A																			
duplicate RPD	A																			
MS/MSD:	A																			

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

broken no TOC in this SDG

① SW·002(50)·LHL2·171004

spl 10.4 – 10.7.17

prep

run 10.27, 11.1.17

CCV ok

CCB ok

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 - 10/07/17
Sample Matrix:	Water	**Date Received:**	10/10/17
Analysis Method:	9060	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW-003(100)-LHL2-171006	K1711264-001	**3.02**	0.50	0.07	1	10/27/17 18:13	
SW-001(25)-LHL2-171006	K1711264-002	**3.40**	0.50	0.07	1	10/27/17 19:22	
SW-001(20)-LHL1-171006	K1711264-004	**3.37**	0.50	0.07	1	10/27/17 20:17	
SW-002(60)-LHL1-171006	K1711264-005	**3.05**	0.50	0.07	1	10/27/17 21:12	
SW-001(20)-LHL6-171007	K1711264-006	**3.79**	0.50	0.07	1	11/01/17 06:42	
SW-003(100)-LHL4-171007	K1711264-007	**2.98**	0.50	0.07	1	11/01/17 08:19	
SW-002(70)-LHL4-171007	K1711264-008	**3.71**	0.50	0.07	1	11/01/17 09:13	
SW-001(20)-LHL4-171007	K1711264-009	**3.44**	0.50	0.07	1	11/01/17 11:05	
SW-001(10)-DR1-171007	K1711264-010	**2.86**	0.50	0.07	1	11/01/17 12:00	
SW-003(100)-LHL5-171007	K1711264-011	**2.99**	0.50	0.07	1	11/01/17 12:55	
SW-002(70)-LHL5-171007	K1711264-012	**3.54**	0.50	0.07	1	11/01/17 13:50	
SW-001(20)-LHL5-171007	K1711264-013	**3.52**	0.50	0.07	1	11/01/17 14:44	
SW-003(100)-LHL6-171007	K1711264-014	**3.82**	0.50	0.07	1	11/01/17 15:39	
SW-002(70)-LHL6-171007	K1711264-015	**4.07**	0.50	0.07	1	11/01/17 16:34	
SW-001(10)-HQ1-171004	K1711264-016	**3.60**	0.50	0.07	1	11/01/17 05:47	
SW-001(10)-HI1-171005	K1711264-017	**3.53**	0.50	0.07	1	11/01/17 17:29	
SW-001(20)-LHL3-171006	K1711264-018	**3.18**	0.50	0.07	1	11/01/17 18:24	
SW-003(100)-LHL3-171006	K1711264-019	**3.30**	0.50	0.07	1	11/01/17 21:11	
SW-002(70)-LHL3-171006	K1711264-020	**3.09**	0.50	0.07	1	11/01/17 22:06	
Method Blank	K1711264-MB1	ND U	0.50	0.07	1	10/27/17 17:44	
Method Blank	K1711264-MB2	ND U	0.50	0.07	1	11/01/17 05:03	

SW 1214

VALIDATION WORKSHEET

Method: Diss. Organic Carbon 9060
Date Reviewed: 11.20.17
Sample Collection Dates: 10.14.17

SDG: KL171203
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SW-001(S)-CE-171014	2 SW-001(10)-CE-171014	3 (10)C13	4 (70)C14	5 SW-002(20)C14	6 DUP-01-171014	7 .02	8 .03	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→	→	→	→	→												
Holding Times	A	→	→	→	28d.	→	→	→												
Initial Calibration																				
Continuing Calibration	A	→	→	→	→	→	→	→												
Method Blanks	A	→	→	→	→	→	→	→												
LCS	A	→	→	→	→	→	→	→												
Surrogate %R or duplicate RPD 8	A	→	→	→	→	→	→	→												
MS/MSD: 2	A	→	→	→	→	→	→	→												
Reporting Limits	A	→	→	→	→	→	→	→												
Completeness of Analyte List	A	→	→	→	→	→	→	→												
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SPl 10.14.17
RUN 11.7.17, 11.8.17

FD pair

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17
Sample Matrix:	Surface Water	**Date Received:**	10/17/17
Analysis Method:	9060	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW-001(5)-CI1-171014	K1711263-001	**4.07**	0.50	0.07	1	11/07/17 22:26	
SW-001(10)-CI2-171014	K1711263-002	**3.57**	0.50	0.07	1	11/07/17 23:21	
SW-001(10)-CI3-171014	K1711263-006	**3.86**	0.50	0.07	1	11/08/17 00:16	
SW-001(70)-CI4-171014	K1711263-007	**3.85**	0.50	0.07	1	11/08/17 01:40	
SW-002(20)-CI4-171014	K1711263-008	**3.71**	0.50	0.07	1	11/08/17 02:50	
DUP-01-171014	K1711263-009	**3.57**	0.50	0.07	1	11/08/17 03:59	
DUP-02-171014	K1711263-010	**3.64**	0.50	0.07	1	11/08/17 04:53	
DUP-03-171014	K1711263-011	**3.85**	0.50	0.07	1	11/08/17 05:48	
Method Blank	K1711263-MB1	ND U	0.50	0.07	1	11/07/17 20:06	

SDG: K1711263 CCB-ND

Project: Herr. Lake

Date: 11.30.17

Method: 9056

ICV %R		lab reported
CCV %R	DOC 26.2/25 = 1.048	lab reported
LCS	DOC 25.3/25 = 1.05	lab reported 105
ICS %R	29.5 - 3.85/25 = 1.026	lab reported
MS %R		lab reported 103
MS/MSD %RPD		lab reported
Duplicate %D	DOC $\frac{4.07 - 3.93}{4.07 + 3.93/2} \cdot \frac{.14}{4} = .035$	lab reported 2
High Std Check		lab reported
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported

SDG L17/1263	Analyte DOC/TOC	
Project: Herr. Lake		
Date: 11.30.17		
Sample ID DOC SW-001(5)-C11 17014	Lab reported 4.07	mg/Kg (mg/L)
		ug/L
Calulation		
Sample ID DOC SW-001(10)C12 17014	Lab reported 3.57	mg/Kg (mg/L)
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

SW LVL2

9060

VALIDATION WORKSHEET

Method: Diss. Organic Carbon
Date Reviewed: 12.8.17
Sample Collection Dates: 10.4 – 10.7.17

SDG: K1711264
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SW.003(100)LVL2.171004	2 .001(75)LVL2.	3 .002(50)LVL2.	4 .001(20)LVL1-	5 .002(40)LVL1.	6 .001(20)LVL0.171007	7 .003(100)LVL4.	8 .002(70)LVL4.	9 .001(20)LVL4.	10 .001(10)DL1.	11 .003(100)LVL5.	12 .002(70)LVL5.	13 .001(20)LVL5.	14 .003(100)LVL6.	15 .002(70)LVL6.4	16 .001(5)HQ1.171004	17 .001(10)LVL0.171005	18 .001(20)LVL3.171005	19 .003(100)LVL3.	20 .002(70)LVL3.
Sample results	A																			X
Holding Times	A																			A
Completion	A																			A
Method Blanks	A																			A
LCS	A																			A
duplicate RPD	A																			A
MS/MSD:	A																			A

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

SPL 10.4 – 10.7.17

prep WM 10.28 or 11.1 or 11.2.17

CCV OK

CCB. NM

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 - 10/07/17
Sample Matrix:	Water	**Date Received:**	10/10/17
Analysis Method:	9060	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW-003(100)-LHL2-171006	K1711264-001	**4.20**	0.50	0.07	1	10/28/17 04:54	
SW-001(25)-LHL2-171006	K1711264-002	**3.57**	0.50	0.07	1	10/28/17 06:04	
SW-002(50)-LHL2-171006	K1711264-003	**3.86**	0.50	0.07	1	10/28/17 06:59	
SW-001(20)-LHL1-171006	K1711264-004	**6.18**	0.50	0.07	1	10/28/17 07:53	
SW-002(60)-LHL1-171006	K1711264-005	**3.18**	0.50	0.07	1	10/28/17 08:48	
SW-001(20)-LHL6-171007	K1711264-006	**3.78**	0.50	0.07	1	11/01/17 23:15	
SW-003(100)-LHL4-171007	K1711264-007	**4.03**	0.50	0.07	1	11/02/17 00:10	
SW-002(70)-LHL4-171007	K1711264-008	**3.83**	0.50	0.07	1	11/02/17 01:05	
SW-001(20)-LHL4-171007	K1711264-009	**3.54**	0.50	0.07	1	11/02/17 02:00	
SW-001(10)-DR1-171007	K1711264-010	**2.86**	0.50	0.07	1	11/02/17 03:51	
SW-003(100)-LHL5-171007	K1711264-011	**3.51**	0.50	0.07	1	11/02/17 05:29	
SW-002(70)-LHL5-171007	K1711264-012	**3.66**	0.50	0.07	1	11/02/17 06:24	
SW-001(20)-LHL5-171007	K1711264-013	**3.31**	0.50	0.07	1	11/02/17 07:18	
SW-003(100)-LHL6-171007	K1711264-014	**4.42**	0.50	0.07	1	11/02/17 08:13	
SW-002(70)-LHL6-171007	K1711264-015	**4.17**	0.50	0.07	1	11/02/17 09:08	
SW-001(10)-HQ1-171004	K1711264-016	**4.15**	0.50	0.07	1	11/01/17 19:19	
SW-001(10)-HI1-171005	K1711264-017	**3.55**	0.50	0.07	1	11/02/17 10:03	
SW-001(20)-LHL3-171006	K1711264-018	**3.40**	0.50	0.07	1	11/02/17 12:23	
SW-003(100)-LHL3-171006	K1711264-019	**4.68**	0.50	0.07	1	11/02/17 13:18	
SW-002(70)-LHL3-171006	K1711264-020	**3.22**	0.50	0.07	1	11/02/17 14:13	
Method Blank	K1711264-MB1	ND U	0.50	0.07	1	10/28/17 04:26	
Method Blank	K1711264-MB2	ND U	0.50	0.07	1	11/01/17 20:43	

SW lvl 2

VALIDATION WORKSHEET

Method: Metals/Hg TOTAL & DISSOLVED
Date Reviewed: 12.5.17
Sample Collection Dates: 10.4 – 10.7.17

SDG: K1711264
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	SW-003(100)LHL2-171004	-001(25)LHL2-	-002(50)LHL2-	-001(20)LHL4-	-002(60)LHL1-	001(20)LHL6-171007	-003(100)LHL4-	-002(70)LHL4-	-001(20)LHL4-	-001(10)DNL-	-003(100)LHL5-	-002(70)LHL5-	-001(20)LHL5-	-003(100)LHL6-	-002(70)LHL6-	-001(A)HQ1-171004	-001(10)HI1-171005	-001(20)LHL3-171005	-003(100)LHL3-	-002(70)LHL3-
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks T+D	A																			
LCS T+D	A																			
duplicate RPD T+D	A																			
MS/MSD: T+D	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments: Total Low level ok Hg post spike ok

#EACH Spl Total + Dissolved.

Spl	10.6.17	10.7.17	10.4.17	10.5.17
prep	10.25.17	11.1.17	11.1.17	11.1.17
run	11.2.17	11.2.17	11.2.17	11.2.17

Total MB Hg 3J, 2J, ND
10.25
11.1 + 11.2 11.2
no flags

T- ICM/CCMS - ok

T- ICB 6 J
+D CCV/CCB 0.1 J 0.6 | -003(100)LHL2-171004 -001(25)LHL2-171006

Total Hg CCB -0.029 J+ SB SW-001(20)LHL4-171007 -002(70)LHL5-171007 -001(20)LHL5-171007 -003(100)LHL6-171007

SW-001(10)HI1-171005
SW-001(10)HQ1-171004
SW-001(20)LHL5-171007
SW-002(70)LHL5-171007
SW-002(50)LHL2171006
~~SW-002(60)~~

SW-001(20)LHL3-171006
SW-003(100)LHL6-171007
SW-001(20)LHL4-171007
SW-002(70)LHL4-171007
SW-001(20)LHL6-171007
SW-001(20)LHL1-171004
SW-002(60)LHL1-171006
SW-003(100)LHL3-171004
SW-002(70)LHL3-171004

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 13:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-003(100)-LHL2-171006	**Basis:**	NA
Lab Code:	K1711264-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.51**	ug/L	0.50	0.08	1	11/02/17 17:35	10/25/17	
Boron	200.8	**221**	ug/L	40	4	20	11/02/17 11:49	10/25/17	
Cadmium	200.8	**0.016** J U U	ug/L	0.020	0.005	1	11/02/17 17:35	10/25/17	
Iron	200.8	**147**	ug/L	2.0	0.3	1	11/02/17 17:35	10/25/17	
Magnesium	200.8	**9270**	ug/L	10	0.7	1	11/02/17 17:35	10/25/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/02/17 10:11	10/27/17	
Selenium	200.8	**0.3 J**	ug/L	1.0	0.2	1	11/02/17 17:35	10/25/17	
Zinc	200.8	**0.6 J**	ug/L	2.0	0.3	1	11/02/17 17:35	10/25/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 13:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-003(100)-LHL2-171006	**Basis:**	NA
Lab Code:	K1711264-001		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.46**	ug/L	0.50	0.08	1	11/02/17 17:48	10/25/17	
Boron	200.8	**212**	ug/L	40	4	20	11/02/17 12:04	10/25/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 17:48	10/25/17	
Iron	200.8	**128**	ug/L	2.0	0.3	1	11/02/17 17:48	10/25/17	
Magnesium	200.8	**9280**	ug/L	10	0.7	1	11/02/17 17:48	10/25/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/02/17 17:48	10/25/17	
Zinc	200.8	**0.5 J**	ug/L	2.0	0.3	1	11/02/17 17:48	10/25/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 14:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-001(25)-LHL2-171006	**Basis:**	NA
Lab Code:	K1711264-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.08**	ug/L	0.50	0.08	1	11/02/17 19:05	10/25/17	
Boron	200.8	**419**	ug/L	40	4	20	11/02/17 11:50	10/25/17	
Cadmium	200.8	**0.009 J**	ug/L	0.020	0.005	1	11/02/17 19:05	10/25/17	
Iron	200.8	**9.1**	ug/L	2.0	0.3	1	11/02/17 19:05	10/25/17	
Magnesium	200.8	**10700**	ug/L	10	0.7	1	11/02/17 19:05	10/25/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/02/17 10:20	10/27/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	11/02/17 19:05	10/25/17	
Zinc	200.8	**0.8 J**	ug/L	2.0	0.3	1	11/02/17 19:05	10/25/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 14:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-001(25)-LHL2-171006	**Basis:**	NA
Lab Code:	K1711264-002		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.03**	ug/L	0.50	0.08	1	11/02/17 17:50	10/25/17	
Boron	200.8	**414**	ug/L	40	4	20	11/02/17 12:05	10/25/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 17:50	10/25/17	
Iron	200.8	**2.1**	ug/L	2.0	0.3	1	11/02/17 17:50	10/25/17	
Magnesium	200.8	**10500**	ug/L	10	0.7	1	11/02/17 17:50	10/25/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	11/02/17 17:50	10/25/17	
Zinc	200.8	**0.6 J**	ug/L	2.0	0.3	1	11/02/17 17:50	10/25/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 14:20
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-002(50)-LHL2-171006	**Basis:**	NA
Lab Code:	K1711264-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.40**	ug/L	0.50	0.08	1	11/02/17 17:38	10/25/17	
Boron	200.8	**243**	ug/L	40	4	20	11/02/17 11:52	10/25/17	
Cadmium	200.8	**0.009 J** U	ug/L	0.020	0.005	1	11/02/17 17:38	10/25/17	
Iron	200.8	**16.1**	ug/L	2.0	0.3	1	11/02/17 17:38	10/25/17	
Magnesium	200.8	**9480**	ug/L	10	0.7	1	11/02/17 17:38	10/25/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/02/17 10:22	10/27/17	
Selenium	200.8	**0.3 J**	ug/L	1.0	0.2	1	11/02/17 17:38	10/25/17	
Zinc	200.8	**0.7 J**	ug/L	2.0	0.3	1	11/02/17 17:38	10/25/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 14:20
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-002(50)-LHL2-171006	**Basis:**	NA
Lab Code:	K1711264-003		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.34**	ug/L	0.50	0.08	1	11/02/17 17:51	10/25/17	
Boron	200.8	**238**	ug/L	40	4	20	11/02/17 12:07	10/25/17	
Cadmium	200.8	**0.009 J**	ug/L	0.020	0.005	1	11/02/17 17:51	10/25/17	
Iron	200.8	**6.7**	ug/L	2.0	0.3	1	11/02/17 17:51	10/25/17	
Magnesium	200.8	**9380**	ug/L	10	0.7	1	11/02/17 17:51	10/25/17	
Selenium	200.8	**0.3 J**	ug/L	1.0	0.2	1	11/02/17 17:51	10/25/17	
Zinc	200.8	**1.6 J**	ug/L	2.0	0.3	1	11/02/17 17:51	10/25/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 15:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-001(20)-LHL1-171006	**Basis:**	NA
Lab Code:	K1711264-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.00**	ug/L	0.50	0.08	1	11/02/17 17:42	10/25/17	
Boron	200.8	**415**	ug/L	40	4	20	11/02/17 11:57	10/25/17	
Cadmium	200.8	**0.009 J**	ug/L	0.020	0.005	1	11/02/17 17:42	10/25/17	
Iron	200.8	**9.8**	ug/L	2.0	0.3	1	11/02/17 17:42	10/25/17	
Magnesium	200.8	**10600**	ug/L	10	0.7	1	11/02/17 17:42	10/25/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/02/17 10:24	10/27/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	11/02/17 17:42	10/25/17	
Zinc	200.8	**2.5**	ug/L	2.0	0.3	1	11/02/17 17:42	10/25/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 15:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-001(20)-LHL1-171006	**Basis:**	NA
Lab Code:	K1711264-004		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.04**	ug/L	0.50	0.08	1	11/02/17 17:53	10/25/17	
Boron	200.8	**403**	ug/L	40	4	20	11/02/17 12:09	10/25/17	
Cadmium	200.8	**0.005 J**	ug/L	0.020	0.005	1	11/02/17 17:53	10/25/17	
Iron	200.8	**11.7**	ug/L	2.0	0.3	1	11/02/17 17:53	10/25/17	
Magnesium	200.8	**10700**	ug/L	10	0.7	1	11/02/17 17:53	10/25/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	11/02/17 17:53	10/25/17	
Zinc	200.8	**1.2 J**	ug/L	2.0	0.3	1	11/02/17 17:53	10/25/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 15:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-002(60)-LHL1-171006	**Basis:**	NA
Lab Code:	K1711264-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.81**	ug/L	0.50	0.08	1	11/02/17 17:47	10/25/17	
Boron	200.8	**211**	ug/L	40	4	20	11/02/17 12:02	10/25/17	
Cadmium	200.8	**0.009 J**	ug/L	0.020	0.005	1	11/02/17 17:47	10/25/17	
Iron	200.8	**226**	ug/L	2.0	0.3	1	11/02/17 17:47	10/25/17	
Magnesium	200.8	**9320**	ug/L	10	0.7	1	11/02/17 17:47	10/25/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/02/17 10:25	10/27/17	
Selenium	200.8	**0.2 J**	ug/L	1.0	0.2	1	11/02/17 17:47	10/25/17	
Zinc	200.8	**0.7 J**	ug/L	2.0	0.3	1	11/02/17 17:47	10/25/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 15:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-002(60)-LHL1-171006	**Basis:**	NA
Lab Code:	K1711264-005		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.83**	ug/L	0.50	0.08	1	11/02/17 17:54	10/25/17	
Boron	200.8	**235**	ug/L	40	4	20	11/02/17 12:10	10/25/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 17:54	10/25/17	
Iron	200.8	**157**	ug/L	2.0	0.3	1	11/02/17 17:54	10/25/17	
Magnesium	200.8	**9140**	ug/L	10	0.7	1	11/02/17 17:54	10/25/17	
Selenium	200.8	**0.2 J**	ug/L	1.0	0.2	1	11/02/17 17:54	10/25/17	
Zinc	200.8	**0.9 J**	ug/L	2.0	0.3	1	11/02/17 17:54	10/25/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 14:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-001(20)-LHL6-171007	**Basis:**	NA
Lab Code:	K1711264-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**0.92**	ug/L	0.50	0.08	1	11/02/17 17:58	11/01/17	
Boron	200.8	**200**	ug/L	40	4	20	11/02/17 12:19	11/01/17	
Cadmium	200.8	**0.013 J**	ug/L	0.020	0.005	1	11/02/17 17:58	11/01/17	
Iron	200.8	**7.3**	ug/L	2.0	0.3	1	11/02/17 17:58	11/01/17	
Magnesium	200.8	**8940**	ug/L	10	0.7	1	11/02/17 17:58	11/01/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/01/17 13:10	11/01/17	
Selenium	200.8	**0.4 J**	ug/L	1.0	0.2	1	11/02/17 17:58	11/01/17	
Zinc	200.8	**1.5 J**	ug/L	2.0	0.3	1	11/02/17 17:58	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 14:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-001(20)-LHL6-171007	**Basis:**	NA
Lab Code:	K1711264-006		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**0.89**	ug/L	0.50	0.08	1	11/02/17 18:24	11/01/17	
Boron	200.8	**166**	ug/L	40	4	20	11/02/17 14:49	11/01/17	
Cadmium	200.8	**0.006** J U B	ug/L	0.020	0.005	1	11/02/17 18:24	11/01/17	
Iron	200.8	**3.7**	ug/L	2.0	0.3	1	11/02/17 18:24	11/01/17	
Magnesium	200.8	**8810**	ug/L	10	0.7	1	11/02/17 18:24	11/01/17	
Selenium	200.8	**0.4 J**	ug/L	1.0	0.2	1	11/02/17 18:24	11/01/17	
Zinc	200.8	**0.6 J**	ug/L	2.0	0.3	1	11/02/17 18:24	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 15:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-003(100)-LHL4-171007	**Basis:**	NA
Lab Code:	K1711264-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**0.94**	ug/L	0.50	0.08	1	11/02/17 18:00	11/01/17	
Boron	200.8	**141**	ug/L	40	4	20	11/02/17 12:20	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 18:00	11/01/17	
Iron	200.8	**87.2**	ug/L	2.0	0.3	1	11/02/17 18:00	11/01/17	
Magnesium	200.8	**8820**	ug/L	10	0.7	1	11/02/17 18:00	11/01/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/01/17 13:16	11/01/17	
Selenium	200.8	**0.3 J**	ug/L	1.0	0.2	1	11/02/17 18:00	11/01/17	
Zinc	200.8	**0.8 J**	ug/L	2.0	0.3	1	11/02/17 18:00	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 15:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-003(100)-LHL4-171007	**Basis:**	NA
Lab Code:	K1711264-007		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**0.91**	ug/L	0.50	0.08	1	11/02/17 18:26	11/01/17	
Boron	200.8	**135**	ug/L	40	4	20	11/02/17 14:50	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 18:26	11/01/17	
Iron	200.8	**66.6**	ug/L	2.0	0.3	1	11/02/17 18:26	11/01/17	
Magnesium	200.8	**8630**	ug/L	10	0.7	1	11/02/17 18:26	11/01/17	
Selenium	200.8	**0.2 J**	ug/L	1.0	0.2	1	11/02/17 18:26	11/01/17	
Zinc	200.8	**1.2 J**	ug/L	2.0	0.3	1	11/02/17 18:26	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 15:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-002(70)-LHL4-171007	**Basis:**	NA
Lab Code:	K1711264-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.27**	ug/L	0.50	0.08	1	11/02/17 18:07	11/01/17	
Boron	200.8	**68**	ug/L	10	1	5	11/02/17 14:34	11/01/17	
Cadmium	200.8	**0.010 J**	ug/L	0.020	0.005	1	11/02/17 18:07	11/01/17	
Iron	200.8	**146**	ug/L	2.0	0.3	1	11/02/17 18:07	11/01/17	
Magnesium	200.8	**8760**	ug/L	10	0.7	1	11/02/17 18:07	11/01/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/01/17 13:18	11/01/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/02/17 18:07	11/01/17	
Zinc	200.8	**0.8 J**	ug/L	2.0	0.3	1	11/02/17 18:07	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 15:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-002(70)-LHL4-171007	**Basis:**	NA
Lab Code:	K1711264-008		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.15**	ug/L	0.50	0.08	1	11/02/17 18:27	11/01/17	
Boron	200.8	**72**	ug/L	10	1	5	11/02/17 14:52	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 18:27	11/01/17	
Iron	200.8	**146**	ug/L	2.0	0.3	1	11/02/17 18:27	11/01/17	
Magnesium	200.8	**8480**	ug/L	10	0.7	1	11/02/17 18:27	11/01/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/02/17 18:27	11/01/17	
Zinc	200.8	**1.0 J**	ug/L	2.0	0.3	1	11/02/17 18:27	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 15:45
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-001(20)-LHL4-171007	**Basis:**	NA
Lab Code:	K1711264-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.14**	ug/L	0.50	0.08	1	11/02/17 18:11	11/01/17	
Boron	200.8	**317**	ug/L	40	4	20	11/02/17 13:58	11/01/17	
Cadmium	200.8	**0.013** J	ug/L	0.020	0.005	1	11/02/17 18:11	11/01/17	
Iron	200.8	**19.0**	ug/L	2.0	0.3	1	11/02/17 18:11	11/01/17	
Magnesium	200.8	**10200**	ug/L	10	0.7	1	11/02/17 18:11	11/01/17	
Mercury	7470A	**0.03** J	ug/L	0.20	0.02	1	11/01/17 13:20	11/01/17	
Selenium	200.8	**0.7 J**	ug/L	1.0	0.2	1	11/02/17 18:11	11/01/17	
Zinc	200.8	**0.8 J**	ug/L	2.0	0.3	1	11/02/17 18:11	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 15:45
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-001(20)-LHL4-171007	**Basis:**	NA
Lab Code:	K1711264-009		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.04**	ug/L	0.50	0.08	1	11/02/17 18:29	11/01/17	
Boron	200.8	**356**	ug/L	40	4	20	11/02/17 14:54	11/01/17	
Cadmium	200.8	**0.008 J**	ug/L	0.020	0.005	1	11/02/17 18:29	11/01/17	
Iron	200.8	**5.6**	ug/L	2.0	0.3	1	11/02/17 18:29	11/01/17	
Magnesium	200.8	**10000**	ug/L	10	0.7	1	11/02/17 18:29	11/01/17	
Selenium	200.8	**0.7 J**	ug/L	1.0	0.2	1	11/02/17 18:29	11/01/17	
Zinc	200.8	**1.0 J**	ug/L	2.0	0.3	1	11/02/17 18:29	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 16:15
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-001(10)-DR1-171007		
Lab Code:	K1711264-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.54**	ug/L	0.50	0.08	1	11/02/17 18:13	11/01/17	
Boron	200.8	**246**	ug/L	40	4	20	11/02/17 14:00	11/01/17	
Cadmium	200.8	**0.122**	ug/L	0.020	0.005	1	11/02/17 18:13	11/01/17	
Iron	200.8	**72.9**	ug/L	2.0	0.3	1	11/02/17 18:13	11/01/17	
Magnesium	200.8	**9550**	ug/L	10	0.7	1	11/02/17 18:13	11/01/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/01/17 13:21	11/01/17	
Selenium	200.8	**0.5 J**	ug/L	1.0	0.2	1	11/02/17 18:13	11/01/17	
Zinc	200.8	**1.5 J**	ug/L	2.0	0.3	1	11/02/17 18:13	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 16:15
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-001(10)-DR1-171007		
Lab Code:	K1711264-010		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.38**	ug/L	0.50	0.08	1	11/02/17 18:30	11/01/17	
Boron	200.8	**264**	ug/L	40	4	20	11/02/17 14:55	11/01/17	
Cadmium	200.8	**0.149**	ug/L	0.020	0.005	1	11/02/17 18:30	11/01/17	
Iron	200.8	**6.6**	ug/L	2.0	0.3	1	11/02/17 18:30	11/01/17	
Magnesium	200.8	**9440**	ug/L	10	0.7	1	11/02/17 18:30	11/01/17	
Selenium	200.8	**0.5 J**	ug/L	1.0	0.2	1	11/02/17 18:30	11/01/17	
Zinc	200.8	**0.8 J**	ug/L	2.0	0.3	1	11/02/17 18:30	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 10:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-003(100)-LHL5-171007	**Basis:**	NA
Lab Code:	K1711264-011		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**0.94**	ug/L	0.50	0.08	1	11/02/17 18:14	11/01/17	
Boron	200.8	**191**	ug/L	40	4	20	11/02/17 14:28	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 18:14	11/01/17	
Iron	200.8	**63.0**	ug/L	2.0	0.3	1	11/02/17 18:14	11/01/17	
Magnesium	200.8	**8900**	ug/L	10	0.7	1	11/02/17 18:14	11/01/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/01/17 13:26	11/01/17	
Selenium	200.8	**0.3 J**	ug/L	1.0	0.2	1	11/02/17 18:14	11/01/17	
Zinc	200.8	**0.6 J**	ug/L	2.0	0.3	1	11/02/17 18:14	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 10:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-003(100)-LHL5-171007	**Basis:**	NA
Lab Code:	K1711264-011		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**0.96**	ug/L	0.50	0.08	1	11/02/17 18:32	11/01/17	
Boron	200.8	**226**	ug/L	40	4	20	11/02/17 14:57	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 18:32	11/01/17	
Iron	200.8	**47.5**	ug/L	2.0	0.3	1	11/02/17 18:32	11/01/17	
Magnesium	200.8	**8910**	ug/L	10	0.7	1	11/02/17 18:32	11/01/17	
Selenium	200.8	**0.3 J**	ug/L	1.0	0.2	1	11/02/17 18:32	11/01/17	
Zinc	200.8	**0.6 J**	ug/L	2.0	0.3	1	11/02/17 18:32	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 11:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-002(70)-LHL5-171007	**Basis:**	NA
Lab Code:	K1711264-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.15**	ug/L	0.50	0.08	1	11/02/17 18:16	11/01/17	
Boron	200.8	**73**	ug/L	10	1	5	11/02/17 16:53	11/01/17	
Cadmium	200.8	**0.008** J U b	ug/L	0.020	0.005	1	11/02/17 18:16	11/01/17	
Iron	200.8	**49.7**	ug/L	2.0	0.3	1	11/02/17 18:16	11/01/17	
Magnesium	200.8	**8250**	ug/L	10	0.7	1	11/02/17 18:16	11/01/17	
Mercury	7470A	**0.06** J J+ 5U ug/L		0.20	0.02	1	11/01/17 13:28	11/01/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/02/17 18:16	11/01/17	
Zinc	200.8	**3.1**	ug/L	2.0	0.3	1	11/02/17 18:16	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 11:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-002(70)-LHL5-171007	**Basis:**	NA
Lab Code:	K1711264-012		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.19**	ug/L	0.50	0.08	1	11/02/17 18:33	11/01/17	
Boron	200.8	**76**	ug/L	10	1	5	11/02/17 14:59	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 18:33	11/01/17	
Iron	200.8	**41.3**	ug/L	2.0	0.3	1	11/02/17 18:33	11/01/17	
Magnesium	200.8	**8410**	ug/L	10	0.7	1	11/02/17 18:33	11/01/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/02/17 18:33	11/01/17	
Zinc	200.8	**2.2**	ug/L	2.0	0.3	1	11/02/17 18:33	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 12:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-001(20)-LHL5-171007		
Lab Code:	K1711264-013		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.09**	ug/L	0.50	0.08	1	11/02/17 19:06	11/01/17	
Boron	200.8	**328**	ug/L	40	4	20	11/02/17 14:05	11/01/17	
Cadmium	200.8	**0.007** J	ug/L	0.020	0.005	1	11/02/17 19:06	11/01/17	
Iron	200.8	**12.1**	ug/L	2.0	0.3	1	11/02/17 19:06	11/01/17	
Magnesium	200.8	**9780**	ug/L	10	0.7	1	11/02/17 19:06	11/01/17	
Mercury	7470A	**0.08**	ug/L	0.20	0.02	1	11/01/17 13:29	11/01/17	
Selenium	200.8	**0.7** J	ug/L	1.0	0.2	1	11/02/17 19:06	11/01/17	
Zinc	200.8	**1.2** J	ug/L	2.0	0.3	1	11/02/17 19:06	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 12:30
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-001(20)-LHL5-171007	**Basis:**	NA
Lab Code:	K1711264-013		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**0.97**	ug/L	0.50	0.08	1	11/02/17 18:34	11/01/17	
Boron	200.8	**353**	ug/L	40	4	20	11/02/17 15:00	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 18:34	11/01/17	
Iron	200.8	**7.5**	ug/L	2.0	0.3	1	11/02/17 18:34	11/01/17	
Magnesium	200.8	**10300**	ug/L	10	0.7	1	11/02/17 18:34	11/01/17	
Selenium	200.8	**0.6 J**	ug/L	1.0	0.2	1	11/02/17 18:34	11/01/17	
Zinc	200.8	**0.8 J**	ug/L	2.0	0.3	1	11/02/17 18:34	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 13:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
Sample Name:	SW-003(100)-LHL6-171007	**Basis:**	NA
Lab Code:	K1711264-014		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.32**	ug/L	0.50	0.08	1	11/02/17 18:21	11/01/17	
Boron	200.8	**30.4**	ug/L	2.0	0.2	1	11/02/17 14:41	11/01/17	
Cadmium	200.8	**0.006** J U Q	ug/L	0.020	0.005	1	11/02/17 18:21	11/01/17	
Iron	200.8	**211**	ug/L	2.0	0.3	1	11/02/17 18:21	11/01/17	
Magnesium	200.8	**9570**	ug/L	10	0.7	1	11/02/17 18:21	11/01/17	
Mercury	7470A	**0.14** J J+ 5Q	ug/L	0.20	0.02	1	11/01/17 13:31	11/01/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/02/17 18:21	11/01/17	
Zinc	200.8	**1.6 J**	ug/L	2.0	0.3	1	11/02/17 18:21	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 13:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-003(100)-LHL6-171007		
Lab Code:	K1711264-014		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.18**	ug/L	0.50	0.08	1	11/02/17 18:39	11/01/17	
Boron	200.8	**31.1**	ug/L	2.0	0.2	1	11/02/17 15:02	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 18:39	11/01/17	
Iron	200.8	**146**	ug/L	2.0	0.3	1	11/02/17 18:39	11/01/17	
Magnesium	200.8	**8080**	ug/L	10	0.7	1	11/02/17 18:39	11/01/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/02/17 18:39	11/01/17	
Zinc	200.8	**1.9 J**	ug/L	2.0	0.3	1	11/02/17 18:39	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 13:45
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-002(70)-LHL6-171007		
Lab Code:	K1711264-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.04**	ug/L	0.50	0.08	1	11/02/17 18:23	11/01/17	
Boron	200.8	**33.1**	ug/L	2.0	0.2	1	11/02/17 14:43	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 18:23	11/01/17	
Iron	200.8	**37.9**	ug/L	2.0	0.3	1	11/02/17 18:23	11/01/17	
Magnesium	200.8	**7710**	ug/L	10	0.7	1	11/02/17 18:23	11/01/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/01/17 13:33	11/01/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/02/17 18:23	11/01/17	
Zinc	200.8	**1.3 J**	ug/L	2.0	0.3	1	11/02/17 18:23	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 13:45
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-002(70)-LHL6-171007		
Lab Code:	K1711264-015		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.04**	ug/L	0.50	0.08	1	11/02/17 18:40	11/01/17	
Boron	200.8	**32.5**	ug/L	2.0	0.2	1	11/02/17 15:04	11/01/17	
Cadmium	200.8	**0.006 J**	ug/L	0.020	0.005	1	11/02/17 18:40	11/01/17	
Iron	200.8	**13.5**	ug/L	2.0	0.3	1	11/02/17 18:40	11/01/17	
Magnesium	200.8	**7880**	ug/L	10	0.7	1	11/02/17 18:40	11/01/17	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	11/02/17 18:40	11/01/17	
Zinc	200.8	**1.7 J**	ug/L	2.0	0.3	1	11/02/17 18:40	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 16:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-001(10)-HQ1-171004		
Lab Code:	K1711264-016		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.12**	ug/L	0.50	0.08	1	11/02/17 18:45	11/01/17	
Boron	200.8	**414**	ug/L	40	4	20	11/02/17 15:12	11/01/17	
Cadmium	200.8	**0.010** J U	ug/L	0.020	0.005	1	11/02/17 18:45	11/01/17	
Iron	200.8	**23.7**	ug/L	2.0	0.3	1	11/02/17 18:45	11/01/17	
Magnesium	200.8	**10400**	ug/L	10	0.7	1	11/02/17 18:45	11/01/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/01/17 13:34	11/01/17	
Selenium	200.8	**0.9 J**	ug/L	1.0	0.2	1	11/02/17 18:45	11/01/17	
Zinc	200.8	**1.0 J**	ug/L	2.0	0.3	1	11/02/17 18:45	11/01/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 16:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-001(10)-HQ1-171004		
Lab Code:	K1711264-016		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.19**	ug/L	0.50	0.08	1	11/02/17 18:58	11/01/17	
Boron	200.8	**387**	ug/L	40	4	20	11/02/17 16:45	11/01/17	
Cadmium	200.8	**0.009 J**	ug/L	0.020	0.005	1	11/02/17 18:58	11/01/17	
Iron	200.8	**2.8**	ug/L	2.0	0.3	1	11/02/17 18:58	11/01/17	
Magnesium	200.8	**10400**	ug/L	10	0.7	1	11/02/17 18:58	11/01/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	11/02/17 18:58	11/01/17	
Zinc	200.8	**0.6 J**	ug/L	2.0	0.3	1	11/02/17 18:58	11/01/17	

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Water

Sample Name: SW-001(10)-HI1-171005
Lab Code: K1711264-017

Service Request: K1711264
Date Collected: 10/05/17 16:00
Date Received: 10/10/17 09:40

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.03**	ug/L	0.50	0.08	1	11/02/17 18:49	11/01/17	
Boron	200.8	**397**	ug/L	40	4	20	11/02/17 15:17	11/01/17	
Cadmium	200.8	**0.011 J**	ug/L	0.020	0.005	1	11/02/17 18:49	11/01/17	
Iron	200.8	**35.1**	ug/L	2.0	0.3	1	11/02/17 18:49	11/01/17	
Magnesium	200.8	**10300**	ug/L	10	0.7	1	11/02/17 18:49	11/01/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/01/17 13:36	11/01/17	
Selenium	200.8	**0.7 J**	ug/L	1.0	0.2	1	11/02/17 18:49	11/01/17	
Zinc	200.8	**2.3**	ug/L	2.0	0.3	1	11/02/17 18:49	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 16:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-001(10)-HI1-171005		
Lab Code:	K1711264-017		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.07**	ug/L	0.50	0.08	1	11/02/17 18:59	11/01/17	
Boron	200.8	**374**	ug/L	40	4	20	11/02/17 16:47	11/01/17	
Cadmium	200.8	**0.006 J**	ug/L	0.020	0.005	1	11/02/17 18:59	11/01/17	
Iron	200.8	**2.5**	ug/L	2.0	0.3	1	11/02/17 18:59	11/01/17	
Magnesium	200.8	**10000**	ug/L	200	10	20	11/02/17 16:47	11/01/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	11/02/17 18:59	11/01/17	
Zinc	200.8	**1.0 J**	ug/L	2.0	0.3	1	11/02/17 18:59	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 17:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-001(20)-LHL3-171006		
Lab Code:	K1711264-018		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.15**	ug/L	0.50	0.08	1	11/02/17 18:50	11/01/17	
Boron	200.8	**356**	ug/L	40	4	20	11/02/17 16:40	11/01/17	
Cadmium	200.8	**0.010** J U	ug/L	0.020	0.005	1	11/02/17 18:50	11/01/17	
Iron	200.8	**13.9**	ug/L	2.0	0.3	1	11/02/17 18:50	11/01/17	
Magnesium	200.8	**10800**	ug/L	10	0.7	1	11/02/17 18:50	11/01/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/01/17 13:37	11/01/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	11/02/17 18:50	11/01/17	
Zinc	200.8	**1.1 J**	ug/L	2.0	0.3	1	11/02/17 18:50	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 17:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-001(20)-LHL3-171006		
Lab Code:	K1711264-018		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.12**	ug/L	0.50	0.08	1	11/02/17 19:00	11/01/17	
Boron	200.8	**416**	ug/L	40	4	20	11/02/17 16:48	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 19:00	11/01/17	
Iron	200.8	**3.6**	ug/L	2.0	0.3	1	11/02/17 19:00	11/01/17	
Magnesium	200.8	**10600**	ug/L	10	0.7	1	11/02/17 19:00	11/01/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	11/02/17 19:00	11/01/17	
Zinc	200.8	**0.5 J**	ug/L	2.0	0.3	1	11/02/17 19:00	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 17:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-003(100)-LHL3-171006		
Lab Code:	K1711264-019		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.23**	ug/L	0.50	0.08	1	11/02/17 18:52	11/01/17	
Boron	200.8	**210**	ug/L	40	4	20	11/02/17 16:42	11/01/17	
Cadmium	200.8	**0.008 J** U Q	ug/L	0.020	0.005	1	11/02/17 18:52	11/01/17	
Iron	200.8	**71.1**	ug/L	2.0	0.3	1	11/02/17 18:52	11/01/17	
Magnesium	200.8	**9530**	ug/L	10	0.7	1	11/02/17 18:52	11/01/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/01/17 13:39	11/01/17	
Selenium	200.8	**0.3 J**	ug/L	1.0	0.2	1	11/02/17 18:52	11/01/17	
Zinc	200.8	**0.9 J**	ug/L	2.0	0.3	1	11/02/17 18:52	11/01/17	

Printed 11/7/2017 4:51:31 PM

Superset Reference:

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 17:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-003(100)-LHL3-171006		
Lab Code:	K1711264-019		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.22**	ug/L	0.50	0.08	1	11/02/17 19:02	11/01/17	
Boron	200.8	**188**	ug/L	40	4	20	11/02/17 16:50	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 19:02	11/01/17	
Iron	200.8	**60.4**	ug/L	2.0	0.3	1	11/02/17 19:02	11/01/17	
Magnesium	200.8	**9090**	ug/L	10	0.7	1	11/02/17 19:02	11/01/17	
Selenium	200.8	**0.2 J**	ug/L	1.0	0.2	1	11/02/17 19:02	11/01/17	
Zinc	200.8	**0.8 J**	ug/L	2.0	0.3	1	11/02/17 19:02	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 18:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-002(70)-LHL3-171006		
Lab Code:	K1711264-020		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.73**	ug/L	0.50	0.08	1	11/02/17 18:56	11/01/17	
Boron	200.8	**168**	ug/L	40	4	20	11/02/17 17:03	11/01/17	
Cadmium	200.8	**0.009** J U	ug/L	0.020	0.005	1	11/02/17 18:56	11/01/17	
Iron	200.8	**195**	ug/L	2.0	0.3	1	11/02/17 18:56	11/01/17	
Magnesium	200.8	**9060**	ug/L	10	0.7	1	11/02/17 18:56	11/01/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/01/17 13:41	11/01/17	
Selenium	200.8	**0.3 J**	ug/L	1.0	0.2	1	11/02/17 18:56	11/01/17	
Zinc	200.8	**0.8 J**	ug/L	2.0	0.3	1	11/02/17 18:56	11/01/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 18:00
Sample Matrix:	Water	**Date Received:**	10/10/17 09:40
		Basis:	NA
Sample Name:	SW-002(70)-LHL3-171006		
Lab Code:	K1711264-020		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.63**	ug/L	0.50	0.08	1	11/02/17 19:03	11/01/17	
Boron	200.8	**162**	ug/L	40	4	20	11/02/17 16:52	11/01/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	11/02/17 19:03	11/01/17	
Iron	200.8	**161**	ug/L	2.0	0.3	1	11/02/17 19:03	11/01/17	
Magnesium	200.8	**8960**	ug/L	10	0.7	1	11/02/17 19:03	11/01/17	
Selenium	200.8	**0.2 J**	ug/L	1.0	0.2	1	11/02/17 19:03	11/01/17	
Zinc	200.8	**0.5 J**	ug/L	2.0	0.3	1	11/02/17 19:03	11/01/17	

SW1VL2

16830

VALIDATION WORKSHEET

Method: Dissolved Methyl Mercury
Date Reviewed: 12.4.17
Sample Collection Dates: 10.4 – 10.7.17

SDG: K1711264
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	SW-.002(100)LVL2-171004	.001(75)LVL2	.001(55)LVL2	.001(20)LVL1	.002(100)LVL1	.001(20)LVL0-171007	.002(100)LVL4	.002(70)LVL4	.001(20)LVL4	.001(10)DL1	.002(100)LVL5	.002(70)LVL5	.001(20)LVL5	.002(100)LVL6	.002(70)LVL6	.001(A)HQ1-171004	.001(10)HQ1-171005	.001(20)LVL3-171006	.002(100)LVL3	.002(70)LVL3
Validation Criteria																				
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS QCS	A																			
duplicate RPD																				
MS/MSD: 002 not ok	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

MS -002 ok
OPR. ok
QCS ok

SPL 10.4.17 10.6.17 10.7.17
prep 11 2017 10 27 17 11 13 17
run 11 21 17 10 28 17 11 14 17

MS collected (see Total Mehg)

ALS Group USA, Corp.
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Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Water

Service Request: K1711264
Date Collected: 10/07/17
Date Received: 10/10/17

Dissolved Methyl Mercury

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW-001(20)-LHL6-171007	K1711264-006	0.1	0.03	1	11/13/17	11/14/17	0.07	J
SW-003(100)-LHL4-171007	K1711264-007	0.1	0.03	1	11/13/17	11/14/17	0.03	J
SW-002(70)-LHL4-171007	K1711264-008	0.1	0.03	1	11/13/17	11/14/17	0.06	J
SW-001(20)-LHL4-171007	K1711264-009	0.1	0.03	1	11/13/17	11/14/17	0.05	J
SW-001(10)-DR1-171007	K1711264-010	0.1	0.03	1	11/13/17	11/14/17	ND	
SW-003(100)-LHL5-171007	K1711264-011	0.1	0.03	1	11/13/17	11/14/17	0.04	J
SW-002(70)-LHL5-171007	K1711264-012	0.1	0.03	1	11/13/17	11/14/17	0.07	J
SW-001(20)-LHL5-171007	K1711264-013	0.1	0.03	1	11/13/17	11/14/17	0.09	J
SW-003(100)-LHL6-171007	K1711264-014	0.1	0.03	1	11/13/17	11/14/17	0.13	
SW-002(70)-LHL6-171007	K1711264-015	0.1	0.03	1	11/13/17	11/14/17	0.06	J

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17
Sample Matrix:	Water	**Date Received:**	10/10/17

Dissolved Methyl Mercury

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW-003(100)-LHL2-171006	K1711264-001	0.1	0.03	1	10/27/17	10/28/17	ND	
SW-001(25)-LHL2-171006	K1711264-002	0.1	0.03	1	10/27/17	10/28/17	ND	
SW-002(50)-LHL2-171006	K1711264-003	0.1	0.03	1	10/27/17	10/28/17	0.45	
SW-001(20)-LHL1-171006	K1711264-004	0.1	0.03	1	10/27/17	10/28/17	ND	
SW-002(60)-LHL1-171006	K1711264-005	0.1	0.03	1	10/27/17	10/28/17	ND	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17
Sample Matrix:	Water	**Date Received:**	10/10/17

Dissolved Methyl Mercury

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW-001(10)-HQ1-171004	K1711264-016	0.1	0.03	1	11/20/17	11/21/17	0.03	J
SW-001(10)-HI1-171005	K1711264-017	0.1	0.03	1	11/20/17	11/21/17	ND	
SW-001(20)-LHL3-171006	K1711264-018	0.1	0.03	1	11/20/17	11/21/17	0.06	J
SW-003(100)-LHL3-171006	K1711264-019	0.1	0.03	1	11/20/17	11/21/17	0.09	J
SW-002(70)-LHL3-171006	K1711264-020	0.1	0.03	1	11/20/17	11/21/17	0.04	J

1630

SW LVL2

VALIDATION WORKSHEET

Method: Total Methyl Mercury
Date Reviewed: 12.4.17
Sample Collection Dates: 10.4 – 10.7.17

SDG: K1711264
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	SW.003(100)LHL2.171004	.001(25)LHL2.	.002(50)LHL2.	.001(20)LHL1.	.002(60)LHL1.	.001(20)LHL6.171007	.003(100)LHL4.	.002(70)LHL4.	.001(20)LHL4.	.001(10)DRI.	.003(100)LHL5.	.002(70)LHL5.	.001(20)LHL5.	.003(100)LHL6.	.002(70)LHL6.	.001(A)HG.171004	.001(10)HH.171005	.001(20)LHL3.171006	.003(100)LHL3.	.002(70)LHL3.
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS QCS	A																			
duplicate RPD																				
MS/MSD: ①	X														X	A				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

SW.003(100)LHL2.171004
.001(25)LHL2.
.002(50)LHL2.
.001(20)LHL1
.002(60)LHL1.

Spl 10.4, 10.6, 10.7.17
prep 10.27.17 11.13.17 11 20 17
run 10.28.17 11.14.17 11 21 17

①- 001 MS low MS+MSD 34%, 29% (65-135) J, UJ 8
006 MS high RPD (29) — J, UJ 9

SW.001(20)LHL6.171007
.003(100)LHL4
.002(70)LHL4
.001(20)LHL4.
.001(10)DRI.
.003(100)LHL5.
.002(70)LHL5.
.001(20)LHL5.
.003(100)LHL6
.002(70)LHL6

OPR. ok
QCS. ok

ALS Group USA, Corp.
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Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Water

Service Request: K1711264
Date Collected: 10/07/17
Date Received: 10/10/17

Total Methyl Mercury

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW-001(20)-LHL6-171007	K1711264-006	0.1	0.03	1	11/13/17	11/14/17	0.04	J
SW-003(100)-LHL4-171007	K1711264-007	0.1	0.03	1	11/13/17	11/14/17	0.15	
SW-002(70)-LHL4-171007	K1711264-008	0.1	0.03	1	11/13/17	11/14/17	0.22	
SW-001(20)-LHL4-171007	K1711264-009	0.1	0.03	1	11/13/17	11/14/17	0.07	J
SW-001(10)-DR1-171007	K1711264-010	0.1	0.03	1	11/13/17	11/14/17	0.05	J
SW-003(100)-LHL5-171007	K1711264-011	0.1	0.03	1	11/13/17	11/14/17	0.06	J
SW-002(70)-LHL5-171007	K1711264-012	0.1	0.03	1	11/13/17	11/14/17	0.19	
SW-001(20)-LHL5-171007	K1711264-013	0.1	0.03	1	11/13/17	11/14/17	0.09	J
SW-003(100)-LHL6-171007	K1711264-014	0.1	0.03	1	11/13/17	11/14/17	0.19	
SW-002(70)-LHL6-171007	K1711264-015	0.1	0.03	1	11/13/17	11/14/17	0.07	J
Method Blank 1	K1711264-MB1	0.1	0.03	1	11/13/17	11/14/17	ND	
Method Blank 2	K1711264-MB2	0.1	0.03	1	11/13/17	11/14/17	ND	
Method Blank 3	K1711264-MB3	0.1	0.03	1	11/13/17	11/14/17	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Water

Service Request: K1711264
Date Collected: 10/04/17
Date Received: 10/10/17

Total Methyl Mercury

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW-001(10)-HQ1-171004	K1711264-016	0.1	0.03	1	11/20/17	11/21/17	0.04	J
SW-001(10)-HI1-171005	K1711264-017	0.1	0.03	1	11/20/17	11/21/17	0.04	J
SW-001(20)-LHL3-171006	K1711264-018	0.1	0.03	1	11/20/17	11/21/17	0.04	J
SW-003(100)-LHL3-171006	K1711264-019	0.1	0.03	1	11/20/17	11/21/17	0.12	
SW-002(70)-LHL3-171006	K1711264-020	0.1	0.03	1	11/20/17	11/21/17	0.10	
Method Blank 1	K1711264-MB1	0.1	0.03	1	11/20/17	11/21/17	ND	
Method Blank 2	K1711264-MB2	0.1	0.03	1	11/20/17	11/21/17	ND	
Method Blank 3	K1711264-MB3	0.1	0.03	1	11/20/17	11/21/17	ND	

ALS Group USA, Corp.
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Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Water

Total

Methyl Mercury

Service Request: K1711264
Date Collected: 10/06/17
Date Received: 10/10/17

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW-003(100)-LHL2-171006	K1711264-001	0.1	0.03	1	10/27/17	10/28/17	ND UJ	8
SW-001(25)-LHL2-171006	K1711264-002	0.1	0.03	1	10/27/17	10/28/17	ND UJ	
SW-002(50)-LHL2-171006	K1711264-003	0.1	0.03	1	10/27/17	10/28/17	0.18 J	
SW-001(20)-LHL1-171006	K1711264-004	0.1	0.03	1	10/27/17	10/28/17	ND UJ	
SW-002(60)-LHL1-171006	K1711264-005	0.1	0.03	1	10/27/17	10/28/17	0.24 J	
Method Blank 1	K1711264-MB1	0.1	0.03	1	10/27/17	10/28/17	ND ~~UJ~~	
Method Blank 2	K1711264-MB2	0.1	0.03	1	10/27/17	10/28/17	ND	
Method Blank 3	K1711264-MB3	0.1	0.03	1	10/27/17	10/28/17	ND	

SW 1V1 2

1631E

VALIDATION WORKSHEET

Method: Dissolved Mercury
Date Reviewed: 12.4.17
Sample Collection Dates: 10.4 – 10.7.17
SDG: K1711264
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	SW-002(100)LHL2-171004	-001(25)LHL2	-002(50)LHL2	-001(70)LHL2	-002(100)LHL2	-001(70)LHL0 171007	-003(100)LHL4	-002(70)LHL4	-001(70)LHL4	-001(10)DL1	-003(100)LHL5	-002(70)LHL5	-001(70)LHL5	-003(100)LHL0	-002(70)LHL0	-001(6)HQ1-171004	-001(10)HH1-171005	-001(20)LHL3-171006	-003(100)LHL3	-002(70)LHL3
Validation Criteria																				
Sample results	A																			
Holding Times ①	A				→	X														
Completion	A																			
Method Blanks ②	X	X	A	X	X	A	→			X	X	A	→			X	X	X	X	X
LCS QCS	A																			
duplicate RPD																				
MS/MSD:	NA																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

- ① high cooler temps for all but -001 through -005.
- ① high cooler temp + unpreserved, J/UJ -006 – 020
- 2 MB's J values used for UJ, & the field qcs that are also J

OPR ok
QCS ok

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Water

Service Request: K1711264
Date Collected: 10/04-07/17
Date Received: 10/10/17

Mercury, Dissolved

Prep Method: METHOD
Analysis Method: 1631E
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW-003(100)-LHL5-171007	K1711264-011	0.5	0.06	1	10/19/17	10/20/17	0.18	J
SW-002(70)-LHL5-171007	K1711264-012	0.5	0.06	1	10/19/17	10/20/17	4.37	
SW-001(20)-LHL5-171007	K1711264-013	0.5	0.06	1	10/19/17	10/20/17	4.49	
SW-003(100)-LHL6-171007	K1711264-014	0.5	0.06	1	10/19/17	10/20/17	3.12	
SW-002(70)-LHL6-171007	K1711264-015	0.5	0.06	1	10/19/17	10/20/17	2.16	
SW-001(10)-HQ1-171004	K1711264-016	0.5	0.06	1	10/19/17	10/20/17	0.15	J U
SW-001(10)-HI1-171005	K1711264-017	0.5	0.06	1	10/19/17	10/20/17	0.16	J U
SW-001(20)-LHL3-171006	K1711264-018	0.5	0.06	1	10/19/17	10/20/17	0.14	J U
SW-003(100)-LHL3-171006	K1711264-019	0.5	0.06	1	10/19/17	10/20/17	0.32	J U
SW-002(70)-LHL3-171006	K1711264-020	0.5	0.06	1	10/19/17	10/20/17	0.16	J U
Method Blank 1	K1711264-MB1	0.5	0.06	1	10/19/17	10/20/17	0.13	J
Method Blank 2	K1711264-MB2	0.5	0.06	1	10/19/17	10/20/17	0.10	J
Method Blank 3	K1711264-MB3	0.5	0.06	1	10/19/17	10/20/17	0.20	J

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Water

Service Request: K1711264
Date Collected: 10/04-07/17
Date Received: 10/10/17

Mercury, Dissolved

Prep Method: METHOD
Analysis Method: 1631E
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW-003(100)-LHL2-171006	K1711264-001	0.5	0.06	1	10/19/17	10/20/17	0.21	
SW-001(25)-LHL2-171006	K1711264-002	0.5	0.06	1	10/19/17	10/20/17	0.21	
SW-002(50)-LHL2-171006	K1711264-003	0.5	0.06	1	10/19/17	10/20/17	0.77	
SW-001(20)-LHL1-171006	K1711264-004	0.5	0.06	1	10/19/17	10/20/17	0.28	
SW-002(60)-LHL1-171006	K1711264-005	0.5	0.06	1	10/19/17	10/20/17	0.24	
SW-001(20)-LHL6-171007	K1711264-006	0.5	0.06	1	10/19/17	10/20/17	1.10	J
SW-003(100)-LHL4-171007	K1711264-007	0.5	0.06	1	10/19/17	10/20/17	2.83	J
SW-002(70)-LHL4-171007	K1711264-008	0.5	0.06	1	10/19/17	10/20/17	0.98	J
SW-001(20)-LHL4-171007	K1711264-009	0.5	0.06	1	10/19/17	10/20/17	0.83	J
SW-001(10)-DR1-171007	K1711264-010	0.5	0.06	1	10/19/17	10/20/17	0.39	J
Method Blank 1	K1711264-MB1	0.5	0.06	1	10/19/17	10/20/17	0.15	J
Method Blank 2	K1711264-MB2	0.5	0.06	1	10/19/17	10/20/17	0.06	J
Method Blank 3	K1711264-MB3	0.5	0.06	1	10/19/17	10/20/17	0.11	J

SW2UL2

VALIDATION WORKSHEET

Method: Sulfate ~~Total~~ (Diss)
Date Reviewed: 12.4.17
Sample Collection Dates: 10.4.17 - 10.7.17

SDG: 1617/1264
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria	SW-.002(100) LHL2-170016	.001(25) LHL2	.002(50) LHL2	.001(20) LHL1	.002(40) LHL4	.001(20) LHL6-171007	.002(100) LHL4	.002(70) LHL4	.001(20) LHL4	.001(10) DIL1	.003(100) LHL5	.002(70) LHL5	.001(20) LHL5	.003(100) LHL6	.002(70) LHL6	.001(10) HG1-171004	.001(10) HG1-171005	.001(20) LHL3-170616	.003(100) LHL3	.002(70) LHL3
Sample results	A																			A
Holding Times	A																			A
Completion	A																			A
Method Blanks (1)	A																			A
LCS	A																			A
duplicate RPDs (2)	A																			A
MS/MSD: -39	A																			A

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Spl 10.4.-10.7.17

prep

run 10.28 - 10.31.17

(1) MB -.065, no flags, spls 710 x MB

ccv ok

ccb. slight hits, too low to qual.

ALS Group USA, Corp.
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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 - 10/07/17
Sample Matrix:	Water	**Date Received:**	10/10/17
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Sulfate, Dissolved

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW-003(100)-LHL2-171006	K1711264-001	**27.3**	0.50	0.05	5	10/28/17 12:05	
SW-001(25)-LHL2-171006	K1711264-002	**38.9**	0.50	0.05	5	10/28/17 12:26	
SW-002(50)-LHL2-171006	K1711264-003	**28.7**	0.50	0.05	5	10/28/17 12:47	
SW-001(20)-LHL1-171006	K1711264-004	**38.4**	0.50	0.05	5	10/28/17 16:03	
SW-002(60)-LHL1-171006	K1711264-005	**26.7**	0.50	0.05	5	10/28/17 16:24	
SW-001(20)-LHL6-171007	K1711264-006	**24.3**	0.50	0.05	5	10/31/17 17:47	
SW-003(100)-LHL4-171007	K1711264-007	**23.1**	0.50	0.05	5	10/31/17 18:08	
SW-002(70)-LHL4-171007	K1711264-008	**18.0**	0.50	0.05	5	10/31/17 18:29	
SW-001(20)-LHL4-171007	K1711264-009	**35.4**	0.50	0.05	5	10/31/17 18:50	
SW-001(10)-DR1-171007	K1711264-010	**30.1**	0.50	0.05	5	10/31/17 23:17	
SW-003(100)-LHL5-171007	K1711264-011	**29.2**	0.50	0.05	5	10/31/17 23:50	
SW-002(70)-LHL5-171007	K1711264-012	**19.2**	0.50	0.05	5	10/31/17 20:17	
SW-001(20)-LHL5-171007	K1711264-013	**34.4**	0.50	0.05	5	10/31/17 20:38	
SW-003(100)-LHL6-171007	K1711264-014	**15.2**	0.50	0.05	5	10/31/17 20:59	
SW-002(70)-LHL6-171007	K1711264-015	**15.0**	0.50	0.05	5	10/31/17 21:42	
SW-001(10)-HQ1-171004	K1711264-016	**41.0**	0.50	0.05	5	10/31/17 17:26	
SW-001(10)-HI1-171005	K1711264-017	**36.6**	0.50	0.05	5	10/31/17 22:03	
SW-001(20)-LHL3-171006	K1711264-018	**39.5**	0.50	0.05	5	10/31/17 22:24	
SW-003(100)-LHL3-171006	K1711264-019	**27.6**	0.50	0.05	5	10/31/17 22:46	
SW-002(70)-LHL3-171006	K1711264-020	**26.2**	0.50	0.05	5	10/31/17 23:07	
Method Blank	K1711264-MB1	ND U	0.10	0.01	1	10/28/17 07:55	
Method Blank	K1711264-MB2	**0.06 J**	0.10	0.01	1	10/31/17 14:29	

SW LM2

VALIDATION WORKSHEET

Method: Sulfate Total / Diss
Date Reviewed: 12.4.17
Sample Collection Dates: 10.4.17 - 10.7.17

SDG: 1617/1264
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	SW-003(100)LHL2-171006	.001(25)LHL2.	.002(50)LHL2.	.001(20)LHL1.	.002(60)LHL1.	.001(20)LHL6-171007	.002(100)LHL4.	.002(70)LHL4.	.001(70)LHL4.	.001(10)DIL1.	.003(100)LHL5.	.002(70)LHL5.	.001(70)LHL5.	.003(100)LHL6.	.002(70)LHL6.	.001(10)HG1-171004	.001(10)HG1-171005	.001(20)LHL3-171006	.003(100)LHL3.	.002(70)LHL3.
Validation Criteria																				
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks (1)	A																			
LCS	A																			
duplicate RPD	A																			
MS/MSD:																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Spls 10.4.-10.7.17 3.1-10.6 (3.1 ok, 8.5, 9.4, 7.9, 10.6)*
prep ok
run 10.28-10.31.17
+CCBs
LM3 .06 no qual, spls >10 x blank

*TEMP: Since waters were preserved (except 1631 were unpreserved for total 1631) no flags. Waters at high cooler.
Spls at ok temps: SW-003(100)LHL2-171006
.001(25)LHL2.
.002(50)LHL2.
.001(20)LHL1.
.002(60)LHL1

1631 w/ high cooler (#totals)

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711264
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 - 10/07/17
Sample Matrix:	Water	**Date Received:**	10/10/17
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW-003(100)-LHL2-171006	K1711264-001	**27.9**	0.50	0.05	5	10/28/17 11:54	
SW-001(25)-LHL2-171006	K1711264-002	**38.7**	0.50	0.05	5	10/28/17 12:15	
SW-002(50)-LHL2-171006	K1711264-003	**29.5**	0.50	0.05	5	10/28/17 12:36	
SW-001(20)-LHL1-171006	K1711264-004	**38.6**	0.50	0.05	5	10/28/17 15:53	
SW-002(60)-LHL1-171006	K1711264-005	**27.1**	0.50	0.05	5	10/28/17 16:14	
SW-001(20)-LHL6-171007	K1711264-006	**24.8**	0.50	0.05	5	10/31/17 17:36	
SW-003(100)-LHL4-171007	K1711264-007	**23.1**	0.50	0.05	5	10/31/17 17:57	
SW-002(70)-LHL4-171007	K1711264-008	**18.4**	0.50	0.05	5	10/31/17 18:19	
SW-001(20)-LHL4-171007	K1711264-009	**36.5**	0.50	0.05	5	10/31/17 18:40	
SW-001(10)-DR1-171007	K1711264-010	**30.7**	0.50	0.05	5	10/31/17 19:01	
SW-003(100)-LHL5-171007	K1711264-011	**29.2**	0.50	0.05	5	10/31/17 23:50	
SW-002(70)-LHL5-171007	K1711264-012	**19.5**	0.50	0.05	5	10/31/17 20:06	
SW-001(20)-LHL5-171007	K1711264-013	**35.4**	0.50	0.05	5	10/31/17 20:27	
SW-003(100)-LHL6-171007	K1711264-014	**15.5**	0.50	0.05	5	10/31/17 20:48	
SW-002(70)-LHL6-171007	K1711264-015	**15.0**	0.50	0.05	5	10/31/17 21:10	
SW-001(10)-HQ1-171004	K1711264-016	**41.8**	0.50	0.05	5	10/31/17 16:54	
SW-001(10)-HI1-171005	K1711264-017	**37.3**	0.50	0.05	5	10/31/17 21:53	
SW-001(20)-LHL3-171006	K1711264-018	**40.0**	0.50	0.05	5	10/31/17 22:14	
SW-003(100)-LHL3-171006	K1711264-019	**28.2**	0.50	0.05	5	10/31/17 22:35	
SW-002(70)-LHL3-171006	K1711264-020	**26.7**	0.50	0.05	5	10/31/17 22:56	
Method Blank	K1711264-MB1	ND U	0.10	0.01	1	10/28/17 07:55	
Method Blank	K1711264-MB2	**0.06 J**	0.10	0.01	1	10/31/17 14:29	

SW 1UL4

VALIDATION WORKSHEET

Method: Sulfate Total MSS 300.0
Date Reviewed: 11.30.17
Sample Collection Dates: 10.4.17
SDG: KL7112603
Reviewer: C Jensen

The following data validation areas were reviewed:

Dissolved

Sample Identification / Validation Criteria	1 SW-001(5)CI1-171014	2 (10)CI2	3 (10)CI3	4 (70)CI4	5 002(20)CI4	6 DUP-01-171014	7 DUP-02	8 DUP-03	9	10 SW-001(5)CI1-171014	11 (10)CI1-171014	12 (10)CI3-171014	13 (70)CI4-171014	14 SW 002 (20)CI4-171014	15 DUP-01-171014	16 -02	17 -03	18	19	20
Completeness of Analyses	A	→	→	→	→	→	→	→		A	→	→	→	→	→	→	→			
Holding Times	A	→	→	→	→	→	→	→		A	→	→	→	→	→	→	→			
Initial Calibration	A	→	→	→	→	→	→	→		A	→	→	→	→	→	→	→			
Continuing Calibration	A	→	→	→	→	→	→	→		A	→	→	→	→	→	→	→			
Method Blanks	A	→	→	→	→	→	→	→		A	→	→	→	→	→	→	→			
LCS	A	→	→	→	→	→	→	→		A	→	→	→	→	→	→	→			
Surrogate %R or duplicate RPD	A	→	→	→	→	→	→	→		A	→	→	→	→	→	→	→			
MS/MSD: 009 067 batch	A	→	→	→	→	→	→	→		A	→	→	→	✓	→	→	→			
Reporting Limits ✓	A	→	→	→	→	→	→	→		A	→	→	→	→	→	→	→			
Completeness of Analyte List	A	→	→	→	→	→	→	→		A	→	→	→	→	→	→	→			
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

2.5-5.1°C wet ice ~~MBL DUP .2 KLS~~

spl 10.14.17
rm 11.9, 11.10.17

FD pair:

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17
Sample Matrix:	Surface Water	**Date Received:**	10/17/17
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Sulfate

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW-001(5)-CI1-171014	K1711263-001	**63.6**	2.0	0.2	20	11/10/17 09:34	
SW-001(10)-CI2-171014	K1711263-002	**59.3**	2.0	0.2	20	11/10/17 09:44	
SW-001(10)-CI3-171014	K1711263-006	**53.0**	2.0	0.2	20	11/10/17 09:55	
SW-001(70)-CI4-171014	K1711263-007	**47.7**	0.50	0.05	5	11/09/17 19:17	
SW-002(20)-CI4-171014	K1711263-008	**49.1**	0.50	0.05	5	11/09/17 19:57	
DUP-01-171014	K1711263-009	**52.1**	1.0	0.1	10	11/10/17 10:05	
DUP-02-171014	K1711263-010	**64.3**	2.0	0.2	20	11/10/17 10:15	
DUP-03-171014	K1711263-011	**61.1**	2.0	0.2	20	11/10/17 10:25	
Method Blank	K1711263-MB1	ND U	0.10	0.01	1	11/09/17 14:18	

ALS Group USA, Corp.
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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711263
Project:	RU-Herrington Lake/02-42643A	**Date Collected:**	10/14/17
Sample Matrix:	Surface Water	**Date Received:**	10/17/17
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Sulfate, Dissolved

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW-001(5)-CI1-171014	K1711263-001	**64.5**	2.0	0.2	20	11/10/17 10:56	
SW-001(10)-CI2-171014	K1711263-002	**59.8**	2.0	0.2	20	11/10/17 11:06	
SW-001(10)-CI3-171014	K1711263-006	**53.5**	2.0	0.2	20	11/10/17 11:17	
SW-001(70)-CI4-171014	K1711263-007	**47.7**	0.50	0.05	5	11/09/17 19:17	
SW-002(20)-CI4-171014	K1711263-008	**49.1**	0.50	0.05	5	11/09/17 19:57	
DUP-01-171014	K1711263-009	**51.5**	1.0	0.1	10	11/10/17 12:06	
DUP-02-171014	K1711263-010	**64.7**	2.0	0.2	20	11/10/17 12:16	
DUP-03-171014	K1711263-011	**61.7**	2.0	0.2	20	11/10/17 12:26	
Method Blank	K1711263-MB1	ND U	0.10	0.01	1	11/09/17 14:18	

SDG: K1711263 CCB-ok

Project: Herr. Lake

Date: 11.30.17

Method: Sulfate T+D

ICV %R	r^2 .999	lab reported
	T+D 5.29/5 = 1.058	
CCV %R		lab reported 106
LCS	T. 5.26/5 = 1.05	lab reported 105
ICS %R		lab reported
MS %R	T. 70.1 − 49.1/20 = 1.05	lab reported 105
MS/MSD %RPD	$\frac{70.1-70}{70.1+70/2} \div \frac{.1}{70.5} = .001$	lab reported 0
Duplicate %D	T. $\frac{47.7-46.4}{47.7+46.4/2} = \frac{1.3}{47} = .027$	lab reported 3
High Std Check		lab reported
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation	attached	lab reported
other (moisture)		lab reported

SDG K1711263	Analyte Sulfate	
Project: HWI-UK		
Date: 11.3w.17		
001		
Sample ID SW-001(5)CI1-171014 DW 63.6 ✓	Lab reported 63.6 T.	mg/Kg mg/L
		ug/L 655 NL
Calulation		
002		
Sample ID SW-001(6)CI2-171014 59.3 ✓	Lab reported 59.3 T.	mg/Kg mg/L
		ug/L 611.6 NL
Calulation		
001		
Sample ID SW-001(9)CI1-171014 64.5 ✓	Lab reported 64.5 D	mg/Kg mg/L
		ug/L
Calulation		
002		
Sample ID SW-001(10)CI2-171014 59.8 ✓	Lab reported 59.8 D.	mg/Kg mg/L
		ug/L
Calulation		
001		
Sample ID DUP-01-171014 52.06 ✓	Lab reported 52.1 T	mg/Kg mg/L
		ug/L
Calulation		
010		
Sample ID DUP-02-171014 64.28 ✓	Lab reported 64.3	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

Sed. LVL 2

VALIDATION WORKSHEET

Method: Sulfate 300.0
Date Reviewed: 12.13.17
Sample Collection Dates: 10.11-10.12.17

SDG: K1711369
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 DUP-005-171011	2 DUP-006-171011	3 SD-001(15)-CIB-171011	4 SD-001(10)-CIA-171011	5 SD-001(20)-CIA-171012	6 (20)-LHL2B-171012	7 (20)-LHL2-171012	8 (20)-LHL0.1-171012	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A	→																		
Holding Times	A	→																		
Completion	A	→																		
Method Blanks	A	→																		
LCS / LCSD	A	→																		
duplicate RPD	A	→																		
MS/MSD:																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

1.7°C

Spl 10.11.17, 10.12.17
prep 10.20.17 IT-E-179
run 10.31 + 10.30.17 IT-317-9
CCV ok
CCV ok

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711369
Project:	RD-Herrington Lake/0242643A	**Date Collected:**	10/11/17 - 10/12/17
Sample Matrix:	Sediment	**Date Received:**	10/19/17
Analysis Method:	300.0	**Units:**	mg/Kg
Prep Method:	Method	**Basis:**	Dry

Sulfate

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
DUP-005-171011	K1711369-001	**176**	3.1	1.5	2	10/30/17	10/20/17	
DUP-006-171011	K1711369-002	**980**	17	8	10	10/31/17	10/20/17	
SD-001(15)-CI1B-171011	K1711369-003	**1120**	17	8	10	10/31/17	10/20/17	
SD-001(16)-CI1A-171011	K1711369-004	**1440**	25	12	10	10/31/17	10/20/17	
SD-001(20)-CI4B-171012	K1711369-005	**185**	13	7	10	10/31/17	10/20/17	
SD-001(20)-LHL2B-171012	K1711369-006	**803**	16	8	10	10/31/17	10/20/17	
SD-001(20)-LHL2C-171012	K1711369-007	**1350**	18	9	10	10/31/17	10/20/17	
SD-001(20)-LHL6C-171012	K1711369-008	**3620**	38	18	10	10/31/17	10/20/17	
Method Blank	K1711369-MB	ND U	1.0	0.5	1	10/30/17	NA	

Sed IVI 2

AES808

VALIDATION WORKSHEET

Method: Methyl Mercury
Date Reviewed: 12.14.17
Sample Collection Dates: 10.11, 10.12.17

SDG: K1711369
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 DUP.005.171011	2 DUP.006.171011	3 SD.001(15).CEIB.171011	4 SD.001(16).CEIA.171011	5 SD.001(20).CEIB.171102	6 SD.001(20).LHL2B.171102	7 SD.001(20).LHL2C.171102	8 SD.001(20).LHL1C.171102	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A →																			
Holding Times	A →																			
Completion	A →																			
Method Blanks (1)	X	X	A	X	A	X	X	A												
LCS QCS	A →																			
duplicate RPD																				
MS/MSD: -001	A →																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Spl 10.11.17 OPR ok
Prep 11.28.17 QCS ok
Anl 11.29.17

- (1) MB-1 .13J Methyl Hg J values rptd by lab 4, 6
  DUP.005.171011 SD.001(16).CEIA.171011 SD.001(20).LHL2C.171102
  DUP.006.171011 SD.001(20).LHL2B.171102

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation
Project:	RD-Herrington Lake/0242643A
Sample Matrix:	Soil

Service Request:	K1711369
Date Collected:	10/11/17
Date Received:	10/19/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DUP-005-171011	K1711369-001	0.4	0.04	1	11/28/17	11/29/17	0.05	J U
DUP-006-171011	K1711369-002	0.5	0.05	1	11/28/17	11/29/17	0.06	J U
SD-001(15)-CI1B-171011	K1711369-003	0.4	0.04	1	11/28/17	11/29/17	ND	
SD-001(16)-CI1A-171011	K1711369-004	0.7	0.07	1	11/28/17	11/29/17	0.24	J U
SD-001(20)-CI4B-171012	K1711369-005	0.3	0.03	1	11/28/17	11/29/17	ND	
SD-001(20)-LHL2B-171012	K1711369-006	0.4	0.04	1	11/28/17	11/29/17	0.25	J U
SD-001(20)-LHL2C-171012	K1711369-007	0.5	0.05	1	11/28/17	11/29/17	0.11	J U
SD-001(20)-LHL6C-171012	K1711369-008	1.0	0.10	1	11/28/17	11/29/17	1.74	
Method Blank 1	K1711369-MB1	0.4	0.04	1	11/28/17	11/29/17	0.13	J
Method Blank 2	K1711369-MB2	0.4	0.04	1	11/28/17	11/29/17	ND	
Method Blank 3	K1711369-MB3	0.4	0.04	1	11/28/17	11/29/17	ND	

Sed IVL 2

VALIDATION WORKSHEET

Method: TOC
Date Reviewed: 12.12.17
Sample Collection Dates: 10.11 - 10.12.17

SDG: 617113G9
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 DM-005-171011	2 DM-006-171011	3 SD 001(15) CTB 171011	4 001(16) CEIA 171011	5 001(20) CTB 171012	6 001(20) LHL28 171012	7 001(20) LHL2c 171012	8 001(20) LHL4c 171012	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A	→	→	→	→	→	→	→												
Holding Times	A	→	→	→	→	→	→	→												
Completion	A	→	→	→	→	→	→	→												
Method Blanks	A	→	→	→	→	→	→	→												
LCS	A	→	→	→	→	→	→	→												
duplicate RPD -	A	→	→	→	→	→	→	→												
MS/MSD: -001	A	→	→	→	→	→	→	→												

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

SPL 10.11 & 10.12.17
prep 11.2.17
VUN 11.3.17

CCV ok
CCB ok

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711369
Project:	RD-Herrington Lake/0242643A	**Date Collected:**	10/11/17 - 10/12/17
Sample Matrix:	Sediment	**Date Received:**	10/19/17
Analysis Method:	9060	**Units:**	Percent
Prep Method:	Method	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
DUP-005-171011	K1711369-001	**1.51**	0.10	0.02	1	11/03/17	11/2/17	
DUP-006-171011	K1711369-002	**2.50**	0.10	0.02	1	11/03/17	11/2/17	
SD-001(15)-CI1B-171011	K1711369-003	**1.73**	0.10	0.02	1	11/03/17	11/2/17	
SD-001(16)-CI1A-171011	K1711369-004	**7.46**	0.10	0.02	1	11/03/17	11/2/17	
SD-001(20)-CI4B-171012	K1711369-005	**0.41**	0.10	0.02	1	11/03/17	11/2/17	
SD-001(20)-LHL2B-171012	K1711369-006	**2.20**	0.10	0.02	1	11/03/17	11/2/17	
SD-001(20)-LHL2C-171012	K1711369-007	**4.02**	0.10	0.02	1	11/03/17	11/2/17	
SD-001(20)-LHL6C-171012	K1711369-008	**17.9**	0.10	0.02	1	11/03/17	11/2/17	
Method Blank	K1711369-MB	ND U	0.10	0.02	1	11/03/17	11/2/17	

ALS Environmental

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SR# K1711369

COC Set 1 of 1

COC#

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: RD-HERRINGTON LAKE	Project Number: 08212643A
Project Manager: MARY SORENSEN	
Company: RAMBOLL-ENVIRON	
Address: 1600 PARKWOOD CIR, SUITE 310, ATL, GA	
Phone #: 770.548.1799	email: msorensen@ramboll.com
Sampler Signature: Katrina Leigh	Sampler Printed Name: KATTRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	Time	Matrix	NUMBER OF CONTAINERS	28D: 300.0 / SO4	28D: 7471B / Hg	180D: 1630 Methyl Hg	180D: 6010C / Metals T	180D: 6020A / Metals T	1 SM 3540 / TS	2 9010 TOC	3 ASTM D2216 WATER CONT	4	5	Remarks
1. DUP-005-171011		10-11-17	0830	SD	2	X	X	X	X	X	X	X	X			
2. DUP-006-171011		10-11-17	0830		2	X	X	X	X	X	X	X	X			
3. SD-001(15)-CI1B-171011		10-11-17	1440		2	X	X	X	X	X	X	X	X			
4. SD-001(16)-CI1A-171011		10-11-17	1500		2	X	X	X	X	X	X	X	X			
5. SD-001(20)-CI4B-171012		10-12-17	0930		2	X	X	X	X	X	X	X	X			
6. SD-001(20)-LHL2B-171012		10-12-17	1045		2	X	X	X	X	X	X	X	X			
7. SD-001(20)-LHL2C-171012		10-12-17	1110		2	X	X	X	X	X	X	X	X			
8. SD-001(20)-LHL4C-171012		10-12-17	1635	↓	3	X	X	X	X	X	X	X	X			
9.																
10.																

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.#
Bill To:

Turnaround Requirements

___ 24 hr. ___ 48 hr.
X 5 Day Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Katrina Leigh	Signature: [illegible]	Signature	Signature	Signature	Signature
Printed Name: KATTRINA LEIGH	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: RSH	Firm: 10/19/17 0930	Firm	Firm	Firm	Firm
Date/Time: 10-17-17 / 0945	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

Soil LVL2

6020A / 7471B

VALIDATION WORKSHEET

Method: Total Metals Hg
Date Reviewed: 1.3.18
Sample Collection Dates: 10.11.17

SDG: KJ711369
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 MP-005-171011	2 DUP-006-171011	3 SD 001(15) CI1B 171011	4 001(16) CI1A 171011	5 001(20) CI4B 171102	6 001(20) LHL2B 171102	7 001(20) LHL2C 171102	8 001(20) LHL2D 171102	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks (1)	A																			
LCS	A																			
duplicate RPD (2) -05, 2	X																			
(3) MS/MSD: -00.	X																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

	metals	Hg
SPL	10.11.17	10.11.17
prep	10/20/17	11/1/17
run	10/30 11/1/17	11.3.17

3.16.18 added in Pb - no flags

- (1) MB Mg .5J neg/key no flag. Spl conc 17 high
- lab dup .001 RPD high (limit 20) As, Fe, Zn all spls J/UJ for As, Fe, Zn = 9
- MS Mg high 133 (75-125) all Mg, all spls J 8
  Hg low 2R 62 (80-120) all spls J, UJ 8

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711369
Project:	RD-Herrington Lake/0242643A	**Date Collected:**	10/11/17 08:30
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	DUP-005-171011	**Basis:**	Dry
Lab Code:	K1711369-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**70.5** J 9	mg/Kg	0.62	0.05	5	10/30/17 07:56	10/20/17	
Boron	6020A	**6.38**	mg/Kg	0.62	0.06	5	10/30/17 07:56	10/20/17	
Cadmium	6020A	**0.625**	mg/Kg	0.025	0.009	5	10/30/17 07:56	10/20/17	
Iron	6010C	**64000** J 9	mg/Kg	5.0	2.5	2	11/01/17 15:55	10/20/17	
Lead	6010C	**38.3**	mg/Kg	2.5	0.5	2	11/01/17 15:55	10/20/17	
Magnesium	6010C	**1720** J 8	mg/Kg	2.5	0.2	2	11/01/17 15:55	10/20/17	
Mercury	7471B	**0.053** J 8	mg/Kg	0.022	0.002	1	11/03/17 13:35	11/01/17	
Selenium	6020A	**1.4**	mg/Kg	1.2	0.09	5	10/30/17 07:56	10/20/17	
Zinc	6020A	**114** J 9	mg/Kg	0.62	0.25	5	10/30/17 07:56	10/20/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711369
Project:	RD-Herrington Lake/0242643A	**Date Collected:**	10/11/17 08:30
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	DUP-006-171011	**Basis:**	Dry
Lab Code:	K1711369-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**90.7** J 9	mg/Kg	0.71	0.06	5	10/30/17 08:12	10/20/17	
Boron	6020A	**20.5**	mg/Kg	0.71	0.07	5	10/30/17 08:12	10/20/17	
Cadmium	6020A	**2.26**	mg/Kg	0.028	0.010	5	10/30/17 08:12	10/20/17	
Iron	6010C	**38700** J 9	mg/Kg	28	14	10	11/01/17 16:08	10/20/17	
Lead	6010C	**27**	mg/Kg	14	3	10	11/01/17 16:08	10/20/17	
Magnesium	6010C	**2910** J 8	mg/Kg	14	1	10	11/01/17 16:08	10/20/17	
Mercury	7471B	**0.056** J 8	mg/Kg	0.021	0.002	1	11/03/17 13:45	11/01/17	
Selenium	6020A	**4.5**	mg/Kg	1.4	0.10	5	10/30/17 08:12	10/20/17	
Zinc	6020A	**124** J 9	mg/Kg	0.71	0.28	5	10/30/17 08:12	10/20/17	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711369
Project:	RD-Herrington Lake/0242643A	**Date Collected:**	10/11/17 14:40
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(15)-CI1B-171011	**Basis:**	Dry
Lab Code:	K1711369-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**64.7** J 9	mg/Kg	0.66	0.05	5	10/30/17 08:40	10/20/17	
Boron	6020A	**13.4**	mg/Kg	0.66	0.07	5	10/30/17 08:40	10/20/17	
Cadmium	6020A	**1.62**	mg/Kg	0.026	0.009	5	10/30/17 08:40	10/20/17	
Iron	6010C	**40800** J 9	mg/Kg	26	13	10	11/01/17 16:11	10/20/17	
Lead	6010C	**26**	mg/Kg	13	3	10	11/01/17 16:11	10/20/17	
Magnesium	6010C	**2990** J 8	mg/Kg	13	1	10	11/01/17 16:11	10/20/17	
Mercury	7471B	**0.058** J 8	mg/Kg	0.016	0.002	1	11/03/17 13:46	11/01/17	
Selenium	6020A	**3.4**	mg/Kg	1.3	0.09	5	10/30/17 08:40	10/20/17	
Zinc	6020A	**76.3** J 9	mg/Kg	0.66	0.26	5	10/30/17 08:40	10/20/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711369
Project:	RD-Herrington Lake/0242643A	**Date Collected:**	10/11/17 15:00
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(16)-CI1A-171011	**Basis:**	Dry
Lab Code:	K1711369-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**391** J 9	mg/Kg	0.90	0.07	5	10/30/17 08:17	10/20/17	
Boron	6020A	**72.3**	mg/Kg	0.90	0.09	5	10/30/17 08:17	10/20/17	
Cadmium	6020A	**10.1**	mg/Kg	0.036	0.013	5	10/30/17 08:17	10/20/17	
Iron	6010C	**51200** J 9	mg/Kg	36	18	10	11/01/17 16:21	10/20/17	
Lead	6010C	**21**	mg/Kg	18	4	10	11/01/17 16:21	10/20/17	
Magnesium	6010C	**5230** J 8	mg/Kg	18	2	10	11/01/17 16:21	10/20/17	
Mercury	7471B	**0.107** J 8	mg/Kg	0.027	0.003	1	11/03/17 13:48	11/01/17	
Selenium	6020A	**14.1**	mg/Kg	1.8	0.1	5	10/30/17 08:17	10/20/17	
Zinc	6020A	**245** J 9	mg/Kg	0.90	0.36	5	10/30/17 08:17	10/20/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711369
Project:	RD-Herrington Lake/0242643A	**Date Collected:**	10/12/17 09:30
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(20)-CI4B-171012	**Basis:**	Dry
Lab Code:	K1711369-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**40.0** J 9	mg/Kg	0.29	0.02	5	10/30/17 08:29	10/20/17	
Boron	6020A	**2.95**	mg/Kg	0.29	0.03	5	10/30/17 08:29	10/20/17	
Cadmium	6020A	**0.332**	mg/Kg	0.011	0.004	5	10/30/17 08:29	10/20/17	
Iron	6010C	**10300** J 9	mg/Kg	11	6	10	11/01/17 16:24	10/20/17	
Lead	6010C	**2.2 J**	mg/Kg	5.7	1.1	10	11/01/17 16:24	10/20/17	
Magnesium	6010C	**6220** J 8	mg/Kg	5.7	0.6	10	11/01/17 16:24	10/20/17	
Mercury	7471B	**0.006 J** J 8	mg/Kg	0.013	0.001	1	11/03/17 13:50	11/01/17	
Selenium	6020A	**0.66**	mg/Kg	0.57	0.04	5	10/30/17 08:29	10/20/17	
Zinc	6020A	**18.8** J 9	mg/Kg	0.29	0.11	5	10/30/17 08:29	10/20/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711369
Project:	RD-Herrington Lake/0242643A	**Date Collected:**	10/12/17 10:45
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(20)-LHL2B-171012	**Basis:**	Dry
Lab Code:	K1711369-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**26.9** J 9	mg/Kg	0.39	0.03	5	10/30/17 08:31	10/20/17	
Boron	6020A	**7.89**	mg/Kg	0.39	0.04	5	10/30/17 08:31	10/20/17	
Cadmium	6020A	**0.465**	mg/Kg	0.015	0.005	5	10/30/17 08:31	10/20/17	
Iron	6010C	**28300** J 9	mg/Kg	15	8	10	11/01/17 16:27	10/20/17	
Lead	6010C	**9.7**	mg/Kg	7.7	1.5	10	11/01/17 16:27	10/20/17	
Magnesium	6010C	**4940** J 8	mg/Kg	7.7	0.8	10	11/01/17 16:27	10/20/17	
Mercury	7471B	**0.033** J 8	mg/Kg	0.018	0.002	1	11/03/17 13:51	11/01/17	
Selenium	6020A	**1.57**	mg/Kg	0.77	0.05	5	10/30/17 08:31	10/20/17	
Zinc	6020A	**38.6** J 9	mg/Kg	0.39	0.15	5	10/30/17 08:31	10/20/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711369
Project:	RD-Herrington Lake/0242643A	**Date Collected:**	10/12/17 11:10
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(20)-LHL2C-171012	**Basis:**	Dry
Lab Code:	K1711369-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**28.9** J 9	mg/Kg	0.31	0.02	5	10/30/17 08:34	10/20/17	
Boron	6020A	**6.86**	mg/Kg	0.31	0.03	5	10/30/17 08:34	10/20/17	
Cadmium	6020A	**0.646**	mg/Kg	0.012	0.004	5	10/30/17 08:34	10/20/17	
Iron	6010C	**34100** J 9	mg/Kg	12	6	10	11/01/17 16:29	10/20/17	
Lead	6010C	**16.1**	mg/Kg	6.2	1.2	10	11/01/17 16:29	10/20/17	
Magnesium	6010C	**8950** J 8	mg/Kg	6.2	0.6	10	11/01/17 16:29	10/20/17	
Mercury	7471B	**0.0294** J 8	mg/Kg	0.0086	0.0009	1	11/03/17 13:53	11/01/17	
Selenium	6020A	**3.61**	mg/Kg	0.62	0.04	5	10/30/17 08:34	10/20/17	
Zinc	6020A	**61.5** J 9	mg/Kg	0.31	0.12	5	10/30/17 08:34	10/20/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711369
Project:	RD-Herrington Lake/0242643A	**Date Collected:**	10/12/17 16:35
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(20)-LHL6C-171012	**Basis:**	Dry
Lab Code:	K1711369-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**8.44** J 9	mg/Kg	0.69	0.05	5	10/30/17 08:37	10/20/17	
Boron	6020A	**20.3**	mg/Kg	0.69	0.07	5	10/30/17 08:37	10/20/17	
Cadmium	6020A	**0.394**	mg/Kg	0.027	0.010	5	10/30/17 08:37	10/20/17	
Iron	6010C	**14100** J 9	mg/Kg	27	14	10	11/01/17 16:32	10/20/17	
Lead	6010C	**9 J**	mg/Kg	14	3	10	11/01/17 16:32	10/20/17	
Magnesium	6010C	**7890** J 8	mg/Kg	14	1	10	11/01/17 16:32	10/20/17	
Mercury	7471B	**0.031** J 8	mg/Kg	0.013	0.001	1	11/03/17 13:54	11/01/17	
Selenium	6020A	**4.1**	mg/Kg	1.4	0.10	5	10/30/17 08:37	10/20/17	
Zinc	6020A	**44.8** J 9	mg/Kg	0.69	0.27	5	10/30/17 08:37	10/20/17	

1630m
ALS SOP

Sed 1V14

VALIDATION WORKSHEET

Method: Methyl Mercury
Date Reviewed: 1.3.18
Sample Collection Dates: 10.11.17

SDG: KI711372
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 DUP-004-171011	2 SD-001(12)-CI3C-171011	3 SD-001(21)-CI3B-171011	4 SD-001(3)-CI3A-171011	5 SD-001(13)-CI2C-171011	6 SD-001(17)-CI2B-171011	7 SD-001(20)-CI2A-171011	8 SD-001-(12)-CI1C-171011	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→	→	→	→	→												
Holding Times	A	→	→	→	→	→	→	→												
Initial Calibration	A	→	→	→	→	→	→	→												
Continuing Calibration (QCS)	A	→	→	→	→	→	→	→												
Method Blanks (D)	X	A	A	A	X	X	X	X												
LCS (QCS)	A	→	→	→	→	→	→	→												
Surrogate %R or duplicate RPD																				
MS/MSD:	A	→	→	→	→	→	→	→												
Reporting Limits	A	→	→	→	→	→	→	→												
Completeness of Analyte List	A	→	→	→	→	→	→	→												
Field Duplicate Pair :																				
Equip /Field Blank																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

spl 10.11.17
prep 11.28.17
run 11.29.17

FD eval. on spreadsheet; in report.

DMB .13J 6, U DUP-004-171011
SD-001(3)-CI2C-171011
SD-001(17)-CI2B-171011
SD-001(20)-CI2A-171011
SD-001(12)-CI1C-171011

SDG:	K1711372	
Project:	Herr. Lake	
Date:	1.8.18	
Method:	ALS SOP	
ICV %R		lab reported
CCV %R		lab reported
~~LCS~~ QCS	70.8/75 = .94	lab reported 94
ICS %R		lab reported
MS %R	65.9/98.8 = .667	lab reported 67
MS/MSD %RPD	65.9 − 65.5 = .4; 65.7 + 65.5/2 = 65.7 = .006	lab reported 41
Duplicate %D		lab reported
~~High Std Check~~ OPR	98.7/100 = .98	lab reported 99
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported

SDG 1671372	Analyte Mercury	24
Project: Fern Ln.		
Date: 1.8.18		
-001 Sample ID DUP-004-171011 VBW checked .(	Lab reported .101 / .1 J mg/kg	mg/Kg mg/L 57.1
Calulation		ug/L 1.234 1.5
		.45 Vol 857
		DL 40 Vol 2
-002 Sample ID SD-001(12)-CI3C-171014 .595	Lab reported .6 mg/kg	mg/Kg mg/L 65.2
Calulation		ug/L 1.708 1.502
		3 1.5
-005 Sample ID SD-001(13)-CI2C-171011 .08 / .0782	Lab reported .08 mg/kg	mg/Kg mg/L 67.4
Calulation		ug/L 1.711 1.522
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

ALS Group USA, Corp.
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Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Soil

Service Request: K1711372
Date Collected: 10/11/17
Date Received: 10/19/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
DUP-004-171011	K1711372-001	0.5	0.05	1	11/28/17	11/29/17	0.10	JU6
SD-001(12)-CI3C-171011	K1711372-002	0.4	0.04	1	11/28/17	11/29/17	0.60	
SD-001(21)-CI3B-171011	K1711372-003	0.4	0.04	1	11/28/17	11/29/17	ND	
SD-001(31)-CI3A-171011	K1711372-004	0.6	0.06	1	11/28/17	11/29/17	ND	
SD-001(13)-CI2C-171011	K1711372-005	0.4	0.04	1	11/28/17	11/29/17	0.08	JU6
SD-001(17)-CI2B-171011	K1711372-006	0.6	0.06	1	11/28/17	11/29/17	0.42	JU6
SD-001(20)-CI2A-171011	K1711372-007	0.5	0.05	1	11/28/17	11/29/17	0.21	JU6
SD-001(12)-CI1C-171011	K1711372-008	0.4	0.04	1	11/28/17	11/29/17	0.07	JU6
Method Blank 1	K1711372-MB1	0.4	0.04	1	11/28/17	11/29/17	0.13	J
Method Blank 2	K1711372-MB2	0.4	0.04	1	11/28/17	11/29/17	ND	
Method Blank 3	K1711372-MB3	0.4	0.04	1	11/28/17	11/29/17	ND	

Sed WI 4

VALIDATION WORKSHEET

Method: Metals / Hg
Date Reviewed: 1.1.18
Sample Collection Dates: 10.11.17
SDG: K1711372
Reviewer: C Jensen

The following data validation areas were reviewed:

Validation Criteria	1 DUP-004-171011	2 SD-001(12)-CI3C-171011	3 SD-001(21)-CI3B-171011	4 SD-001(31)-CI34-171011	5 SD-001(13)-CI2C-171011	6 SD-001(17)-CI2B-171011	7 SD-001(20)-CI2A-171011	8 SD-001-(12)-CI1C-171011	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→	→	→	→	→												
Holding Times	A	→	→	→	→	→	→	→												
Initial Calibration	A	→	→	→	→	→	→	→												
Continuing Calibration	A	→	→	→	→	→	→	→												
Method Blanks (1)	A	→	→	→	→	→	→	→												
LCS	A	→	→	→	→	→	→	→												
Surrogate %R or duplicate RPD (2)	X	→	→	→	→	→	→	→												
MS/MSD: -001 (3)	X	A	→	→	→	→	→	→												
Reporting Limits	A	→	→	→	→	→	→	→												
Completeness of Analyte List	A	→	→	→	→	→	→	→												
Field Duplicate Pair :																				
Equip /Field Blank																				

ICB Ba J
Mg J
Hg - .034 J
} no flags

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Metals / Hg
Spl 10.11.17 10.11.17
prep 10.20 11.1.17
run 11.2, 10.30.17 11.3.17

FD pair on spreadsheet; no report.

added Pb 3.16.18 = no new flags

(1) MBs Mg .63 - no flags; spls much higher.

(2) Fe lab dup out, all Fe J/UJ 9

(3) MS Hg low, parent spl J/UJ & DUP-004-171011
Second MS ok.

SDG: K1711372

Internals - ok. (circled mark)
ICB Batch 568507 8:50 Pb 2ug/L
no flags
Spls higher than
5x blank (2x5)
-10.

Project: Henr Lk

Date: 1.9.18

Method: Metals / Hg 6020/7471B

ICV %R
As 25.5/25 = 1.02 — 102
B 24.9/25 = .99 — lab reported 99
Cd 12.5/12.5 = 100 — 100
Pb 251/250 = 1.0 — 100 — 19

CCV %R
As 25.1/25 = 1.0 — lab reported

LCS
Fe 208/200 = 1 — 104
Mg 992/1000 = .99 — lab reported 99
Se 100/100 = 1. — 100

ICS %R — lab reported

MS %R
As 153 - 27.6/129 = .97 — 97
Cd 13.5 - .338/12.9 = 1.02 — lab reported 102

MS/MSD %RPD — lab reported

Duplicate %D
As (27.6 - 31.2) / (27.6 + 31.2/2) = -3.6 / 29.4 = .12 — lab reported 12

~~High Std Check~~ dup
B (7.42 - 6.42) / (7.42 + 6.42/2) = 1 / 6.92 = 14 — lab reported 14

Low Cal Check — lab reported

Serial D% 73
Pb (20 - 190)/20 = 3011 — MRL 3 x 50 = 150 — ok < 50 x MRL one value. — lab reported

Sample Recalculation — lab reported

postspk: As 85.8 - 38.9/50 = .938 — 94
B 58.2 - 10.5/50 = .954 — 96

other (moisture) — lab reported 96

LLC
As 1.1/1 = 1.10 — 110
B .9/1 = .9 — 90
Cd .05/.04 = 1.25 — 125

ICS
As 24.7/25 = .9 — 99
Cd 24.6/25 = .9 — 98

Serial D
As 195-180/195 = .076
Cd 2.39-2.33/2.39 = .025
20 = 8/3

SDG K1711372

Project: Hav. LK

Date: 1.9.18

Analyte Metals/Hg

405

~~547~~ 504

100 ml

1.236 g

-001 ~~Hg~~

Sample ID Dup.004.171011

Lab reported -

mg/Kg (circled) mg/L ~~1.236~~

As .0156 ~~38.94~~ 38.9156 x100

Calulation 38.94 / 1.263 x .577 12/100 = 27.6

ug/L 57.1

B 10.4794 x100 / 1.263 x .577 = 12/100 = 7.42

Sample ID

Lab reported

mg/Kg mg/L

Mg 2.105 x100 / 1.236 x .577 x 10 = 2918 12/1 2980

Calulation

ug/L

509

Sample ID Hg

Lab reported .057

mg/Kg mg/L .871 g

.564 .564 / .571 = 1.04 12 / 10 = .055

ug/L 50 ml

Calulation

Sample ID Pb -

Lab reported

mg/Kg mg/L

ug/L

Calulation

-003

Sample ID SD.001(21).~~CE~~.171011

Lab reported

mg/Kg (circled) mg/L 1.211 g

As 152.843 x100 / .674 x .121 12/100 = 93 93.6

Calulation

ug/L 100 ml

67.4

Ca .935 x100 / 1.211 x .674 12/100 = .573

.780 g

Sample ID

Lab reported

mg/Kg mg/L

ug/L

Calulation Mg 2.343 x100 / 1.211 x .674 1210 = 2870 2870

Sample ID

Lab reported

mg/Kg mg/L

Zn 111.279 x100 / 1.211 x .674 12/100 = 68 68.2

Calulation

ug/L

Sample ID

Lab reported

mg/Kg mg/L

ug/L

Calulation

Sample ID

Lab reported

mg/Kg mg/L

ug/L

Calulation

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711372
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 08:30
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	DUP-004-171011	**Basis:**	Dry
Lab Code:	K1711372-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**27.6**	mg/Kg	0.71	0.06	5	10/30/17 08:59	10/20/17	
Boron	6020A	**7.42**	mg/Kg	0.71	0.07	5	10/30/17 08:59	10/20/17	
Cadmium	6020A	**0.338**	mg/Kg	0.028	0.010	5	10/30/17 08:59	10/20/17	
Iron	6010C	**36000** J 9	mg/Kg	28	14	10	11/02/17 14:26	10/20/17	
Lead	6010C	**24**	mg/Kg	14	3	10	11/02/17 14:26	10/20/17	
Magnesium	6010C	**2980**	mg/Kg	14	1	10	11/02/17 14:26	10/20/17	
Mercury	7471B	**0.057** J 8	mg/Kg	0.020	0.002	1	11/03/17 13:59	11/01/17	
Selenium	6020A	**1.3** J	mg/Kg	1.4	0.10	5	10/30/17 08:59	10/20/17	
Zinc	6020A	**65.7**	mg/Kg	0.71	0.28	5	10/30/17 08:59	10/20/17	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711372
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 10:30
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(12)-CI3C-171011	**Basis:**	Dry
Lab Code:	K1711372-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**18.1**	mg/Kg	0.60	0.05	5	10/30/17 09:16	10/20/17	
Boron	6020A	**7.39**	mg/Kg	0.60	0.06	5	10/30/17 09:16	10/20/17	
Cadmium	6020A	**0.299**	mg/Kg	0.024	0.008	5	10/30/17 09:16	10/20/17	
Iron	6010C	**23600** J9	mg/Kg	24	12	10	11/02/17 14:47	10/20/17	
Lead	6010C	**19**	mg/Kg	12	2	10	11/02/17 14:47	10/20/17	
Magnesium	6010C	**2700**	mg/Kg	12	1	10	11/02/17 14:47	10/20/17	
Mercury	7471B	**0.024**	mg/Kg	0.022	0.002	1	11/03/17 14:04	11/01/17	
Selenium	6020A	**1.2**	mg/Kg	1.2	0.08	5	10/30/17 09:16	10/20/17	
Zinc	6020A	**48.1**	mg/Kg	0.60	0.24	5	10/30/17 09:16	10/20/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711372
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 10:45
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(21)-CI3B-171011	**Basis:**	Dry
Lab Code:	K1711372-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**93.6**	mg/Kg	0.61	0.05	5	10/30/17 09:19	10/20/17	
Boron	6020A	**7.84**	mg/Kg	0.61	0.06	5	10/30/17 09:19	10/20/17	
Cadmium	6020A	**0.573**	mg/Kg	0.025	0.009	5	10/30/17 09:19	10/20/17	
Iron	6010C	**68500** J 9	mg/Kg	25	12	10	11/02/17 14:49	10/20/17	
Lead	6010C	**26**	mg/Kg	12	2	10	11/02/17 14:49	10/20/17	
Magnesium	6010C	**2870**	mg/Kg	12	1	10	11/02/17 14:49	10/20/17	
Mercury	7471B	**0.038**	mg/Kg	0.019	0.002	1	11/03/17 14:06	11/01/17	
Selenium	6020A	**1.6**	mg/Kg	1.2	0.09	5	10/30/17 09:19	10/20/17	
Zinc	6020A	**68.2**	mg/Kg	0.61	0.25	5	10/30/17 09:19	10/20/17	

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dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711372
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 11:30
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(31)-CI3A-171011	**Basis:**	Dry
Lab Code:	K1711372-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**448**	mg/Kg	0.64	0.05	5	10/30/17 09:28	10/20/17	
Boron	6020A	**19.6**	mg/Kg	0.64	0.06	5	10/30/17 09:28	10/20/17	
Cadmium	6020A	**1.48**	mg/Kg	0.026	0.009	5	10/30/17 09:28	10/20/17	
Iron	6010C	**58300** J 9	mg/Kg	26	13	10	11/02/17 14:52	10/20/17	
Lead	6010C	**26**	mg/Kg	13	3	10	11/02/17 14:52	10/20/17	
Magnesium	6010C	**3610**	mg/Kg	13	1	10	11/02/17 14:52	10/20/17	
Mercury	7471B	**0.069**	mg/Kg	0.021	0.002	1	11/03/17 14:07	11/01/17	
Selenium	6020A	**32.8**	mg/Kg	1.3	0.09	5	10/30/17 09:28	10/20/17	
Zinc	6020A	**130**	mg/Kg	0.64	0.26	5	10/30/17 09:28	10/20/17	

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Sediment

Service Request: K1711372
Date Collected: 10/11/17 11:55
Date Received: 10/19/17 09:30

Sample Name: SD-001(13)-CI2C-171011
Lab Code: K1711372-005

Basis: Dry

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**32.0**	mg/Kg	0.61	0.05	5	10/30/17 09:30	10/20/17	
Boron	6020A	**7.92**	mg/Kg	0.61	0.06	5	10/30/17 09:30	10/20/17	
Cadmium	6020A	**0.367**	mg/Kg	0.024	0.009	5	10/30/17 09:30	10/20/17	
Iron	6010C	**35100** J 9	mg/Kg	24	12	10	11/02/17 14:54	10/20/17	
Lead	6010C	**24**	mg/Kg	12	2	10	11/02/17 14:54	10/20/17	
Magnesium	6010C	**2980**	mg/Kg	12	1	10	11/02/17 14:54	10/20/17	
Mercury	7471B	**0.047**	mg/Kg	0.027	0.003	1	11/03/17 14:09	11/01/17	
Selenium	6020A	**1.4**	mg/Kg	1.2	0.09	5	10/30/17 09:30	10/20/17	
Zinc	6020A	**71.9**	mg/Kg	0.61	0.24	5	10/30/17 09:30	10/20/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711372
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 12:10
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(17)-CI2B-171011	**Basis:**	Dry
Lab Code:	K1711372-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**115**	mg/Kg	0.84	0.07	5	10/30/17 09:33	10/20/17	
Boron	6020A	**27.5**	mg/Kg	0.84	0.08	5	10/30/17 09:33	10/20/17	
Cadmium	6020A	**4.86**	mg/Kg	0.034	0.012	5	10/30/17 09:33	10/20/17	
Iron	6010C	**36700** J9	mg/Kg	34	17	10	11/02/17 14:57	10/20/17	
Lead	6010C	**24**	mg/Kg	17	3	10	11/02/17 14:57	10/20/17	
Magnesium	6010C	**3730**	mg/Kg	17	2	10	11/02/17 14:57	10/20/17	
Mercury	7471B	**0.087**	mg/Kg	0.029	0.003	1	11/03/17 14:11	11/01/17	
Selenium	6020A	**13.7**	mg/Kg	1.7	0.1	5	10/30/17 09:33	10/20/17	
Zinc	6020A	**145**	mg/Kg	0.84	0.34	5	10/30/17 09:33	10/20/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711372
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 12:25
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(20)-CI2A-171011	**Basis:**	Dry
Lab Code:	K1711372-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**132**	mg/Kg	0.76	0.06	5	10/30/17 09:36	10/20/17	
Boron	6020A	**29.6**	mg/Kg	0.76	0.08	5	10/30/17 09:36	10/20/17	
Cadmium	6020A	**4.72**	mg/Kg	0.030	0.011	5	10/30/17 09:36	10/20/17	
Iron	6010C	**32300** J 9	mg/Kg	30	15	10	11/02/17 15:00	10/20/17	
Lead	6010C	**20**	mg/Kg	15	3	10	11/02/17 15:00	10/20/17	
Magnesium	6010C	**6720**	mg/Kg	15	2	10	11/02/17 15:00	10/20/17	
Mercury	7471B	**0.118**	mg/Kg	0.032	0.003	1	11/03/17 14:12	11/01/17	
Selenium	6020A	**12.8**	mg/Kg	1.5	0.1	5	10/30/17 09:36	10/20/17	
Zinc	6020A	**149**	mg/Kg	0.76	0.30	5	10/30/17 09:36	10/20/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711372
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 14:35
Sample Matrix:	Sediment	**Date Received:**	10/19/17 09:30
Sample Name:	SD-001(12)-CI1C-171011	**Basis:**	Dry
Lab Code:	K1711372-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**35.6**	mg/Kg	0.67	0.05	5	10/30/17 09:39	10/20/17	
Boron	6020A	**8.86**	mg/Kg	0.67	0.07	5	10/30/17 09:39	10/20/17	
Cadmium	6020A	**0.472**	mg/Kg	0.027	0.009	5	10/30/17 09:39	10/20/17	
Iron	6010C	**35200** J 9	mg/Kg	27	13	10	11/02/17 15:02	10/20/17	
Lead	6010C	**27**	mg/Kg	13	3	10	11/02/17 15:02	10/20/17	
Magnesium	6010C	**1790**	mg/Kg	13	1	10	11/02/17 15:02	10/20/17	
Mercury	7471B	**0.050**	mg/Kg	0.026	0.003	1	11/03/17 14:14	11/01/17	
Selenium	6020A	**1.4**	mg/Kg	1.3	0.09	5	10/30/17 09:39	10/20/17	
Zinc	6020A	**112**	mg/Kg	0.67	0.27	5	10/30/17 09:39	10/20/17	

1/4 Sed

VALIDATION WORKSHEET

Method: TOC 9060
Date Reviewed: 1.9.18
Sample Collection Dates: 10.11.17

SDG: K1711372
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 DUP-004-171011	2 SD-001(12)-CI3C-171011	3 SD-001(21)-CI3B-171101	4 SD-001(3)-CI3A-171101	5 SD-001(13)-CI2C-171101	6 SD-001(17)-CI2B-171101	7 SD-001(20)-CI2A-171101	8 SD-001-(12)-CI1C-171101	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A																			
Holding Times	A																			
Initial Calibration																				
Continuing Calibration	A																			
Method Blanks	A							N												
LCS	A																			
~~Surrogate %R or~~ duplicate RPD	A																			
~~MS/MSD:~~	A																			
Reporting Limits	A																			
Completeness of Analyte List	A																			
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Spl 10.11.17
prep 11.2.17
run 11.3.17

SDG: R1711372

Project: Herr. Lk.

Date: 1.8.18

Method: TOC 7560

ICV %R		lab reported
CCV %R	11.9/12= .99	lab reported 99
LCS	.62/.6= 1.03	lab reported 103
ICS %R		lab reported
MS %R	3.89-1.51/2.41= .987	lab reported 99
MS/MSD %RPD	$\frac{3.83-3.91}{3.83+3.91/2} = \frac{-.08}{3.87} = .02$	lab reported <1
Duplicate %D	$\frac{1.51-1.49}{1.51+1.49/2} = \frac{.02}{1.5} = .013$	lab reported 1
High Std Check		lab reported
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported

SDG KL711372	Analyte TCE	
Project: Hunters Lk		
Date: 1.8.18		
Sample ID DUP004-171011	Lab reported 1.37 2	solids mg/Kg mg/L 57.1
x 1.37		ug/L
Calulation		
Sample ID SD-001(12)-CF3C-171011	Lab reported 2.2	mg/Kg mg/L 65.2
2.2		ug/L
Calulation		
Sample ID SD-001(24)-CF3B-171011	Lab reported 1.35	mg/Kg mg/L 67.4
1.35		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711372
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17
Sample Matrix:	Sediment	**Date Received:**	10/19/17
Analysis Method:	9060	**Units:**	Percent
Prep Method:	Method	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
DUP-004-171011	K1711372-001	**1.37**	0.10	0.02	1	11/03/17 12:05	11/2/17	
SD-001(12)-CI3C-171011	K1711372-002	**2.20**	0.10	0.02	1	11/03/17 12:05	11/2/17	
SD-001(21)-CI3B-171011	K1711372-003	**1.35**	0.10	0.02	1	11/03/17 12:05	11/2/17	
SD-001(31)-CI3A-171011	K1711372-004	**3.13**	0.10	0.02	1	11/03/17 12:05	11/2/17	
SD-001(13)-CI2C-171011	K1711372-005	**1.17**	0.10	0.02	1	11/03/17 12:05	11/2/17	
SD-001(17)-CI2B-171011	K1711372-006	**4.92**	0.10	0.02	1	11/03/17 12:05	11/2/17	
SD-001(20)-CI2A-171011	K1711372-007	**3.22**	0.10	0.02	1	11/03/17 12:05	11/2/17	
SD-001(12)-CI1C-171011	K1711372-008	**1.62**	0.10	0.02	1	11/03/17 12:05	11/2/17	
Method Blank	K1711372-MB1	ND U	0.10	0.02	1	11/03/17 12:05	11/2/17	

Sed IVL4

VALIDATION WORKSHEET

Method: Sulfate 300.0

Date Reviewed: 1.8.18

Sample Collection Dates: 10.11.17

SDG: K1711372

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 DUP-004-171011	2 SD-001(12)-CI3C-171011	3 SD-001(21)-CI3B-171011	4 SD-001(31)-CI3A-171101	5 SD-001(13)-CI2C-171101	6 SD-001(17)-CI2B-171101	7 SD-001(20)-CI2A-171101	8 SD-001-(12)-CI1C-171101	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→	→	→	→	→												
Holding Times	A	→	→	→	→	→	→	→												
Initial Calibration																				
Continuing Calibration	A	→	→	→	→	→	→	5												
Method Blanks	A	→	→	→	→	→	→	→												
LCS	A	→	→	→	→	→	→	→												
Surrogate %R or ~~duplicate RPD~~	A	→	→	→	→	→	→	→												
~~MS/MSD:~~	A	→	→	→	→	→	→	→												
Reporting Limits	A	→	→	→	→	→	→	→												
Completeness of Analyte List	A	→	→	→	→	→	→	→												
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

1.6°C Fm. M spreadsheet. DUP4 / SD-001(B)C12C.

SM 10.11.17
Prep 11.7 ; 10.20.17
AM 11.7. ; 10.30, 10.31.17

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711372
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17
Sample Matrix:	Sediment	**Date Received:**	10/19/17
Analysis Method:	300.0	**Units:**	mg/Kg
Prep Method:	Method	**Basis:**	Dry

Sulfate

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
DUP-004-171011	K1711372-001	**88**	18	9	10	11/07/17 15:44	11/7/17	
SD-001(12)-CI3C-171011	K1711372-002	**91**	15	8	10	11/07/17 15:54	11/7/17	
SD-001(21)-CI3B-171011	K1711372-003	**58**	15	7	10	11/07/17 16:04	11/7/17	
SD-001(31)-CI3A-171011	K1711372-004	**454**	22	11	10	11/07/17 16:14	11/7/17	
SD-001(13)-CI2C-171011	K1711372-005	**124**	16	8	10	10/31/17 11:04	10/20/17	
SD-001(17)-CI2B-171011	K1711372-006	**1120**	22	11	10	10/31/17 11:15	10/20/17	
SD-001(20)-CI2A-171011	K1711372-007	**1260**	20	10	10	10/31/17 11:26	10/20/17	
SD-001(12)-CI1C-171011	K1711372-008	**106**	15	8	10	10/31/17 11:36	10/20/17	
Method Blank	K1711372-MB1	ND U	1.0	0.5	1	10/30/17 16:11	NA	
Method Blank	K1711372-MB2	ND U	1.0	0.5	1	11/07/17 15:14	11/7/17	

SDG 1617113372	Analyte Sulfate		1616
Project:			
Date: 1.5.18			
		Solids	
001 Sample ID DNP.004.171011	Lab reported 88	57.1	mg/Kg mg/L
5.02 / .571 = X10 = 88			ug/L
Calulation			
002 Sample ID SB.001(12).CE3E.171011	Lab reported 91	65.2	mg/Kg mg/L
6.0372 / .652 X10 = 92			ug/L
Calulation			
003 Sample ID SB.001(21).CE3B.171011	Lab reported 58	67.4	mg/Kg mg/L
3.9156 / .674 X10 = 58			ug/L
Calulation			
Sample ID	Lab reported		mg/Kg mg/L
			ug/L
Calulation			
Sample ID	Lab reported		mg/Kg mg/L
			ug/L
Calulation			
Sample ID	Lab reported		mg/Kg mg/L
			ug/L
Calulation			
Sample ID	Lab reported		mg/Kg mg/L
			ug/L
Calulation			
Sample ID	Lab reported		mg/Kg mg/L
			ug/L
Calulation			
Sample ID	Lab reported		mg/Kg mg/L
			ug/L
Calulation			

SDG: 1617113372 CCB. NP

Project: Herr. Lake

Date: 1.8.18

Method: Sulfate 300.0

ICV %R		lab reported
CCV %R	4.83/5 = .96 4.67/5 = .93	lab reported 97, 93
LCS	374/400 = .94 332/339 = .97	lab reported 94 97
ICS %R		lab reported
MS %R	7380 - 79/6000 = 1.21 6000 7380 - 7280 / 7380 + 7280/2 = 106 / 7330 = .013	lab reported 120
MS/MSD %RPD		lab reported 1
Duplicate %D	454 - 392 / 454 + 392/2 = 62 / 423 = .146	lab reported 15
High Std Check		lab reported
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported

Sed 1 of 2

VALIDATION WORKSHEET

Method: Total Metals / Hg
Date Reviewed: 12.18.17
Sample Collection Dates: 10.11, 10.12, 10.17.17

SDG: K1711619
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SO.001(17)HZIB.171011	2 SO.001(20).HZIA.171011	3 SO.001(19).CFYC.171012	4 SO.001(24)LHL34.171012	5 SO.001(17).LHL36.171012	6 SO.001(17)LHL46-171012	7 SO.001(1).DUP.171014	8 SO.001(2).COLUMBIA.171011	9 SO.001(3).HOLE.171011	10 SO.001(20).LHLIC.171012	11 SO.001(20).LHLIB.171012	12 SO.001(22).LHL46.171012	13 SO.001(21)LHL56C.171012	14 SO.001(16).LHL58.171012	15 SO.001(20).LHL66.171012	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS	A																			
duplicate RPD	A																			
MS/MSD: -003	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Pb added 3.16.18 - qc ok

	Metals	Hg
	10.12.17	
smp	10.11.17	10.12.17
prep	10.16.17 10.26.17	11.1.17
run	10.30.17	11.3.17

IMP - Boron .171 no flags

no flags

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 17:15
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
		Basis:	Dry
Sample Name:	SD-001(17)-H21B-171011		
Lab Code:	K1711619-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**50.2**	mg/Kg	0.82	0.07	5	10/30/17 09:56	10/26/17	
Boron	6020A	**21.3**	mg/Kg	0.82	0.08	5	10/30/17 09:56	10/26/17	
Cadmium	6020A	**0.999**	mg/Kg	0.033	0.011	5	10/30/17 09:56	10/26/17	
Iron	6010C	**23200**	mg/Kg	33	16	10	11/03/17 14:33	10/26/17	
Lead	6010C	**20**	mg/Kg	16	3	10	11/03/17 14:33	10/26/17	
Magnesium	6010C	**3560**	mg/Kg	16	2	10	11/03/17 14:33	10/26/17	
Mercury	7471B	**0.034**	mg/Kg	0.034	0.003	1	11/03/17 15:12	11/01/17	J
Selenium	6020A	**7.1**	mg/Kg	1.6	0.1	5	10/30/17 09:56	10/26/17	
Zinc	6020A	**44.7**	mg/Kg	0.82	0.33	5	10/30/17 09:56	10/26/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 17:30
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
Sample Name:	SD-001(20)-H21A-171011	**Basis:**	Dry
Lab Code:	K1711619-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**32.9**	mg/Kg	1.7	0.1	5	10/30/17 09:59	10/26/17	
Boron	6020A	**48.4**	mg/Kg	1.7	0.2	5	10/30/17 09:59	10/26/17	
Cadmium	6020A	**2.36**	mg/Kg	0.066	0.023	5	10/30/17 09:59	10/26/17	
Iron	6010C	**17400**	mg/Kg	66	33	10	11/03/17 14:36	10/26/17	
Lead	6010C	**15**	mg/Kg	33	7	10	11/03/17 14:36	10/26/17	J
Magnesium	6010C	**4720**	mg/Kg	33	3	10	11/03/17 14:36	10/26/17	
Mercury	7471B	**0.059**	mg/Kg	0.070	0.007	1	11/03/17 15:13	11/01/17	J
Selenium	6020A	**15.5**	mg/Kg	3.3	0.2	5	10/30/17 09:59	10/26/17	
Zinc	6020A	**67.6**	mg/Kg	1.7	0.7	5	10/30/17 09:59	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 10:00
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
		Basis:	Dry
Sample Name:	SD-001(19)-CI4C-171012		
Lab Code:	K1711619-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**17.6**	mg/Kg	0.61	0.05	5	10/30/17 10:02	10/26/17	
Boron	6020A	**4.59**	mg/Kg	0.61	0.06	5	10/30/17 10:02	10/26/17	
Cadmium	6020A	**0.292**	mg/Kg	0.024	0.009	5	10/30/17 10:02	10/26/17	
Iron	6010C	**25400**	mg/Kg	4.9	2.4	2	11/03/17 14:05	10/26/17	
Lead	6010C	**16.0**	mg/Kg	2.4	0.5	2	11/03/17 14:05	10/26/17	
Magnesium	6010C	**5720**	mg/Kg	2.4	0.2	2	11/03/17 14:05	10/26/17	
Mercury	7471B	**0.026**	mg/Kg	0.024	0.002	1	11/03/17 15:15	11/01/17	
Selenium	6020A	**0.7**	mg/Kg	1.2	0.09	5	10/30/17 10:02	10/26/17	J
Zinc	6020A	**43.9**	mg/Kg	0.61	0.24	5	10/30/17 10:02	10/26/17	

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Superset Reference:

Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Sediment

Sample Name: SD-001(24)-LHL3C-171012
Lab Code: K1711619-004

Service Request: K1711619
Date Collected: 10/12/17 13:20
Date Received: 10/25/17 09:40

Basis: Dry

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**8.58**	mg/Kg	0.93	0.07	5	10/30/17 10:21	10/26/17	
Boron	6020A	**18.5**	mg/Kg	0.93	0.09	5	10/30/17 10:21	10/26/17	
Cadmium	6020A	**0.470**	mg/Kg	0.037	0.013	5	10/30/17 10:21	10/26/17	
Iron	6010C	**10400**	mg/Kg	37	19	10	11/03/17 14:38	10/26/17	
Lead	6010C	**8 J**	mg/Kg	19	4	10	11/03/17 14:38	10/26/17	
Magnesium	6010C	**8180**	mg/Kg	19	2	10	11/03/17 14:38	10/26/17	
Mercury	7471B	**0.018 J**	mg/Kg	0.043	0.004	1	11/03/17 15:25	11/01/17	
Selenium	6020A	**3.8**	mg/Kg	1.9	0.1	5	10/30/17 10:21	10/26/17	
Zinc	6020A	**24.6**	mg/Kg	0.93	0.37	5	10/30/17 10:21	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 13:45
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
		Basis:	Dry
Sample Name:	SD-001(17)-LHL3B-171012		
Lab Code:	K1711619-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**14.9**	mg/Kg	0.96	0.08	5	10/30/17 10:24	10/26/17	
Boron	6020A	**11.1**	mg/Kg	0.96	0.10	5	10/30/17 10:24	10/26/17	
Cadmium	6020A	**0.436**	mg/Kg	0.039	0.014	5	10/30/17 10:24	10/26/17	
Iron	6010C	**13600**	mg/Kg	39	19	10	11/03/17 14:41	10/26/17	
Lead	6010C	**14**	J mg/Kg	19	4	10	11/03/17 14:41	10/26/17	
Magnesium	6010C	**12200**	mg/Kg	19	2	10	11/03/17 14:41	10/26/17	
Mercury	7471B	**0.019**	J mg/Kg	0.027	0.003	1	11/03/17 15:27	11/01/17	
Selenium	6020A	**1.7**	J mg/Kg	1.9	0.1	5	10/30/17 10:24	10/26/17	
Zinc	6020A	**70.2**	mg/Kg	0.96	0.39	5	10/30/17 10:24	10/26/17	

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Sediment

Service Request: K1711619
Date Collected: 10/12/17 14:20
Date Received: 10/25/17 09:40

Basis: Dry

Sample Name: SD-001(19)-LHL4C-171012
Lab Code: K1711619-006

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**6.44**	mg/Kg	0.70	0.06	5	10/30/17 10:27	10/26/17	
Boron	6020A	**10.7**	mg/Kg	0.70	0.07	5	10/30/17 10:27	10/26/17	
Cadmium	6020A	**0.237**	mg/Kg	0.028	0.010	5	10/30/17 10:27	10/26/17	
Iron	6010C	**10700**	mg/Kg	28	14	10	11/03/17 14:44	10/26/17	
Lead	6010C	**8**	mg/Kg	14	3	10	11/03/17 14:44	10/26/17	J
Magnesium	6010C	**18200**	mg/Kg	14	1	10	11/03/17 14:44	10/26/17	
Mercury	7471B	**0.016**	mg/Kg	0.027	0.003	1	11/03/17 15:29	11/01/17	J
Selenium	6020A	**2.2**	mg/Kg	1.4	0.10	5	10/30/17 10:27	10/26/17	
Zinc	6020A	**37.7**	mg/Kg	0.70	0.28	5	10/30/17 10:27	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 13:30
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
		Basis:	Dry
Sample Name:	SD-001(1)-DR1-171016		
Lab Code:	K1711619-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**12.0**	mg/Kg	0.55	0.04	5	10/30/17 10:29	10/26/17	
Boron	6020A	**3.40**	mg/Kg	0.55	0.05	5	10/30/17 10:29	10/26/17	
Cadmium	6020A	**0.327**	mg/Kg	0.022	0.008	5	10/30/17 10:29	10/26/17	
Iron	6010C	**29600**	mg/Kg	22	11	10	11/03/17 14:46	10/26/17	
Lead	6010C	**18**	mg/Kg	11	2	10	11/03/17 14:46	10/26/17	
Magnesium	6010C	**3770**	mg/Kg	11	1	10	11/03/17 14:46	10/26/17	
Mercury	7471B	**0.029**	mg/Kg	0.021	0.002	1	11/03/17 15:30	11/01/17	
Selenium	6020A	**0.5**	mg/Kg	1.1	0.08	5	10/30/17 10:29	10/26/17	J
Zinc	6020A	**67.2**	mg/Kg	0.55	0.22	5	10/30/17 10:29	10/26/17	

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Superset Reference:

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 15:45
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
		Basis:	Dry
Sample Name:	SD-001(12)-CURDS1A-171011		
Lab Code:	K1711619-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**91.6**	mg/Kg	0.59	0.05	5	10/30/17 10:32	10/26/17	
Boron	6020A	**11.5**	mg/Kg	0.59	0.06	5	10/30/17 10:32	10/26/17	
Cadmium	6020A	**0.333**	mg/Kg	0.023	0.008	5	10/30/17 10:32	10/26/17	
Iron	6010C	**33300**	mg/Kg	23	12	10	11/03/17 14:49	10/26/17	
Lead	6010C	**26**	mg/Kg	12	2	10	11/03/17 14:49	10/26/17	
Magnesium	6010C	**2640**	mg/Kg	12	1	10	11/03/17 14:49	10/26/17	
Mercury	7471B	**0.021**	mg/Kg	0.027	0.003	1	11/03/17 15:32	11/01/17	J
Selenium	6020A	**1.4**	mg/Kg	1.2	0.08	5	10/30/17 10:32	10/26/17	
Zinc	6020A	**62.4**	mg/Kg	0.59	0.23	5	10/30/17 10:32	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 17:00
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
		Basis:	Dry
Sample Name:	SD-001(13)-HQ1C-171011		
Lab Code:	K1711619-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**19.1**	mg/Kg	0.58	0.05	5	10/30/17 10:35	10/26/17	
Boron	6020A	**8.63**	mg/Kg	0.58	0.06	5	10/30/17 10:35	10/26/17	
Cadmium	6020A	**0.268**	mg/Kg	0.023	0.008	5	10/30/17 10:35	10/26/17	
Iron	6010C	**27600**	mg/Kg	23	12	10	11/03/17 14:52	10/26/17	
Lead	6010C	**18**	mg/Kg	12	2	10	11/03/17 14:52	10/26/17	
Magnesium	6010C	**4320**	mg/Kg	12	1	10	11/03/17 14:52	10/26/17	
Mercury	7471B	**0.034**	mg/Kg	0.022	0.002	1	11/03/17 15:34	11/01/17	
Selenium	6020A	**0.9**	mg/Kg	1.2	0.08	5	10/30/17 10:35	10/26/17	J
Zinc	6020A	**56.6**	mg/Kg	0.58	0.23	5	10/30/17 10:35	10/26/17	

Superset Reference:

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Sediment

Service Request: K1711619
Date Collected: 10/12/17 12:25
Date Received: 10/25/17 09:40

Basis: Dry

Sample Name: SD-001(20)-LHL1C-171012
Lab Code: K1711619-010

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**10.7**	mg/Kg	1.5	0.1	5	10/30/17 10:38	10/26/17	
Boron	6020A	**20.2**	mg/Kg	1.5	0.1	5	10/30/17 10:38	10/26/17	
Cadmium	6020A	**0.853**	mg/Kg	0.060	0.021	5	10/30/17 10:38	10/26/17	
Iron	6010C	**17200**	mg/Kg	60	30	10	11/03/17 14:54	10/26/17	
Lead	6010C	**17**	mg/Kg	30	6	10	11/03/17 14:54	10/26/17	J
Magnesium	6010C	**17800**	mg/Kg	30	3	10	11/03/17 14:54	10/26/17	
Mercury	7471B	**0.061**	mg/Kg	0.069	0.007	1	11/03/17 15:35	11/01/17	J
Selenium	6020A	**4.7**	mg/Kg	3.0	0.2	5	10/30/17 10:38	10/26/17	
Zinc	6020A	**59.1**	mg/Kg	1.5	0.6	5	10/30/17 10:38	10/26/17	

Superset Reference:

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 12:25
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
		Basis:	Dry
Sample Name:	SD-001(20)-LHL1B-171012		
Lab Code:	K1711619-011		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**9.3**	mg/Kg	1.4	0.1	5	10/30/17 10:41	10/26/17	
Boron	6020A	**17.2**	mg/Kg	1.4	0.1	5	10/30/17 10:41	10/26/17	
Cadmium	6020A	**0.910**	mg/Kg	0.058	0.020	5	10/30/17 10:41	10/26/17	
Iron	6010C	**17300**	mg/Kg	58	29	10	11/03/17 14:57	10/26/17	
Lead	6010C	**13**	mg/Kg	29	6	10	11/03/17 14:57	10/26/17	J
Magnesium	6010C	**17600**	mg/Kg	29	3	10	11/03/17 14:57	10/26/17	
Mercury	7471B	**0.041**	mg/Kg	0.046	0.005	1	11/03/17 15:37	11/01/17	J
Selenium	6020A	**4.9**	mg/Kg	2.9	0.2	5	10/30/17 10:41	10/26/17	
Zinc	6020A	**72.0**	mg/Kg	1.4	0.6	5	10/30/17 10:41	10/26/17	

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Superset Reference:

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 14:45
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
		Basis:	Dry
Sample Name:	SD-001(22)-LHL4B-171012		
Lab Code:	K1711619-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**16.9**	mg/Kg	0.56	0.04	5	10/30/17 10:43	10/26/17	
Boron	6020A	**3.52**	mg/Kg	0.56	0.06	5	10/30/17 10:43	10/26/17	
Cadmium	6020A	**0.128**	mg/Kg	0.022	0.008	5	10/30/17 10:43	10/26/17	
Iron	6010C	**18800**	mg/Kg	22	11	10	11/03/17 15:07	10/26/17	
Lead	6010C	**9**	mg/Kg	11	2	10	11/03/17 15:07	10/26/17	J
Magnesium	6010C	**5140**	mg/Kg	11	1	10	11/03/17 15:07	10/26/17	
Mercury	7471B	**0.006**	mg/Kg	0.024	0.002	1	11/03/17 15:38	11/01/17	J
Selenium	6020A	**0.5**	mg/Kg	1.1	0.08	5	10/30/17 10:43	10/26/17	J
Zinc	6020A	**24.3**	mg/Kg	0.56	0.22	5	10/30/17 10:43	10/26/17	

Superset Reference:

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 15:15
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
		Basis:	Dry
Sample Name:	SD-001(21)-LHL5C-171012		
Lab Code:	K1711619-013		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**22.2**	mg/Kg	0.65	0.05	5	10/30/17 10:46	10/26/17	
Boron	6020A	**6.57**	mg/Kg	0.65	0.07	5	10/30/17 10:46	10/26/17	
Cadmium	6020A	**0.363**	mg/Kg	0.026	0.009	5	10/30/17 10:46	10/26/17	
Iron	6010C	**26600**	mg/Kg	26	13	10	11/03/17 15:10	10/26/17	
Lead	6010C	**28**	mg/Kg	13	3	10	11/03/17 15:10	10/26/17	
Magnesium	6010C	**5810**	mg/Kg	13	1	10	11/03/17 15:10	10/26/17	
Mercury	7471B	**0.023**	mg/Kg	0.023	0.002	1	11/03/17 15:43	11/01/17	
Selenium	6020A	**1.9**	mg/Kg	1.3	0.09	5	10/30/17 10:46	10/26/17	
Zinc	6020A	**63.9**	mg/Kg	0.65	0.26	5	10/30/17 10:46	10/26/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 15:45
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
		Basis:	Dry
Sample Name:	SD-001(16)-LHL5B-171012		
Lab Code:	K1711619-014		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**7.98**	mg/Kg	0.46	0.04	5	10/30/17 10:54	10/26/17	
Boron	6020A	**9.16**	mg/Kg	0.46	0.05	5	10/30/17 10:54	10/26/17	
Cadmium	6020A	**0.279**	mg/Kg	0.018	0.006	5	10/30/17 10:54	10/26/17	
Iron	6010C	**19700**	mg/Kg	18	9	10	11/03/17 15:13	10/26/17	
Lead	6010C	**12.7**	mg/Kg	9.1	1.8	10	11/03/17 15:13	10/26/17	
Magnesium	6010C	**5360**	mg/Kg	9.1	0.9	10	11/03/17 15:13	10/26/17	
Mercury	7471B	**0.026**	mg/Kg	0.020	0.002	1	11/03/17 15:45	11/01/17	
Selenium	6020A	**0.55**	mg/Kg	0.91	0.06	5	10/30/17 10:54	10/26/17	J
Zinc	6020A	**47.7**	mg/Kg	0.46	0.18	5	10/30/17 10:54	10/26/17	

Superset Reference:

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 16:20
Sample Matrix:	Sediment	**Date Received:**	10/25/17 09:40
		Basis:	Dry
Sample Name:	SD-001(20)-LHL6B-171012		
Lab Code:	K1711619-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.73**	mg/Kg	0.53	0.04	5	10/30/17 10:57	10/26/17	
Boron	6020A	**6.38**	mg/Kg	0.53	0.05	5	10/30/17 10:57	10/26/17	
Cadmium	6020A	**0.057**	mg/Kg	0.021	0.007	5	10/30/17 10:57	10/26/17	
Iron	6010C	**4940**	mg/Kg	21	11	10	11/03/17 15:15	10/26/17	
Lead	6010C	ND U	mg/Kg	11	2	10	11/03/17 15:15	10/26/17	
Magnesium	6010C	**23600**	mg/Kg	11	1	10	11/03/17 15:15	10/26/17	
Mercury	7471B	**0.004 J**	mg/Kg	0.023	0.002	1	11/03/17 15:47	11/01/17	
Selenium	6020A	**0.4 J**	mg/Kg	1.1	0.07	5	10/30/17 10:57	10/26/17	
Zinc	6020A	**10.9**	mg/Kg	0.53	0.21	5	10/30/17 10:57	10/26/17	

Superset Reference:

Sed lvl 2

VALIDATION WORKSHEET

Method: Sulfate 300.0
Date Reviewed: 12.18.17
Sample Collection Dates: 10.11 - 10.16.17
SDG: K1711619
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SD-001(17)-H21B-171011	2 SD-001(20)-H21A-171011	3 SD-001(19)-CHC-171012	4 SD-001(24)-LHL32-171012	5 SD-001(17)-LHL34-171012	6 SD-001(17)-LHL42-171012	7 SD-001(1)-DR1-171014	8 SD-001(12)-CHEBIA-171011	9 SD-001(13)-HQIC-171011	10 SD-001(20)-LHL1C-171012	11 SD-001(20)-LHL1B-171012	12 SD-001(22)-LHL4B-171012	13 SD-001(21)-LHL5C-171012	14 SD-001(16)-LHL5B-171012	15 SD-001(20)-LHL1A-171012	16	17	18	19	20
Sample results	A														→					
Holding Times	A														→					
Completion ①	A														→					
Method Blanks	A														→					
LCS	A														→					
~~duplicate~~ RPD	A														D					
MS/MSD: -003,004	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments: Shipped 10.24.17 Lab rec. 10.25.17 3.4 & 3.2°C

SDG 10.11, 10.12, 10.16.17

prep 11.7.17

run 11.7.17

① on Bottle COC

SD 001(17)-HQIB-171011 SD-001(17)-H21B-171011 } lab noted 'identified by collection times'

SD 001(21)-HQIA-171011 SD-001(20)-H21A-171011 }

CCV ok

CCB ok

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Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Sediment

Analysis Method: 300.0
Prep Method: Method

Service Request: K1711619
Date Collected: 10/11/17 - 10/16/17
Date Received: 10/25/17

Units: mg/Kg
Basis: Dry

Sulfate

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
SD-001(17)-H21B-171011	K1711619-001	**209**	22	10	10	11/07/17	11/7/17	
SD-001(20)-H21A-171011	K1711619-002	**654**	43	20	10	11/07/17	11/7/17	
SD-001(19)-CI4C-171012	K1711619-003	**79**	15	8	10	11/07/17	11/7/17	
SD-001(24)-LHL3C-171012	K1711619-004	**349**	25	12	10	11/07/17	11/7/17	
SD-001(17)-LHL3B-171012	K1711619-005	**230**	20	10	10	11/07/17	11/7/17	
SD-001(19)-LHL4C-171012	K1711619-006	**461**	19	9	10	11/07/17	11/7/17	
SD-001(1)-DR1-171016	K1711619-007	**12.0**	7.0	3.3	5	11/10/17	11/7/17	
SD-001(12)-CURDS1A-171011	K1711619-008	**81**	16	8	10	11/07/17	11/7/17	
SD-001(13)-HQ1C-171011	K1711619-009	**134**	15	7	10	11/07/17	11/7/17	
SD-001(20)-LHL1C-171012	K1711619-010	**642**	36	17	10	11/07/17	11/7/17	
SD-001(20)-LHL1B-171012	K1711619-011	**529**	37	17	10	11/07/17	11/7/17	
SD-001(22)-LHL4B-171012	K1711619-012	**253**	14	7	10	11/07/17	11/7/17	
SD-001(21)-LHL5C-171012	K1711619-013	**153**	18	9	10	11/07/17	11/7/17	
SD-001(16)-LHL5B-171012	K1711619-014	**45**	15	7	10	11/07/17	11/7/17	
SD-001(20)-LHL6B-171012	K1711619-015	**185**	15	8	10	11/07/17	11/7/17	
Method Blank	K1711619-MB	ND U	1.0	0.5	1	11/07/17	11/7/17	

ALS SOP

Sed LW2

VALIDATION WORKSHEET

Method: Methyl Mercury ALS SOP

Date Reviewed: 12.18.17

Sample Collection Dates: 10.11, 10.12, 10.16.17

SDG: K1711619

Reviewer: C Jensen

The following data validation areas were reviewed:

Validation Criteria	1 SO-001(17)HZ1B-171011	2 SO-001(20)HZ1A-171011	3 SO-001(19)-CJC-171012	4 SO-001(24)LH136-171012	5 SO-001(17)LH136-171012	6 SO-001(19)LH142-171012	7 SO-001(1)DR1-171016	8 SO-001(12)-CJC2B1A-171011	9 SO-001(13)HOLC-171011	10 SO-001(20)-LH1LC-171012	11 SO-001(20)-LH1LB-171012	12 SO-001(22)-LH142-171012	13 SO-001(21)LH136-171012	14 SO-001(18)-LH1SB-171012	15 SO-001(20)-LH1B-171012	16	17	18	19	20
Sample results	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→					
Holding Times	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→					
Completion	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→					
Method Blanks	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→					
LCS QLS	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→					
duplicate RPD																				
MS/MSD: -003	A	→	→	→	→															

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Spl 10.11, 10.12, 10.16.17

prep 11.27.17

run 11.28.17

OPR. ok

QLS. ok

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Soil

Service Request: K1711619
Date Collected: 10/11/17
Date Received: 10/25/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SD-001(17)-H21B-171011	K1711619-001	0.7	0.07	1	11/27/17	11/28/17	0.41	J
SD-001(20)-H21A-171011	K1711619-002	1.3	0.13	1	11/27/17	11/28/17	1.70	
SD-001(19)-CI4C-171012	K1711619-003	0.4	0.04	1	11/27/17	11/28/17	0.09	J
SD-001(24)-LHL3C-171012	K1711619-004	0.8	0.08	1	11/27/17	11/28/17	0.34	J
SD-001(17)-LHL3B-171012	K1711619-005	0.6	0.06	1	11/27/17	11/28/17	0.71	
SD-001(19)-LHL4C-171012	K1711619-006	0.6	0.06	1	11/27/17	11/28/17	ND	
SD-001(1)-DR1-171016	K1711619-007	0.4	0.04	1	11/27/17	11/28/17	0.05	J
SD-001(12)-CURDS1A-171011	K1711619-008	0.5	0.05	1	11/27/17	11/28/17	0.34	J
SD-001(13)-HQ1C-171011	K1711619-009	0.4	0.04	1	11/27/17	11/28/17	0.46	
SD-001(20)-LHL1C-171012	K1711619-010	1.1	0.11	1	11/27/17	11/28/17	0.48	J
SD-001(20)-LHL1B-171012	K1711619-011	1.0	0.10	1	11/27/17	11/28/17	0.46	J
SD-001(22)-LHL4B-171012	K1711619-012	0.3	0.03	1	11/27/17	11/28/17	0.13	J
SD-001(21)-LHL5C-171012	K1711619-013	0.5	0.05	1	11/27/17	11/28/17	0.06	J
SD-001(16)-LHL5B-171012	K1711619-014	0.4	0.04	1	11/27/17	11/28/17	0.04	J
SD-001(20)-LHL6B-171012	K1711619-015	0.4	0.04	1	11/27/17	11/28/17	0.21	
Method Blank 1	K1711619-MB1	0.4	0.04	1	11/27/17	11/28/17	ND	
Method Blank 2	K1711619-MB2	0.4	0.04	1	11/27/17	11/28/17	ND	
Method Blank 3	K1711619-MB3	0.4	0.04	1	11/27/17	11/28/17	ND	

Sed 1102

VALIDATION WORKSHEET

Method: TOC 9060

SDG: K1711619

Date Reviewed: 12.18.17

Reviewer: C Jensen

Sample Collection Dates: 10.11-10.16.17

The following data validation areas were reviewed:

Sample Identification	1 SO-001(17) HZ1B-171011	2 SO-004(20) HZ1A-171011	3 SO-001(19)-C TYC-171012	4 SO-001(24) LHL37-171012	5 SO-001(17) LHL39-171012	6 SO-001(19) LHL4C-171012	7 SO-001(17)-DUP-171014	8 SO-001(12) CWBB1A-171011	9 SO-001(13) HBIC-171011	10 SO-001(23) LHL1C-171012	11 SO-001(20) LHL1B-171012	12 SO-001(22) LHL4B-171012	13 SO-001(21) LHL5C-171012	14 SO-001(16) LHL5B-171012	15 SO-001(20) LHL6B-171012	16	17	18	19	20
Validation Criteria																				
Sample results	A														→					
Holding Times	A														→					
Completion	A														→					
Method Blanks	A														→					
LCS	A														→					
duplicate RPD	A														→					
MS/MSD: -004	A														→					

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Spl 10.11, 10.12 & 10.16.17

Prep 11.3.17

Run 11.6.17

CCV - ok

CCB - ok

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1711619
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 - 10/16/17
Sample Matrix:	Sediment	**Date Received:**	10/25/17
Analysis Method:	9060	**Units:**	Percent
Prep Method:	Method	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
SD-001(17)-H21B-171011	K1711619-001	**7.38**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(20)-H21A-171011	K1711619-002	**15.5**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(19)-CI4C-171012	K1711619-003	**0.88**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(24)-LHL3C-171012	K1711619-004	**11.9**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(17)-LHL3B-171012	K1711619-005	**2.58**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(19)-LHL4C-171012	K1711619-006	**3.58**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(1)-DR1-171016	K1711619-007	**0.86**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(12)-CURDS1A-171011	K1711619-008	**0.63**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(13)-HQ1C-171011	K1711619-009	**1.26**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(20)-LHL1C-171012	K1711619-010	**6.30**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(20)-LHL1B-171012	K1711619-011	**3.87**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(22)-LHL4B-171012	K1711619-012	**0.38**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(21)-LHL5C-171012	K1711619-013	**1.42**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(16)-LHL5B-171012	K1711619-014	**0.91**	0.10	0.02	1	11/06/17	11/3/17	
SD-001(20)-LHL6B-171012	K1711619-015	**1.51**	0.10	0.02	1	11/06/17	11/3/17	
Method Blank	K1711619-MB	ND U	0.10	0.02	1	11/06/17	11/3/17	

PW IVL 4

K1712055
L2020523

VALIDATION WORKSHEET

Method: Speciated Selenium
Date Reviewed: 1.3.18
Sample Collection Dates: 11.3.17

SDG: ~~K1712055~~
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria	PW001-CWRDSNB-171103	PW001-CWRDSI-171103																		
Completeness of Analyses	A	A																		
Holding Times	A	A																		
Initial Calibration	A	A	recalcd. ICAL reviews f. raw. ok																	
Continuing Calibration	A	A	from chromatogram, used 5 ppb as ccv. STD. ok																	
Method Blanks	A	A	from raw ok																	
LCS	A	A																		
~~Surrogate %R~~ or duplicate RPD (20)	A	A																		
MS/MSD: (for 130)	A	A	from raw. ok O																	
Reporting Limits	A	A																		
Completeness of Analyte List	A	A																		
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

spl 11.3.17
prep 11.20.17
rvw 11.21.17

reviewed chromatograms. listed + confirmed results. ok

MS
dup

SDG: K17/2055

Project: Herr Lk

Date: 1.3.18

Method: Se

ICV %R	Se ICV .99/1=.9 24.4/25=.97 Se4 4.84/5=.96 50.3/50=1.0	lab reported
CCV %R	Se4 4.918/5=.98 Se5 4.874/5=.97	lab reported
LCS	Se ICV 5.023/5=1.0 Se4 9.76/10=.97	lab reported
ICS %R	Se4 9.70/10=.97 Se ICV 9.5/10=.95	lab reported 95
MS %R	26.38 − .539/25=1.04	lab reported 104
MS/MSD %RPD		lab reported
Duplicate %D	Se4 $\frac{51.7-51.7}{51.7+51.7/2}$=0 Se4 $\frac{196-195=1}{\frac{196+195}{2}}$=.005	lab reported 0 .005
High Std Check	dup Se4 $\frac{4.6-4.7}{4.6+4.7/2}=\frac{.1}{46.5}$=.002	lab reported .2
Low Cal Check	Se4 CVS 9.76/10=.97	lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported

MBs all ND

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2020523-1 K1712055-001 PW001-CURDSNB-171103							
Sampled By: CLIENT on 03-NOV-17 @ 08:00							
Matrix: Water							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	0.38		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	2.12		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020523-2 K1712055-002 PW001-CURDS1-171103							
Sampled By: CLIENT on 03-NOV-17 @ 08:45							
Matrix: Water							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	0.65		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	4.04		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

lvl 4 PW

35

1632A

VALIDATION WORKSHEET

Method: Dissolved Metals As III, V, Inorganic As

Date Reviewed: 1.3.18

Sample Collection Dates: 11.3.17

SDG: KI712059

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 PW001-CURDSNB-171103	2 PW001-CURDS1-171103	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	A																		
Holding Times	A	A																		
Initial Calibration	A	A																		
Continuing Calibration	A	A																		
Method Blank (1)	X	A																		
LCS																				
Surrogate %R or duplicate RPD																				
MS/MSD:	A	A																		
Reporting Limits	A	A																		
Completeness of Analyte List	A	A																		
Field Duplicate Pair :																				
Equip /Field Blank																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SPK 11.3.17
prep
run 11.20, 11.28.17

As V is a calculation

(1) MB AsIII .0127J V, L PW001-CURDSNB-171103

SDG: 1617120055

Project: Hunt. LLC

Date: 1.3.18

Method: PDSS Ag III, V, Fluor

ICV %R		lab reported
CCV %R	III .23/.2 = 1.15 V .175/.2 = .875	lab reported 115 87
LCS		lab reported
ICS %R	III .301 − .098/.2 = 1.015	lab reported 102
MS %R	Fluor 2.2 − 1.47/1 = .73	lab reported 73
MS/MSD %RPD	III Fluor .301 − .302 / .301 + .302/2 = .001/.3015 ≤ .0033 2.2 − 2.14 / 2.2 + 2.14/2 = .06/2.17 = .027	lab reported <1 lab reported 9
Duplicate %D		lab reported 3.
High Std Check		lab reported
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported

SDG K17/2055	Analyte D325 Metals - As(III) As V	
Project: Harv. LK		
Date: 1.3.18		
Sample ID PW001-CURDSNK-171103	Lab reported .0171	mg/Kg mg/L
III 17.1 /1000 = .0171	.0171	ug/L
Calulation (none) V	~~2.29~~ 2.22	
inorg 2242/1000 = 2.2	2.24	
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID PW001-CURDSK-171103	Lab reported	mg/Kg mg/L
III 32.2 /1000 = .0322	.0322	ug/L
Calulation V	2.77	
Inorg 2806/1000 = 2.8	2.81	
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712055
Project:	Herrington Lake	**Date Collected:**	11/03/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-CURDSNB-171103		
Lab Code:	K1712055-001	Units:	ug/L (ppb)
Test Notes:		Basis:	NA

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.0171	J U Q
Arsenic (V)	None	1632A	0.2	0.03	10	NA	NA	2.22	
Inorganic Arsenic	None	1632A	0.2	0.03	10	NA	11/28/17	2.24	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712055
Project:	Herrington Lake	**Date Collected:**	11/03/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-CURDS1-171103	Units:	ug/L (ppb)
Lab Code:	K1712055-002	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.0322	
Arsenic (V)	None	1632A	0.2	0.03	10	NA	NA	2.77	
Inorganic Arsenic	None	1632A	0.2	0.03	10	NA	11/28/17	2.81	

lvl 4 PW

VALIDATION WORKSHEET

Method: Dissolved Sulfate 300.0
Date Reviewed: 1.3.17
Sample Collection Dates: 11.3.17
SDG: KI712055
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 PW001.CURDSN.171103	2 PW001.CURDSL.171103	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses ①	A	X — no sample for SDY																		
Holding Times	A	A																		
Initial Calibration	A	A																		
Continuing Calibration	A	A																		
Method Blanks	A	A																		
LCS	A	A																		
Surrogate %R or duplicate RPD	A	A																		
MS/MSD:	A	A																		
Reporting Limits	A																			
Completeness of Analyte List	A																			
Field Duplicate Pair :																				
Equip /Field Blank																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

2.1, 0.3°C

no SDY for CURDSL
no DOC for CURDSL

Spl 11.3.17
prep
run 11.20.17
CCV ok
CCB ok

• ① Lab did not receive unpreserved spl. for PW001.CURDSL.171103, therefore no dissolved sulfate

SDG K1712055	Analyte Diss Sulf.	
Project: Herr Lk.		
Date: 1.3.17		
	pllc	
Sample ID Pwql.Cwrdsub.171103	Lab reported 143	mg/Kg mg/L (mg/L circled)
raw 143		ug/L
Calulation checked		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

SDG: K1712055 CCB. NB

Project: Hen Lake

Date: 1.3.17

Method: Sulfate, D375. 3000

ICV %R	.998	lab reported	
CCV %R	5/5=1. 4.995/5=1	lab reported	100 100
LCS	4.985/5=1. 5/5=1.	lab reported	100 100
ICS %R		lab reported	
MS %R	9.79-1.62/8=1.02	lab reported	102
MS/MSD %RPD	$\frac{9.79-9.79}{9.79+9.79/2}=\phi$	lab reported	ϕ
Duplicate %D	$\frac{1.62-1.62}{1.62+1.62/2}=\phi$	lab reported	ϕ
High Std Check		lab reported	
Low Cal Check		lab reported	
Serial D %		lab reported	
Sample Recalculation		lab reported	
other (moisture)		lab reported	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712055
Project:	Herrington Lake	**Date Collected:**	11/3/17
Sample Matrix:	Pore Water	**Date Received:**	11/7/17
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Sulfate, Dissolved

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
PW001-CURDSNB-171103	K1712055-001	**143**	5.0	0.5	50	11/28/17 08:27	
Method Blank	K1712055-MB1	ND U	0.10	0.01	1	11/27/17 12:49	
Method Blank	K1712055-MB2	ND U	0.10	0.01	1	11/27/17 20:42	

lvl 4 PW

VALIDATION WORKSHEET

Method: D35 ORG: Carbon
Date Reviewed: 1.3.18
Sample Collection Dates: 11.3.17
SDG: KL1712055
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1 PW001.CURDSNS.171103	2 PW001.CURDSL.171103	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria																				
Completeness of Analyses	A	X no sample																		
Holding Times	A																			
Initial Calibration	A																			
Continuing Calibration	A																			
Method Blanks	A																			
LCS	A																			
Surrogate %R or duplicate RPD	A																			
MS/MSD:	A																			
Reporting Limits	A																			
Completeness of Analyte List	A																			
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SM 11317
RM 11 29 17 • no SM. PW001.CURDSL.171103

SDG:	K1712055	
Project:	Hew. LK	MBs all-ND
Date:	1.3.18	
Method:	Diss. Org. Carbon	
ICV %R	.998	lab reported
CCV %R	25.9/25 = 1.04	lab reported 104
LCS	25.5/24 = 1.02	lab reported 102
ICS %R		lab reported
MS %R	31.6 - 3.93/25 = 1.106	lab reported 111
MS/MSD %RPD		lab reported
Duplicate %D	$\frac{3.93 - 3.99}{3.93 + 3.99/2} = \frac{-.06}{3.96} = .015$	lab reported 2
High Std Check		lab reported
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported

SDG 16172055	Analyte Diss Org. Carb	
Project: Hem LK		
Date: 1.3.18		
Sample ID PWAX.CWRDSNK.171103	Lab reported 3.93	
3.93 raw/ok		mg/Kg mg/L (mg/L circled)
Calulation		ug/L
Sample ID	Lab reported	
		mg/Kg mg/L
Calulation		ug/L
Sample ID	Lab reported	
		mg/Kg mg/L
Calulation		ug/L
Sample ID	Lab reported	
		mg/Kg mg/L
Calulation		ug/L
Sample ID	Lab reported	
		mg/Kg mg/L
Calulation		ug/L
Sample ID	Lab reported	
		mg/Kg mg/L
Calulation		ug/L
Sample ID	Lab reported	
		mg/Kg mg/L
Calulation		ug/L
Sample ID	Lab reported	
		mg/Kg mg/L
Calulation		ug/L
Sample ID	Lab reported	
		mg/Kg mg/L
Calulation		ug/L

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712055
Project:	Herrington Lake	**Date Collected:**	11/3/17
Sample Matrix:	Pore Water	**Date Received:**	11/7/17
Analysis Method:	9060	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
PW001-CURDSNB-171103	K1712055-001	**3.93**	0.50	0.07	1	11/29/17 19:40	
Method Blank	K1712055-MB1	ND U	0.50	0.07	1	11/29/17 18:57	

lvl 4 PW

1631E

VALIDATION WORKSHEET

Method: Diss. Hg
Date Reviewed: 1.3.18
Sample Collection Dates: 11.3.17

SDG: KI712055
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 PW001.CUMSNB.171103	2 PW001.CUDSLL.171103	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	A																		
Holding Times	A	A																		
Initial Calibration	A	A																		
Continuing Calibration																				
Method Blanks	A	A																		
LCS/LCSD	A	A																		
Surrogate %R or duplicate RPD																				
MS/MSD:	A	A																		
Reporting Limits	A	A																		
Completeness of Analyte List	A	A																		
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SMP 11.3.17
prep 11.18.17
run 11.20.17

SDG K1712059	Analyte Diss. Hg	
Project: Hunt Lk		
Date: 1.3.18		
Sample ID PW001 · CWV DSMH · 171205	Lab reported 1.69 ug/L	mg/Kg mg/L 25
42.4 / 25 = 1.69		ug/L 10 ml
Calulation		DWP
Sample ID PW001 · CWRMS1 · 171205	Lab reported 0.98 ug/L	mg/Kg mg/L 25
24.5/25 = .98		ug/L 10 ml
Calulation		DWP
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

SDG: K1712058

Project: Harr. Lk.

Date: 1.3.18

Method: Diss. Hg

ICV %R	5.08/5 = 1.016 4.98/5.00 = .99	lab reported	102 99
CCV %R	12.1/12.5 = .96	lab reported	96
OPR	4.8/5 = .96		
LCS	QCS/QCSA 4.8/5 = 96	lab reported	96 96
ICS %R	$\frac{4.87 - 4.79}{4.87 + 4.79/2} = \frac{.02}{4.8} = .004$	lab reported	0
MS %R	5.8 − .75/5.00 = .89%	lab reported	90
MS/MSD %RPD		lab reported	
Duplicate %D		lab reported	
High Std Check		lab reported	
Low Cal Check		lab reported	
Serial D %		lab reported	
Sample Recalculation		lab reported	
other (moisture)		lab reported	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: Herrington Lake
Sample Matrix: Pore water

Service Request: K1712055
Date Collected: 11/03/17
Date Received: 11/07/17

Mercury, Dissolved

Prep Method: METHOD
Analysis Method: 1631E
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PW001-CURDSNB-171103	K1712055-001	0.5	0.06	1	11/18/17	11/20/17	1.69	
PW001-CURDS1-171103	K1712055-002	0.5	0.06	1	11/18/17	11/20/17	0.98	
Method Blank 1	K1712055-MB1	0.5	0.06	1	11/18/17	11/20/17	ND	
Method Blank 2	K1712055-MB2	0.5	0.06	1	11/18/17	11/20/17	ND	
Method Blank 3	K1712055-MB3	0.5	0.06	1	11/18/17	11/20/17	ND	

1631E PW 1UL2

VALIDATION WORKSHEET

Method: mercury dissolved
Date Reviewed: 12.14.17
Sample Collection Dates: 11.3.17, 11.4.17

SDG: 1617120S9
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 PW001-CIC-171103	2 PW001-CWD32A-171104	3 PW001-CWD32B-171103	4 PW001-CWD32C-171103	5 PW001-CI2A-171104	6 PW001-CI2C-171103	7 PW001-CIC3-171103	8 PW001-HQ1A-171104	9 PW001-HQ1B-171104	10	11 PW001-HQ1C-171104	12 PW001-HF1A-171102	13 PW001-HF1B-171103	14	15 PW001-DUP-171104	16	17	18	19	20
Sample results	A								→		A		→		A					
Holding Times	A								→		A		→		A					
Completion (1)	A								→		A		→		A					
Method Blanks	A								→		A		→		A					
LCS %R/%R	A								→		A		→		A					
duplicate RPD																				
MS/MSD: -DU MS	A								→		A		→		A					

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Olm did not receive Spl PW001-HF1C-171101, no diss Hg reported
OPR-ok

Spl 11.1.17, 11.2, 11.3 + 11.4.17
prep 11.18.17
run 11.20.17

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: Herrington Lake
Sample Matrix: Pore water

Service Request: K1712059
Date Collected: 11/01-04/17
Date Received: 11/07/17

Mercury, Dissolved

Prep Method: METHOD
Analysis Method: 1631E
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PW001-CI1C-171103	K1712059-001	0.5	0.06	1	11/18/17	11/20/17	1.26	
PW001-CURDS2A-171104	K1712059-002	1.25	0.15	2.5	11/18/17	11/20/17	4.03	
PW001-CURDS2B-171103	K1712059-003	0.5	0.06	1	11/18/17	11/20/17	1.16	
PW001-CURDS2C-171103	K1712059-004	0.5	0.06	1	11/18/17	11/20/17	1.33	
PW001-CI2A-171104	K1712059-005	0.5	0.06	1	11/18/17	11/20/17	0.97	
PW001-CI2C-171103	K1712059-006	0.5	0.06	1	11/18/17	11/20/17	1.10	
PW001-CI3C-171103	K1712059-007	0.5	0.06	1	11/18/17	11/20/17	1.19	
PW001-HQ1A-171104	K1712059-008	0.5	0.06	1	11/18/17	11/20/17	1.18	
PW001-HQ1B-171104	K1712059-009	0.5	0.06	1	11/18/17	11/20/17	1.39	
PW001-HQ1C-171104	K1712059-010	0.5	0.06	1	11/18/17	11/20/17	1.03	
PW001-HI1A-171102	K1712059-011	0.5	0.06	1	11/18/17	11/20/17	0.95	
PW001-HI1B-171103	K1712059-012	0.5	0.06	1	11/18/17	11/20/17	1.55	
PW001-DUP-171104	K1712059-014	0.5	0.06	1	11/18/17	11/20/17	1.29	
Method Blank 1	K1712059-MB1	0.5	0.06	1	11/18/17	11/20/17	ND	
Method Blank 2	K1712059-MB2	0.5	0.06	1	11/18/17	11/20/17	ND	
Method Blank 3	K1712059-MB3	0.5	0.06	1	11/18/17	11/20/17	ND	

1630 PW LW2

VALIDATION WORKSHEET

Method: Dissolved Methyl Mercury
Date Reviewed: 12.19.17
Sample Collection Dates: 11.3.17, 11.4.17

SDG: 161712059
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 PW001-CE1C-171103	2 PW001-CORE052A-171104	3 PW001-CE3C-171103	4 PW001-CORE02C-171103	5 PW001-CE2A-171104	6 PW001-CE2C-171103	7 PW001-CE3-171103	8 PW001-HOLA-171104	9 PW001-HOLB-171104	10	11 PW001-HOLC-171104	12 PW001-HE1A-171102	13 PW001-HE1B-171103	14 PW001-HE1C-171101	15 PW001-DUP-171104	16	17	18	19	20
Sample results	A	→	→	→	→	→	→	→	→		A	→	→	→	→					
Holding Times	A	→	→	→	→	→	→	→	→		A	→	→	→	→					
Completion	A	→	→	→	→	→	→	→	→		A	→	→	→	→					
Method Blank ①	A	X	A	→	→	→	X	A	A		A	→	→	→	X					
LCS QCS	A	→	→	→	→	→	→	→	→		A	→	→	→	→					
duplicate RPD																				
MS/MSD -011 ②	X	→	→	→	→	→	→	→	→		X	→	→	→	→					

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

sol 11.3.17 11.4.17 11.2.17
prep 11.30.17
run 12.1.17

① MB2 Diss Meth Hg .05J U to { PW001-CORE052A-171104; PW001-CE3C-171103; PW001-DUP-171104 }

OPR ok

② MS/MSD RPD 23. Recoveries, ~~no flags~~ water blk <20 RPD

LW sols J/U q

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: Herrington Lake
Sample Matrix: Pore water

Service Request: K1712059
Date Collected: 11/03/17
Date Received: 11/07/17

Methyl Mercury, Dissolved

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PW001-CI1C-171103	K1712059-001	0.1	0.03	1	11/30/17	12/01/17	ND	UJ 9
PW001-CURDS2A-171104	K1712059-002	0.1	0.03	1	11/30/17	12/01/17	0.03	J 9
PW001-CURDS2B-171103	K1712059-003	0.1	0.03	1	11/30/17	12/01/17	ND	UJ 9
PW001-CURDS2C-171103	K1712059-004	0.1	0.03	1	11/30/17	12/01/17	ND	UJ 9
PW001-CI2A-171104	K1712059-005	0.1	0.03	1	11/30/17	12/01/17	ND	UJ 9
PW001-CI2C-171103	K1712059-006	0.1	0.03	1	11/30/17	12/01/17	ND	UJ 9
PW001-CI3C-171103	K1712059-007	0.1	0.03	1	11/30/17	12/01/17	0.03	J 9
PW001-HQ1A-171104	K1712059-008	0.1	0.03	1	11/30/17	12/01/17	ND	UJ 9
PW001-HQ1B-171104	K1712059-009	0.1	0.03	1	11/30/17	12/01/17	ND	UJ 9
PW001-HQ1C-171104	K1712059-010	0.1	0.03	1	11/30/17	12/01/17	ND	UJ 9
PW001-HI1A-171102	K1712059-011	0.1	0.03	1	11/30/17	12/01/17	0.06	J 9
PW001-HI1B-171103	K1712059-012	0.1	0.03	1	11/30/17	12/01/17	0.10	J 9
PW001-HI1C-171101	K1712059-013	0.1	0.03	1	11/30/17	12/01/17	0.12	J 9
PW001-DUP-171104	K1712059-014	0.1	0.03	1	11/30/17	12/01/17	0.04	UJ ~~J~~ 6,9
Method Blank 1	K1712059-MB1	0.1	0.03	1	11/30/17	12/01/17	ND	
Method Blank 2	K1712059-MB2	0.1	0.03	1	11/30/17	12/01/17	0.05	J
Method Blank 3	K1712059-MB3	0.1	0.03	1	11/30/17	12/01/17	ND	

lvl 4 PW

VALIDATION WORKSHEET

Method: 6020 Metals, Hg
Date Reviewed: 1.3.18
Sample Collection Dates: 11.3.17
SDG: K1712059 5
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 RW001.CURDSUB.171103	2 RW001.CURDS1.171103	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	A																		
Holding Times	A	A																		
Initial Calibration	A	A																		
Continuing Calibration	A	A																		
Method Blanks	A	A																		
LCS	A	A																		
Surrogate %R or duplicate RPD	A	A																		
MS/MSD: -on batch	A	A																		
Reporting Limits	A	A																		
Completeness of Analyte List	A	A																		
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

MB 3µ.5) no flags to spls

Spl 11/3/17 11/3/17
prep 11/20/17 11/17/17
run 11.28+11/29.17 11.26.17

SDG 1712055	Analyte RCRA Metals, Hg	
Project: Hess LC		
Date: 1.26.18		
Sample ID PW001-CURBSUMP-171103	Lab reported	mg/Kg mg/L
As 5.83 ✓	5.83	ug/L
Calulation Cd .063 ✓	.063	
Hg 0	ND	
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID PW001-CURBST-171103	Lab reported	mg/Kg mg/L
Ba 1300	1220	ug/L
Calulation Fe 11.13	11.2	
Zn 0	3.4	
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

SDG: K1712055 MB. ND

Project: Hwy Uk.

Date: 1.3.18

Method: 200.8 7470

	As 25.7/25= 1.02	
ICV %R	Cd 24.6/25= .98	lab reported 103
	Cd 24.7/25= .988	98
CCV %R	Hg 4.92/5= .98	lab reported 99
	As 52.8/50= 1.06	98
LCS	Fe 52.2/50= 1.04	lab reported 106
	B 20.3/20= 1.01	104
ICS %R	Hg 5.23/5= 1.046	lab reported 101
	As 56.1 - 5.83/50= 1.00	105
MS %R	Cd 25 - .063/25= .797	lab reported 100
	Fe 132 - 83/50= .98	98
MS/MSD %RPD		lab reported
	As $\frac{5.83-5.72}{5.83+5.72/2} = \frac{11}{5.775} = .019$	2
Duplicate %D		lab reported
	Ba $\frac{1760-1680}{1760+1680/2} = \frac{80}{1720} = .046$	
High Std Check		lab reported 4
Low Cal Check	Hg dup ϕ/ϕ	lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported
low level	Hg .21.2=1.	101
	As .49/.5=.9	98
	Ba 1.2/2= .6	6

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712055
Project:	Herrington Lake	**Date Collected:**	11/03/17 08:00
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-CURDSNB-171103	**Basis:**	NA
Lab Code:	K1712055-001		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**5.83**	ug/L	0.50	0.09	1	11/28/17 10:30	11/20/17	
Boron	200.8	**1760**	ug/L	200	50	100	11/29/17 08:50	11/20/17	
Cadmium	200.8	**0.063**	ug/L	0.020	0.006	1	11/28/17 10:30	11/20/17	
Iron	200.8	**83.0**	ug/L	2.0	0.3	1	11/28/17 10:30	11/20/17	
Magnesium	200.8	**21100**	ug/L	1000	200	100	11/29/17 08:50	11/20/17	
Mercury	7470A	ND	U ug/L	0.20	0.02	1	11/20/17 09:40	11/17/17	
Selenium	200.8	**5.0**	ug/L	1.0	0.2	1	11/28/17 10:30	11/20/17	
Zinc	200.8	**3.3**	ug/L	2.0	0.2	1	11/28/17 10:30	11/20/17	

Client: Ramboll Environ US Corporation
Project: Herrington Lake
Sample Matrix: Pore Water

Service Request: K1712055
Date Collected: 11/03/17 08:45
Date Received: 11/07/17 10:00

Sample Name: PW001-CURDS1-171103
Lab Code: K1712055-002

Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**4.59**	ug/L	0.50	0.09	1	11/28/17 10:37	11/20/17	
Boron	200.8	**1220**	ug/L	200	50	100	11/29/17 08:55	11/20/17	
Cadmium	200.8	**0.021**	ug/L	0.020	0.006	1	11/28/17 10:37	11/20/17	
Iron	200.8	**11.2**	ug/L	2.0	0.3	1	11/28/17 10:37	11/20/17	
Magnesium	200.8	**16500**	ug/L	1000	200	100	11/29/17 08:55	11/20/17	
Mercury	7470A	ND	U ug/L	0.20	0.02	1	11/20/17 09:42	11/17/17	
Selenium	200.8	**3.2**	ug/L	1.0	0.2	1	11/28/17 10:37	11/20/17	
Zinc	200.8	**3.4**	ug/L	2.0	0.2	1	11/28/17 10:37	11/20/17	

*PORE WATER 1 of 2 COOLER #1 of 2 K1712055

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 - 604307

Page 1 of 2

Report To	Contact and company name below will appear on the final report
Company:	RAMBOLL EH
Contact:	M. Sorensen
Phone:	(770) 548 1799
Company address below will appear on the final report	
Street:	1600 Parkwood Cir. Suite 310
City/Province:	ATL, GA
Postal Code:	
Invoice To	Same as Report To: YES / NO
	Copy of Invoice with Report: YES / NO
Company:	RAMBOLL EH
Contact:	m.sorensen@ramboll.com

Report Format / Distribution	
Select Report Format:	PDF, EXCEL, EDD (DIGITAL)
Quality Control (QC) Report with Report	YES / NO
Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	EMAIL, MAIL, FAX
Email 1 or Fax	msorensen@Ramboll.com
Email 2	
Email 3	

Invoice Distribution	
Select Invoice Distribution:	EMAIL, MAIL, FAX
Email 1 or Fax	msorensen@Ramboll.com
Email 2	

Project Information	
ALS Account # / Quote #:	
Job #:	HERRINGTON LAKE
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only):

ALS Contact:

Sampler: AJS, BG

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R]: Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4]; 3 day [P3]; 2 day [P2]

EMERGENCY: 1 Business day [E1]; Same Day, Weekend or Statutory holiday [E0]

Date and Time Required for all E&P TATs:

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	1 Se. Spec. IC-ICP-CEC-HS	2 As. Spec. 1632	3 Metals/Hg 200.8/7471	4 Meth Hg 1630	5 Hg 1631E	6 Sulfate 300	7 DOC 9060	Level 4 data validation	Level 2 data validation	Number of Containers
	PW001-CURDSNB-171103	03-NOV-17	0800	Porewater								X		7
	PW001-CURDS1-171103	03-NOV-17	0845									X		6
	PW001-CI1C-171103	03-NOV-17	0930										X	7
	PW001-CURDS2A-171104	04-NOV-17	1315										X	6
	PW001-CURDS2B-171103	03-NOV-17	1115										X	7
	PW001-CURDS2C-171103	03-NOV-17	1030										X	7
	PW001-CI2A-171104	04-NOV-17	1530										X	7
	PW001-CI2C-171103	03-NOV-17	1200										X	7
	PW001-CI3C-171103	03-NOV-17	1315										X	7
	PW001-HQ1A MS-171104	04-NOV-17	1045										X	7
	PW001-HQ1B-171104	04-NOV-17	0945										X	7
	PW001-HQ1C-171104	04-NOV-17	1130										X	7

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? YES / NO

Are samples for human drinking water use? YES / NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

* All Bottles, Containers, Vials were field filtered w. 0.45 um.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen / SIF Observations: Yes / No

Ice Packs / Ice Cubes / Custody seal intact: Yes / No

Cooling Initiated

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C

SHIPMENT RELEASE (client use)

Released by: Ben Garske Date: 11-6-17 Time: 1000

INITIAL SHIPMENT RECEPTION (lab use only)

Received by: Date: 11/7/17 Time: 1000

FINAL SHIPMENT RECEPTION (lab use only)

Received by: Date: Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

ALS

PC MH

Cooler Receipt and Preservation Form

Client Ramboll Service Request K17 12055

Received: 11/7/17 Opened: 11/7/17 By: CG Unloaded: 11/7/17 By: CG

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? _____

If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
-0.3	-0.4	2.2	2.1	-0.1	349		7883 4212 3750	
-0.3	-0.4	0.4	0.3	-0.1	351		3749	

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) CG 11/7
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: Did not receive an unpreserved container for SO4 for samples RW001-CURDS1-171103 & RW001-HI1A-171102. ↳ (5 bottles, COC indicates 6) Also did not receive a DOC bottle for these same samples 9060

SHORT HOLD TIME ROSH

7/25/16

Pw LVL2

VALIDATION WORKSHEET

IC171205Y

Method: Selenium Speciation
Date Reviewed: 12.14.17
Sample Collection Dates: 11.3, 11.4 - 11.1, 11.2.17

SDG: L2020526
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria	PW001-CIC-171103	-CWE052A-171104	-CWE052B-171103	-CWE052C-171103	-CI2A-171104	-CI2C-171103	-CI3C-171103	-HQ1A-171104	-HQ1B-171104	-HQ1C-171104	-HI1A-171103	-HI1B-171103	-HI1C-171104	-DUP-171104	Hz					
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS	A																			
duplicate RPD	A																			
MS/MSD:	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Spl 11.1 11.2 11.3 11.4
prep 11.20.17
run 11.21.17

FP PW001-HQ1C-171104 / PW001-DUP-171104
Settle out - rest in

no floes.

FM ✓

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2020526-1 K1712059-001 PW001-CI1C-171103							
Sampled By: CLIENT on 03-NOV-17 @ 09:30							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	0.32		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	2.64		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-2 K1712059-002 PW001-CURDS2A-171104							
Sampled By: CLIENT on 04-NOV-17 @ 13:15							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	0.18		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-3 K1712059-003 PW001-CURDS2B-171103							
Sampled By: CLIENT on 03-NOV-17 @ 11:15							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	0.46		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	1.82		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-4 K1712059-004 PW001-CURDS2C-171103							
Sampled By: CLIENT on 03-NOV-17 @ 10:30							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	0.54		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	2.17		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-5 K1712059-005 PW001-CI2A-171104							
Sampled By: CLIENT on 04-NOV-17 @ 15:30							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	0.14		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	0.32		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-6 K1712059-006 PW001-CI2C-171103							
Sampled By: CLIENT on 03-NOV-17 @ 12:00							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	0.12		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	1.77		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2020526-6 K1712059-006 PW001-CI2C-171103							
Sampled By: CLIENT on 03-NOV-17 @ 12:00							
Matrix:							
L2020526-7 K1712059-007 PW001-CI3C-171103							
Sampled By: CLIENT on 03-NOV-17 @ 13:15							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	0.22		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	0.75		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-8 K1712059-008 PW001-HQ1A-171104							
Sampled By: CLIENT on 04-NOV-17 @ 10:45							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	0.29		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	0.56		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-9 K1712059-009 PW001-HQ1B-171104							
Sampled By: CLIENT on 04-NOV-17 @ 09:45							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	0.15		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-10 K1712059-010 PW001-HQ1C-171104							
Sampled By: CLIENT on 04-NOV-17 @ 11:30							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	0.12		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	0.40		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-11 K1712059-011 PW001-HI1A-171102							
Sampled By: CLIENT on 02-NOV-17 @ 16:00							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-12 K1712059-012 PW001-HI1B-171103							
Sampled By: CLIENT on 03-NOV-17 @ 14:45							
Matrix:							
Selenium Species in Water by HPLC/CCMS							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2020526-12 K1712059-012 PW001-HI1B-171103							
Sampled By: CLIENT on 03-NOV-17 @ 14:45							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-13 K1712059-013 PW001-HI1C-171101							
Sampled By: CLIENT on 01-NOV-17 @ 14:45							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	0.11		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-14 K1712059-014 PW001-DUP-171104							
Sampled By: CLIENT on 04-NOV-17 @ 08:00							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	<0.10		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-15 K1712059-011 PW001-HI1A-171102-MS							
Sampled By: CLIENT							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	25.0		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	24.9		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	24.8		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521
L2020526-16 K1712059-011 PW001-HI1A-171102-MSD							
Sampled By: CLIENT							
Matrix:							
Selenium Species in Water by HPLC/CCMS							
Selenium +4	23.7		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenium +6	23.9		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Selenocyanate	23.8		0.10	ug/L	20-NOV-17	21-NOV-17	R3894521
Unknown Se Species	<0.20		0.20	ug/L	20-NOV-17	21-NOV-17	R3894521

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

16324 PW LWL2

VALIDATION WORKSHEET

Method: D35. Metals. As Spec.
Date Reviewed: 12.19.17
Sample Collection Dates: 11.3.17, 11.4.17
SDG: 16712059
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1 PW001-CEIC-171103	2 PW001-CWLWS2A-171104	3 PW001-CWLWS2D-171103	4 PW001-CWLWS2C-171102	5 PW001-CEZA-171104	6 PW001-CEZC-171102	7 PW001-CEZB-171103	8 PW001-HQIA-171104	9 PW001-HQIB-171103	10	11 PW001-HQIC-171104	12	13 PW001-HEIB-171103	14 PW001-HEIC-171101	15 PW001-DUP-171104	16 PW001-HEIA-171102	17 PW001-HEIA-171102	18 PW001-HEIA-171102	19	20
Validation Criteria																				
Sample results	A										A		A							
Holding Times	A										A		A							
Completion (1)	A										A		A							
Method Blanks (2)	X	A									A		A							
LCS																				
duplicate RPD																				
MS/MSD: Batch	A								D		A		A							

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

FD. on spreadsheet.

(1) Lab notes 3 containers for PW001-HEIA-171102, investigation after initial MS was 3%? determined As in each bottle varied. ∴ MS/MSD not performed. Batch QC reported. Those results reported for as III, as V, monomas.

(2) MB 1 .0127 MB 3 .0126 U to PW001-CEIC-171103

cat.

Sat 11.1, 11.2, 11.3, 11.4.17

prep

PSW 11.20 11.28, 11.29.17

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-CI1C-171103	Units:	ug/L (ppb)
Lab Code:	K1712059-001	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.0101	J U B
Arsenic (V)	None	1632A	2	0.3	100	NA	NA	2.69	
Inorganic Arsenic	None	1632A	2	0.3	100	NA	11/28/17	2.70	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-CURDS2A-171104	Units:	ug/L (ppb)
Lab Code:	K1712059-002	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	4	0.6	200	NA	11/20/17	71.6	
Arsenic (V)	None	1632A	10	1.5	500	NA	NA	40.1	
Inorganic Arsenic	None	1632A	10	1.5	500	NA	11/28/17	112	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-CURDS2B-171103	Units:	ug/L (ppb)
Lab Code:	K1712059-003	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.078	
Arsenic (V)	None	1632A	0.4	0.06	20	NA	NA	6.02	
Inorganic Arsenic	None	1632A	0.4	0.06	20	NA	11/28/17	6.10	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-CURDS2C-171103	Units:	ug/L (ppb)
Lab Code:	K1712059-004	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.0668	
Arsenic (V)	None	1632A	0.4	0.06	20	NA	NA	2.92	
Inorganic Arsenic	None	1632A	0.4	0.06	20	NA	11/28/17	2.99	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name: PW001-CI2A-171104
Lab Code: K1712059-005
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.0967	
Arsenic (V)	None	1632A	2	0.3	100	NA	NA	30.8	
Inorganic Arsenic	None	1632A	2	0.3	100	NA	11/28/17	30.9	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-CI2C-171103	Units:	ug/L (ppb)
Lab Code:	K1712059-006	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.038	
Arsenic (V)	None	1632A	0.04	0.006	2	NA	NA	0.477	
Inorganic Arsenic	None	1632A	0.04	0.006	2	NA	11/28/17	0.515	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name: PW001-CI3C-171103
Lab Code: K1712059-007
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.0397	
Arsenic (V)	None	1632A	0.04	0.006	2	NA	NA	0.906	
Inorganic Arsenic	None	1632A	0.04	0.006	2	NA	11/28/17	0.946	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name: PW001-HQ1A-171104
Lab Code: K1712059-008
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.0591	
Arsenic (V)	None	1632A	0.2	0.03	10	NA	NA	1.84	
Inorganic Arsenic	None	1632A	0.2	0.03	10	NA	11/29/17	1.90	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-HQ1B-171104	Units:	ug/L (ppb)
Lab Code:	K1712059-009	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.2	0.03	10	NA	11/20/17	5.39	
Arsenic (V)	None	1632A	2	0.3	100	NA	NA	20.7	
Inorganic Arsenic	None	1632A	2	0.3	100	NA	11/29/17	26.1	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-HQ1C-171104	Units:	ug/L (ppb)
Lab Code:	K1712059-010	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.0642	
Arsenic (V)	None	1632A	0.04	0.006	2	NA	NA	0.491	
Inorganic Arsenic	None	1632A	0.04	0.006	2	NA	11/29/17	0.555	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/02/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-HI1A-171102	Units:	ug/L (ppb)
Lab Code:	K1712059-011.02	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.020	
Arsenic (V)	None	1632A	0.04	0.006	2	NA	NA	0.609	
Inorganic Arsenic	None	1632A	0.04	0.006	2	NA	11/29/17	0.629	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/02/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-HI1A-171102	Units:	ug/L (ppb)
Lab Code:	K1712059-011.11	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.2	0.03	10	NA	11/20/17	2.99	
Arsenic (V)	None	1632A	0.4	0.06	20	NA	NA	2.43	
Inorganic Arsenic	None	1632A	0.4	0.06	20	NA	11/29/17	5.42	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/02/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-HI1A-171102	Units:	ug/L (ppb)
Lab Code:	K1712059-011.12	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.0315	
Arsenic (V)	None	1632A	0.04	0.006	2	NA	NA	0.779	
Inorganic Arsenic	None	1632A	0.04	0.006	2	NA	11/29/17	0.810	

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Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name: PW001-HI1B-171103
Lab Code: K1712059-012
Test Notes:

Units: ug/L (ppb)
Basis: NA

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.1	0.015	5	NA	11/20/17	1.15	
Arsenic (V)	None	1632A	0.4	0.06	20	NA	NA	5.55	
Inorganic Arsenic	None	1632A	0.4	0.06	20	NA	11/29/17	6.70	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Units: ug/L (ppb)
Basis: NA

Sample Name: PW001-HI1C-171101
Lab Code: K1712059-013
Test Notes:

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.2	0.03	10	NA	11/20/17	1.76	
Arsenic (V)	None	1632A	0.2	0.03	10	NA	NA	1.59	
Inorganic Arsenic	None	1632A	0.2	0.03	10	NA	11/28/17	3.35	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Dissolved Metals

Sample Name:	PW001-DUP-171104	Units:	ug/L (ppb)
Lab Code:	K1712059-014	Basis:	NA
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
Arsenic (III)	None	1632A	0.02	0.003	1	NA	11/20/17	0.0486	
Arsenic (V)	None	1632A	0.04	0.006	2	NA	NA	0.475	
Inorganic Arsenic	None	1632A	0.04	0.006	2	NA	11/29/17	0.524	

PW1712

VALIDATION WORKSHEET

Method: Dissolved Sulfate 300.0

SDG: 161712059

Date Reviewed: 12.14.17

Reviewer: C Jensen

Sample Collection Dates: 11.3.17, 11.4.17

The following data validation areas were reviewed:

Validation Criteria	1 PW001-CHC-171103	2 PW001-COMOSA-171104	3 PW001-COMOSB-171103	4 PW001-COMRZC-171103	5 PW001-CRZA-171104	6 PW001-CRZC-171103	7 PW001-CRZE-171103	8 PW001-HQIA-171104	9 PW001-HQIB-171104	10	11 PW001-HQIC-171104	12	13 PW001-HRIB-171103	14	15 PW001-BMP-171104	16	17	18	19	20
Sample results	A	→	→	→	→	→	→	→	→		A		A		A					
Holding Times	A	→	→	→	→	→	→	→	→		A		A		A					
Completion (2)	A	→	→	→	→	→	→	→	→		A		A		A					
Method Blanks	A	→	→	→	→	→	→	→	→		A		A		A					
LCS	A	→	→	→	→	→	→	→	→		A		A		A					
duplicate RPD	A	→	→	→	→	→	→	→	→		A		A		A					
MS/MSD: DNM	A	→	→	→	→	→	→	→	→		A		A		A					

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

2.1, 0.3C

Spl 11.3 + 11.4.17

prep

PW 11.27 + 11.28.17

- Elle notes they did not receive an unpreserved container for PW-001 HFIC-171101 & no diss. sulfate result for these PW001 HIA-171102 & two samples

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17 - 11/04/17
Sample Matrix:	Pore Water	**Date Received:**	11/7/17
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Sulfate, Dissolved

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
PW001-CI1C-171103	K1712059-001	**120**	5.0	0.5	50	11/28/17 09:50	
PW001-CURDS2A-171104	K1712059-002	**36.3**	0.50	0.05	5	11/27/17 23:20	
PW001-CURDS2B-171103	K1712059-003	**74.3**	2.0	0.2	20	11/28/17 07:54	
PW001-CURDS2C-171103	K1712059-004	**84.0**	2.0	0.2	20	11/28/17 08:05	
PW001-CI2A-171104	K1712059-005	**46.8**	0.50	0.05	5	11/27/17 21:36	
PW001-CI2C-171103	K1712059-006	**92.9**	2.0	0.2	20	11/28/17 08:16	
PW001-CI3C-171103	K1712059-007	**48.9**	0.50	0.05	5	11/27/17 21:58	
PW001-HQ1A-171104	K1712059-008	**45.5**	0.50	0.05	5	11/27/17 22:09	
PW001-HQ1B-171104	K1712059-009	**34.2**	0.50	0.05	5	11/27/17 22:19	
PW001-HQ1C-171104	K1712059-010	**39.3**	0.50	0.05	5	11/27/17 22:30	
PW001-HI1B-171103	K1712059-012	**17.5**	0.50	0.05	5	11/27/17 22:41	
PW001-DUP-171104	K1712059-014	**39.5**	0.50	0.05	5	11/27/17 22:52	
Method Blank	K1712059-MB1	ND U	0.10	0.01	1	11/27/17 15:11	
Method Blank	K1712059-MB2	ND U	0.10	0.01	1	11/27/17 12:49	
Method Blank	K1712059-MB3	ND U	0.10	0.01	1	11/27/17 20:42	

PW 1101 2

90120

VALIDATION WORKSHEET

Method: Dissolved Organic Carbon

SDG: 161712059

Date Reviewed: 12.4.17

Reviewer: C Jensen

Sample Collection Dates: 11.3.17, 11.4.17

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 PW001-CIC-171103	2 PW001-CURVE2A-171104	3 PW001-CURVE2C-171103	4 PW001-CURVE2C-171102	5 PW001-CIC2A-171104	6 PW001-CIC2C-171103	7 PW001-CIC3-171103	8 PW001-HQIA-171104	9 PW001-HQIB-171104	10	11 PW001-HQIC-171104	12	13 PW001-HEIB-171103	14	15 PW001-DUP-171104	16	17	18	19	20
Sample results	A	X	A								A		A		A					
Holding Times	A		A								A		A							
Completion (1)	A		A								A		A							
Method Blanks	A		A								A		A		A					
LCS	A		A								A		A							
duplicate RPD	A		A								A		A							
MS/MSD:	A		A								A		A							

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

(1) Lab note did not receive DOC bottle for
PW001-HEIA-171102
PW001-HEIC-171101
(diff SDG) ~~PW001-CURVE1~~
PW001-CURVE2A-171104
PW001-DUP-171104

* could not evaluate field dup since no DOC bottle.

Spl 11.3 + 11.4.17

run 11.29 + 11.30.17

Client: Ramboll Environ US Corporation
Project: Herrington Lake
Sample Matrix: Pore Water

Analysis Method: 9060
Prep Method: None

Service Request: K1712059
Date Collected: 11/03/17 - 11/04/17
Date Received: 11/7/17

Units: mg/L
Basis: NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
PW001-CI1C-171103	K1712059-001	**3.51**	0.50	0.07	1	11/29/17 20:22	
PW001-CURDS2B-171103	K1712059-003	**3.77**	0.50	0.07	1	11/29/17 20:50	
PW001-CURDS2C-171103	K1712059-004	**3.41**	0.50	0.07	1	11/29/17 21:04	
PW001-CI2A-171104	K1712059-005	**4.16**	0.50	0.07	1	11/29/17 21:32	
PW001-CI2C-171103	K1712059-006	**2.74**	0.50	0.07	1	11/29/17 22:00	
PW001-CI3C-171103	K1712059-007	**3.25**	0.50	0.07	1	11/29/17 22:57	
PW001-HQ1A-171104	K1712059-008	**3.53**	0.50	0.07	1	11/29/17 23:25	
PW001-HQ1B-171104	K1712059-009	**4.49**	0.50	0.07	1	11/29/17 23:53	
PW001-HQ1C-171104	K1712059-010	**2.86**	0.50	0.07	1	11/30/17 00:20	
PW001-HI1B-171103	K1712059-012	**3.79**	0.50	0.07	1	11/30/17 00:48	
Method Blank	K1712059-MB1	ND U	0.50	0.07	1	11/29/17 18:57	

1630

lvl 4 PW

VALIDATION WORKSHEET

Method: DISS. Methyl Mercury

Date Reviewed: 1.3.18

Sample Collection Dates: 11.3.17

SDG: KI71205

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 RW001.CUMSMS.171103	2 RW001.CUMDS1.171103	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	A																		
Holding Times	A	A																		
Initial Calibration	A	A																		
Continuing Calibration																				
Method Blank ①	A	A																		
LCS QCS	A	A																		
Surrogate %R or duplicate RPD																				
MS/MSD: batch	A	A																		
Reporting Limits	A	A																		
Completeness of Analyte List	A	A																		
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SPL 11.3.17

prep 11.30.17

run 12.1.17

① MB2.05D no flags, qals added.

② MS/MSD RPD 23 (20 limit), no flags

SDG: KI712055 Hum. ND

Project: Hew Lk

Date: 1.3.18

Method: 1630

ICV %R	2.18/2=1.09 50.4/50=1.	lab reported 109 101
CCV %R		lab reported
OPR	162/2= 81	81
LCS QCS	85/100= .8	lab reported 85
ICS %R		lab reported
MS %R	1.72-1.37 / 1.72+1.37/2 = .35 / 1.54 = .226	lab reported 23 out (20 limit) matrix interf.
MS/MSD %RPD	1.72-.86/2=.83	lab reported 83
Duplicate %D		lab reported
High Std Check		lab reported
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported

SDG K1712595	Analyte Diss. Methyl Mercury	
Project: Hew Lk		
Date: 1.3.18		
		200
Sample ID PW001-CURDSNB-171103	Lab reported ND	mg/Kg mg/L
raw 1.35	.0391	ug/L 42,50
Calulation		
Sample ID PW001-CURDSI-171103	Lab reported ND	mg/Kg mg/L
		ug/L 50 50
Calulation raw .933	.0178	
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712055
Project:	Herrington Lake	**Date Collected:**	11/03/17
Sample Matrix:	Pore water	**Date Received:**	11/07/17

Methyl Mercury, Dissolved

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PW001-CURDSNB-171103	K1712055-001	0.1	0.04	1	11/30/17	12/01/17	ND	
PW001-CURDS1-171103	K1712055-002	0.1	0.03	1	11/30/17	12/01/17	ND	
Method Blank 1	K1712055-MB1	0.1	0.03	1	11/30/17	12/01/17	ND	
Method Blank 2	K1712055-MB2	0.1	0.03	1	11/30/17	12/01/17	0.05	J
Method Blank 3	K1712055-MB3	0.1	0.03	1	11/30/17	12/01/17	ND	

200.8 / 7470A PW LW2

VALIDATION WORKSHEET

Method: Dissolved Metals / Hg
Date Reviewed: 12.19.17
Sample Collection Dates: 11.3.17, 11.4.17

SDG: K1712059
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 PW001-CIC-171103	2 PW001-COMB3A-171104	3 PW001-COMB5ZA-171103	4 PW001-COMB5ZC-171103	5 PW001-CI2A-171104	6 PW001-CI2C-171103	7 PW001-CI3-171103	8 PW001-HQ1A-171104	9 PW001-HQ1B-171104	10	11 PW001-HQ1C-171104	12 PW001-HF1A-171102	13 PW001-HF1B-171103	14 PW001-HF1C-171101	15 PW001-DUP-171104	16	17	18	19	20
Sample results	A										A									
Holding Times	A										A									
Completion	A										A									
Method Blanks ①	X	A	A	X	A						A									
LCS	A										A									
duplicate RPD	A										A									
MS/MSD: batch	A										A									

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments: metals Hg

spl 1 1 1 2 1 3 / 1 4
prep 11.20.17 11.17.17
run 11.28 11.29, 11.30.17

① MB: Zinc: 5 J ug/L V, L PW001-CIC-171103
PW001-COMB5ZC-171103

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17 09:30
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-CI1C-171103	**Basis:**	NA
Lab Code:	K1712059-001		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**3.48**	ug/L	0.50	0.09	1	11/28/17 10:42	11/20/17	
Boron	200.8	**1090**	ug/L	200	50	100	11/29/17 08:57	11/20/17	
Cadmium	200.8	**0.042**	ug/L	0.020	0.006	1	11/28/17 10:42	11/20/17	
Iron	200.8	**24.4**	ug/L	2.0	0.3	1	11/28/17 10:42	11/20/17	
Magnesium	200.8	**17000**	ug/L	1000	200	100	11/29/17 08:57	11/20/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/20/17 09:44	11/17/17	
Selenium	200.8	**3.7**	ug/L	1.0	0.2	1	11/28/17 10:42	11/20/17	
Zinc	200.8	**1.8** J U Q	ug/L	2.0	0.2	1	11/28/17 10:42	11/20/17	

Client: Ramboll Environ US Corporation
Project: Herrington Lake
Sample Matrix: Pore Water

Service Request: K1712059
Date Collected: 11/04/17 13:15
Date Received: 11/07/17 10:00

Sample Name: PW001-CURDS2A-171104
Lab Code: K1712059-002

Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**123**	ug/L	0.50	0.09	1	11/28/17 10:44	11/20/17	
Boron	200.8	**605**	ug/L	40	10	20	11/29/17 08:59	11/20/17	
Cadmium	200.8	**0.072**	ug/L	0.020	0.006	1	11/28/17 10:44	11/20/17	
Iron	200.8	**739**	ug/L	2.0	0.3	1	11/28/17 10:44	11/20/17	
Magnesium	200.8	**13000**	ug/L	200	40	20	11/29/17 08:59	11/20/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/20/17 09:45	11/17/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	11/28/17 10:44	11/20/17	
Zinc	200.8	**107**	ug/L	2.0	0.2	1	11/28/17 10:44	11/20/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17 11:15
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-CURDS2B-171103	**Basis:**	NA
Lab Code:	K1712059-003		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**14.4**	ug/L	0.50	0.09	1	11/28/17 10:46	11/20/17	
Boron	200.8	**1020**	ug/L	100	30	50	11/29/17 09:01	11/20/17	
Cadmium	200.8	**0.014 J**	ug/L	0.020	0.006	1	11/28/17 10:46	11/20/17	
Iron	200.8	**36.9**	ug/L	2.0	0.3	1	11/28/17 10:46	11/20/17	
Magnesium	200.8	**14800**	ug/L	500	100	50	11/29/17 09:01	11/20/17	
Mercury	7470A	**0.04 J**	ug/L	0.20	0.02	1	11/20/17 09:47	11/17/17	
Selenium	200.8	**2.7**	ug/L	1.0	0.2	1	11/28/17 10:46	11/20/17	
Zinc	200.8	**2.1**	ug/L	2.0	0.2	1	11/28/17 10:46	11/20/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17 10:30
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-CURDS2C-171103	**Basis:**	NA
Lab Code:	K1712059-004		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**5.05**	ug/L	0.50	0.09	1	11/28/17 10:55	11/20/17	
Boron	200.8	**940**	ug/L	100	30	50	11/29/17 09:06	11/20/17	
Cadmium	200.8	**0.025**	ug/L	0.020	0.006	1	11/28/17 10:55	11/20/17	
Iron	200.8	**28.8**	ug/L	2.0	0.3	1	11/28/17 10:55	11/20/17	
Magnesium	200.8	**15300**	ug/L	500	100	50	11/29/17 09:06	11/20/17	
Mercury	7470A	**0.09**	ug/L	0.20	0.02	1	11/20/17 09:49	11/17/17	J
Selenium	200.8	**3.0**	ug/L	1.0	0.2	1	11/28/17 10:55	11/20/17	
Zinc	200.8	**1.3**	ug/L	2.0	0.2	1	11/28/17 10:55	11/20/17	J

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17 15:30
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-CI2A-171104	**Basis:**	NA
Lab Code:	K1712059-005		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**29.2**	ug/L	0.50	0.09	1	11/28/17 10:57	11/20/17	
Boron	200.8	**494**	ug/L	40	10	20	11/29/17 09:08	11/20/17	
Cadmium	200.8	**0.012 J**	ug/L	0.020	0.006	1	11/28/17 10:57	11/20/17	
Iron	200.8	**69.7**	ug/L	2.0	0.3	1	11/28/17 10:57	11/20/17	
Magnesium	200.8	**11700**	ug/L	200	40	20	11/29/17 09:08	11/20/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/20/17 09:50	11/17/17	
Selenium	200.8	**1.0 J**	ug/L	1.0	0.2	1	11/28/17 10:57	11/20/17	
Zinc	200.8	**4.6**	ug/L	2.0	0.2	1	11/28/17 10:57	11/20/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17 12:00
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-CI2C-171103	**Basis:**	NA
Lab Code:	K1712059-006		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.04**	ug/L	0.50	0.09	1	11/28/17 11:00	11/20/17	
Boron	200.8	**950**	ug/L	100	30	50	11/29/17 09:09	11/20/17	
Cadmium	200.8	**0.021**	ug/L	0.020	0.006	1	11/28/17 11:00	11/20/17	
Iron	200.8	**8.7**	ug/L	2.0	0.3	1	11/28/17 11:00	11/20/17	
Magnesium	200.8	**15600**	ug/L	500	100	50	11/29/17 09:09	11/20/17	
Mercury	7470A	ND	U ug/L	0.20	0.02	1	11/20/17 09:52	11/17/17	
Selenium	200.8	**2.3**	ug/L	1.0	0.2	1	11/28/17 11:00	11/20/17	
Zinc	200.8	**2.1**	ug/L	2.0	0.2	1	11/28/17 11:00	11/20/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17 13:15
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-CI3C-171103	**Basis:**	NA
Lab Code:	K1712059-007		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**2.32**	ug/L	0.50	0.09	1	11/28/17 11:02	11/20/17	
Boron	200.8	**457**	ug/L	40	10	20	11/29/17 09:11	11/20/17	
Cadmium	200.8	**0.008 J**	ug/L	0.020	0.006	1	11/28/17 11:02	11/20/17	
Iron	200.8	**62.8**	ug/L	2.0	0.3	1	11/28/17 11:02	11/20/17	
Magnesium	200.8	**11400**	ug/L	200	40	20	11/29/17 09:11	11/20/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/20/17 09:57	11/17/17	
Selenium	200.8	**1.3**	ug/L	1.0	0.2	1	11/28/17 11:02	11/20/17	
Zinc	200.8	**3.6**	ug/L	2.0	0.2	1	11/28/17 11:02	11/20/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17 10:45
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-HQ1A-171104	**Basis:**	NA
Lab Code:	K1712059-008		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**2.87**	ug/L	0.50	0.09	1	11/28/17 11:04	11/20/17	
Boron	200.8	**171**	ug/L	20	5	10	11/29/17 09:13	11/20/17	
Cadmium	200.8	**0.006 J**	ug/L	0.020	0.006	1	11/28/17 11:04	11/20/17	
Iron	200.8	**31.9**	ug/L	2.0	0.3	1	11/28/17 11:04	11/20/17	
Magnesium	200.8	**5840**	ug/L	100	20	10	11/29/17 09:13	11/20/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/20/17 09:58	11/17/17	
Selenium	200.8	**1.2**	ug/L	1.0	0.2	1	11/28/17 11:04	11/20/17	
Zinc	200.8	**2.2**	ug/L	2.0	0.2	1	11/28/17 11:04	11/20/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17 09:45
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-HQ1B-171104	**Basis:**	NA
Lab Code:	K1712059-009		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**38.8**	ug/L	0.50	0.09	1	11/28/17 11:06	11/20/17	
Boron	200.8	**346**	ug/L	20	5	10	11/29/17 09:15	11/20/17	
Cadmium	200.8	ND U	ug/L	0.020	0.006	1	11/28/17 11:06	11/20/17	
Iron	200.8	**2020**	ug/L	2.0	0.3	1	11/28/17 11:06	11/20/17	
Magnesium	200.8	**16500**	ug/L	100	20	10	11/29/17 09:15	11/20/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/20/17 10:00	11/17/17	
Selenium	200.8	**0.6 J**	ug/L	1.0	0.2	1	11/28/17 11:06	11/20/17	
Zinc	200.8	**2.1**	ug/L	2.0	0.2	1	11/28/17 11:06	11/20/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/04/17 11:30
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-HQ1C-171104	**Basis:**	NA
Lab Code:	K1712059-010		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.14**	ug/L	0.50	0.09	1	11/28/17 11:08	11/20/17	
Boron	200.8	**304**	ug/L	20	5	10	11/29/17 09:16	11/20/17	
Cadmium	200.8	ND U	ug/L	0.020	0.006	1	11/28/17 11:08	11/20/17	
Iron	200.8	**30.4**	ug/L	2.0	0.3	1	11/28/17 11:08	11/20/17	
Magnesium	200.8	**10200**	ug/L	100	20	10	11/29/17 09:16	11/20/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/20/17 10:01	11/17/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	11/28/17 11:08	11/20/17	
Zinc	200.8	**2.5**	ug/L	2.0	0.2	1	11/28/17 11:08	11/20/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/02/17 16:00
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-HI1A-171102	**Basis:**	NA
Lab Code:	K1712059-011		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**4.47**	ug/L	0.50	0.09	1	11/28/17 11:10	11/20/17	
Boron	200.8	**198**	ug/L	20	5	10	11/29/17 09:18	11/20/17	
Cadmium	200.8	ND U	ug/L	0.020	0.006	1	11/28/17 11:10	11/20/17	
Iron	200.8	**324**	ug/L	2.0	0.3	1	11/28/17 11:10	11/20/17	
Magnesium	200.8	**13000**	ug/L	100	20	10	11/29/17 09:18	11/20/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/20/17 10:03	11/17/17	
Selenium	200.8	**0.3 J**	ug/L	1.0	0.2	1	11/28/17 11:10	11/20/17	
Zinc	200.8	**2.5**	ug/L	2.0	0.2	1	11/28/17 11:10	11/20/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712059
Project:	Herrington Lake	**Date Collected:**	11/03/17 14:45
Sample Matrix:	Pore Water	**Date Received:**	11/07/17 10:00
Sample Name:	PW001-HI1B-171103	**Basis:**	NA
Lab Code:	K1712059-012		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**9.07**	ug/L	0.50	0.09	1	11/28/17 11:21	11/20/17	
Boron	200.8	**173**	ug/L	20	5	10	11/29/17 09:27	11/20/17	
Cadmium	200.8	ND U	ug/L	0.020	0.006	1	11/28/17 11:21	11/20/17	
Iron	200.8	**2510**	ug/L	2.0	0.3	1	11/28/17 11:21	11/20/17	
Magnesium	200.8	**10900**	ug/L	100	20	10	11/29/17 09:27	11/20/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/20/17 10:10	11/17/17	
Selenium	200.8	**0.3 J**	ug/L	1.0	0.2	1	11/28/17 11:21	11/20/17	
Zinc	200.8	**3.8**	ug/L	2.0	0.2	1	11/28/17 11:21	11/20/17	

Client: Ramboll Environ US Corporation
Project: Herrington Lake
Sample Matrix: Pore Water

Service Request: K1712059
Date Collected: 11/01/17 14:45
Date Received: 11/07/17 10:00

Sample Name: PW001-HI1C-171101
Lab Code: K1712059-013

Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**5.71**	ug/L	0.50	0.09	1	11/28/17 11:23	11/20/17	
Boron	200.8	**225**	ug/L	20	5	10	11/29/17 09:29	11/20/17	
Cadmium	200.8	ND U	ug/L	0.020	0.006	1	11/28/17 11:23	11/20/17	
Iron	200.8	**148**	ug/L	2.0	0.3	1	11/28/17 11:23	11/20/17	
Magnesium	200.8	**13600**	ug/L	100	20	10	11/29/17 09:29	11/20/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/20/17 10:11	11/17/17	
Selenium	200.8	**0.2 J**	ug/L	1.0	0.2	1	11/28/17 11:23	11/20/17	
Zinc	200.8	**2.8**	ug/L	2.0	0.2	1	11/28/17 11:23	11/20/17	

Client: Ramboll Environ US Corporation
Project: Herrington Lake
Sample Matrix: Pore Water

Service Request: K1712059
Date Collected: 11/04/17 08:00
Date Received: 11/07/17 10:00

Sample Name: PW001-DUP-171104
Lab Code: K1712059-014

Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.05**	ug/L	0.50	0.09	1	11/28/17 11:25	11/20/17	
Boron	200.8	**310**	ug/L	20	5	10	11/29/17 09:30	11/20/17	
Cadmium	200.8	ND U	ug/L	0.020	0.006	1	11/28/17 11:25	11/20/17	
Iron	200.8	**20.9**	ug/L	2.0	0.3	1	11/28/17 11:25	11/20/17	
Magnesium	200.8	**10400**	ug/L	100	20	10	11/29/17 09:30	11/20/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	11/20/17 10:46	11/17/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	11/28/17 11:25	11/20/17	
Zinc	200.8	**4.8**	ug/L	2.0	0.2	1	11/28/17 11:25	11/20/17	

Jed WR2

VALIDATION WORKSHEET

Method: Sulfate
Date Reviewed: 1.8.18
Sample Collection Dates: 11.2.17

SDG: K1712090
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SD.001(76).CIWA.171102	2 SD.DUP.009.171102	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A	A																		
Holding Times (1)	X	X																		
Completion	A	A																		
Method Blanks	A	A																		
LCS	A	A																		
duplicate RPD	A	A																		
MS/MSD: -001	A	A																		

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

1.4°C

FD pair SD.001(76).CIWA.171102 / SD.DUP.009.171102
Sulfate

Spl 11.2.17 Osplv run outside of HT due to dilutions. Q J/UJ. 1
prep 11.30.17
run 12.1.17

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712090
Project:	Herrington Lake	**Date Collected:**	11/2/17
Sample Matrix:	Sediment	**Date Received:**	11/7/17
Analysis Method:	300.0	**Units:**	mg/Kg
Prep Method:	Method	**Basis:**	Dry

Sulfate

Sample Name	Lab Code	Result		MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
SD-001(76)-CI4A-171102	K1712090-001	**2090**	J (	47	-	20	12/01/17 09:35	11/30/17	*
SD-DUP-009-171102	K1712090-002	**2630**	J (	47	-	20	12/01/17 10:19	11/30/17	*
Method Blank	K1712090-MB	ND	U	1.0	-	1	11/30/17 18:48	11/30/17	

L6010/6020/7471B Sed WI2

VALIDATION WORKSHEET

Method: Metals (Hg)
Date Reviewed: 1.8.18
Sample Collection Dates: 11.2.17

SDG: K1712070
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SD-001(70) CFM-171102	2 SD-DUP-001-171102	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A	A																		
Holding Times	A	A																		
Completion	A	A																		
Method Blanks	A	A																		
LCS	A	A																		
duplicate RPD	A	A																		
MS/MSD -001	A	A																		

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

- MB Fe 2.0J) spks too high for MS only.

Hg 7J)

Metal Hg

SM 11.2.17 11.2.17

prep 11.7.17 11.8.17

ANA 11.9, 11.21.17 11.9.17

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712090
Project:	Herrington Lake	**Date Collected:**	11/02/17 10:50
Sample Matrix:	Sediment	**Date Received:**	11/07/17 10:00
Sample Name:	SD-001(76)-CI4A-171102	**Basis:**	Dry
Lab Code:	K1712090-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**120**	mg/Kg	0.73	0.06	5	11/21/17 08:35	11/07/17	
Boron	6020A	**46.6**	mg/Kg	0.73	0.07	5	11/21/17 08:35	11/07/17	
Cadmium	6020A	**3.35**	mg/Kg	0.029	0.010	5	11/21/17 08:35	11/07/17	
Iron	6010C	**35200**	mg/Kg	5.8	1.3	2	11/09/17 12:58	11/07/17	
Magnesium	6010C	**4930**	mg/Kg	2.9	0.07	2	11/09/17 12:58	11/07/17	
Mercury	7471B	**0.143**	mg/Kg	0.025	0.002	1	11/09/17 12:38	11/08/17	
Selenium	6020A	**9.2**	mg/Kg	1.5	0.1	5	11/21/17 09:44	11/07/17	
Zinc	6020A	**121**	mg/Kg	0.73	0.29	5	11/21/17 08:35	11/07/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712090
Project:	Herrington Lake	**Date Collected:**	11/02/17 08:00
Sample Matrix:	Sediment	**Date Received:**	11/07/17 10:00
Sample Name:	SD-DUP-009-171102	**Basis:**	Dry
Lab Code:	K1712090-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**123**	mg/Kg	0.83	0.07	5	11/21/17 08:48	11/07/17	
Boron	6020A	**43.5**	mg/Kg	0.83	0.08	5	11/21/17 08:48	11/07/17	
Cadmium	6020A	**3.19**	mg/Kg	0.033	0.012	5	11/21/17 08:48	11/07/17	
Iron	6010C	**35200**	mg/Kg	6.6	1.5	2	11/09/17 13:07	11/07/17	
Magnesium	6010C	**4900**	mg/Kg	3.3	0.08	2	11/09/17 13:07	11/07/17	
Mercury	7471B	**0.140**	mg/Kg	0.026	0.003	1	11/09/17 12:40	11/08/17	
Selenium	6020A	**8.8**	mg/Kg	1.7	0.1	5	11/21/17 09:52	11/07/17	
Zinc	6020A	**118**	mg/Kg	0.83	0.33	5	11/21/17 08:48	11/07/17	

ALS SOP Sed LVL2

VALIDATION WORKSHEET

Method: Methyl Mercury
Date Reviewed: ~~11.2017~~ 1.8.18
Sample Collection Dates: 11.2.17

SDG: K1712970
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SD-001(70)-171102	2 SD-DUP-009-171102	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A	A																		
Holding Times	A	A																		
Completion	A	A																		
Method Blanks	A	A																		
LCS QCS	A	A																		
duplicate RPD																				
MS/MSD: Batch	A	A																		

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

FD Sols in Spreadsheet

SM 11.2.17
MMP 11.27.17
MM 11.28.17

OPR ok

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: Herrington Lake
Sample Matrix: Soil

Service Request: K1712090
Date Collected: 11/02/17
Date Received: 11/07/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SD-001(76)-CI4A-171102	K1712090-001	0.6	0.06	1	11/27/17	11/28/17	ND	
SD-DUP-009-171102	K1712090-002	0.7	0.07	1	11/27/17	11/28/17	0.30	J
Method Blank 1	K1712090-MB1	0.4	0.04	1	11/27/17	11/28/17	ND	
Method Blank 2	K1712090-MB2	0.4	0.04	1	11/27/17	11/28/17	ND	
Method Blank 3	K1712090-MB3	0.4	0.04	1	11/27/17	11/28/17	ND	

Sed 1/1/2

VALIDATION WORKSHEET

Method: TOC, 9060
Date Reviewed: 1.8.18
Sample Collection Dates: 11.2.17

SDG: K1712090
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	SD.001(FD) CIY44.171118	SD.DUP.009.171118																		
Sample results	A	A																		
Holding Times	A	A																		
Completion	A	A																		
Method Blanks	A	A																		
LCS	A	A																		
duplicate RPD	A	A																		
MS/MSD; batch	A	A																		

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

FD pair sds. on dup spreadsheet

SM 11.2.17
prep 11.17.17
an 11.17.17

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712090
Project:	Herrington Lake	**Date Collected:**	11/2/17
Sample Matrix:	Sediment	**Date Received:**	11/7/17
Analysis Method:	9060	**Units:**	Percent
Prep Method:	Method	**Basis:**	Dry, per Method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
SD-001(76)-CI4A-171102	K1712090-001	**3.02**	0.10	0.02	1	11/17/17 14:09	11/17/17	
SD-DUP-009-171102	K1712090-002	**3.00**	0.10	0.02	1	11/17/17 14:09	11/17/17	
Method Blank	K1712090-MB	ND U	0.10	0.02	1	11/17/17 14:09	11/17/17	

Loaw 7471 Wet/Dry Wet 1

VALIDATION WORKSHEET

Method: Metals Hg Bluegill

Date Reviewed: 1.10.18

Sample Collection Dates: 10.5 - 10.16.17

SDG: 161712347

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-002(BG)-LHL3-171005	2 FWB-002(BG)-LHL3-171005	3 FF-001(BG)-LHL1-171011	4 FWB-001(BG)-LHL1-171011	5 FF-001(BG)-LHL5-171011	6 FWB-001(BG)-LHL5-171011	7 FF-002(BG)-LHL5-171011	8 FWB-002(BG)-LHL5-171011	9 FF-001(BG)-LHL6-171011	10 FWB-001(BG)-LHL6-171011	11 FF-002(BG)-LHL6-171011	12 FWB-002(BG)-LHL6-171011	13 FF-001(GS)-DR-171014	14 FWB-001(GS)-DR-171014	15 FF-001(BG)-MHL3-171014	16 FWB-001(BG)-MHL3-171014	17 FF-002(BG)-MHL3-171014	18 FWB-002(BG)-MHL3-171014	19 FF-001(BG)-MHL4-171015	20 FWB-001(BG)-MHL1-171015
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS	A																			
duplicate RPD (1)	A																			
MS/MSD: (W)	A														A	X	A			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Metals Hg

SPL 10.5 - 10.16.17 -024 Dry FWB-001(BG)-MHL3-171014

prep 12.9.17 12.7.17 12.8.17

anl 12.14. 12.18 12.7.17

(1) Lab dup out (48) limit 20

Fe only this Spl

Fe J/UJ 9 Dry

- WB Fe 1.4 J
- 12/9 Zn 1.2 J
- 12/8 Mn 1.1 J

} no flags

- Serum NRCC Dorm-4
- NRCC Tort-3

Pb 3.16.18 .0008 J U, LB FF-001(BG)-LHL1-171011

FF-002(BG)-MHL1-171015 FF-001(BG)-LHL5-171011

FF-002(BG)-LHL5-171011

FF-001(BG)-LHL6-171011

FF-002(BG)-LHL6-171011

FF-001(GS)-DR-171014

FF-001(BG)-MHL3-171014

FF-002(BG)-MHL3-171014

FF-001(BG)-MHL1-171015

12/7 Hg .008 J / Batch

2nd Hg ND / no flags

dup

Lecso Hg Fish tissue IVI 2

VALIDATION WORKSHEET

Method: Metals, 7471 Dry

Date Reviewed: 1.10.18

Sample Collection Dates: 10.5 - 10.16.17

SDG: K1712347

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-002(BG)-MHG-171005	2 FWB-002(BG)-MHG-171005	3 FF-001(BG)-DE-171010	4 FWB-001(BG)-DE-171010	5 FF-002(GS)-DE-171010	6 FWB-002(GS)-DE-171004	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A	→	→	→	→	→														
Holding Times	A	→	→	→	→	→														
Completion	A	→	→	→	→	→														
Method Blanks	A	→	→	→	→	→														
LCS	A	→	→	→	→	→														
duplicate RPD	A	→	→	→	→	→														
MS/MSD:	A	→	→	→	→	→														

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 16:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-LHL3-171005	**Basis:**	Dry
Lab Code:	K1712347-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.28 J**	mg/Kg	0.50	0.02	5	12/14/17 13:37	12/09/17	
Boron	6020A	**0.52**	mg/Kg	0.50	0.20	5	12/14/17 13:37	12/09/17	
Cadmium	6020A	**0.015 J**	mg/Kg	0.020	0.003	5	12/14/17 13:37	12/09/17	
Iron	6020A	**14.8**	mg/Kg	1.00	0.09	5	12/14/17 13:37	12/09/17	
Lead	6020A	**0.031**	mg/Kg	0.020	0.003	5	12/14/17 13:37	12/09/17	
Magnesium	6010C	**1390**	mg/Kg	1.00	0.5	1	12/18/17 10:50	12/09/17	
Mercury	7471B	**0.128**	mg/Kg	0.020	0.004	2	12/07/17 11:06	12/07/17	
Selenium	6020A	**5.82**	mg/Kg	1.00	0.03	5	12/14/17 13:37	12/09/17	
Zinc	6020A	**54.3**	mg/Kg	0.50	0.08	5	12/14/17 13:37	12/09/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 16:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(BG)-LHL3-171005	**Basis:**	Dry
Lab Code:	K1712347-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.39 J**	mg/Kg	0.50	0.02	5	12/14/17 13:39	12/09/17	
Boron	6020A	**2.47**	mg/Kg	0.50	0.20	5	12/14/17 13:39	12/09/17	
Cadmium	6020A	**0.103**	mg/Kg	0.020	0.003	5	12/14/17 13:39	12/09/17	
Iron	6020A	**106**	mg/Kg	1.00	0.09	5	12/14/17 13:39	12/09/17	
Lead	6020A	**0.124**	mg/Kg	0.020	0.003	5	12/14/17 13:39	12/09/17	
Magnesium	6010C	**2040**	mg/Kg	1.00	0.5	1	12/18/17 10:53	12/09/17	
Mercury	7471B	**0.060**	mg/Kg	0.020	0.004	2	12/07/17 11:09	12/07/17	
Selenium	6020A	**3.86**	mg/Kg	1.00	0.03	5	12/14/17 13:39	12/09/17	
Zinc	6020A	**117**	mg/Kg	0.50	0.08	5	12/14/17 13:39	12/09/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 09:45
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(BG)-LHL1-171011	**Basis:**	Dry
Lab Code:	K1712347-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.28 J**	mg/Kg	0.50	0.02	5	12/14/17 13:42	12/09/17	
Boron	6020A	**0.38 J**	mg/Kg	0.50	0.20	5	12/14/17 13:42	12/09/17	
Cadmium	6020A	**0.009 J**	mg/Kg	0.020	0.003	5	12/14/17 13:42	12/09/17	
Iron	6020A	**27.7**	mg/Kg	1.0	0.09	5	12/14/17 13:42	12/09/17	
Lead	6020A	**0.007** J U Q	mg/Kg	0.020	0.003	5	12/14/17 13:42	12/09/17	
Magnesium	6010C	**1390**	mg/Kg	1.0	0.5	1	12/18/17 10:55	12/09/17	
Mercury	7471B	**0.190**	mg/Kg	0.020	0.004	2	12/07/17 11:13	12/07/17	
Selenium	6020A	**4.9**	mg/Kg	1.0	0.03	5	12/14/17 13:42	12/09/17	
Zinc	6020A	**61.2**	mg/Kg	0.50	0.08	5	12/14/17 13:42	12/09/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 09:45
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(BG)-LHL1-171011	**Basis:**	Dry
Lab Code:	K1712347-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.27 J**	mg/Kg	0.50	0.02	5	12/14/17 13:45	12/09/17	
Boron	6020A	**1.97**	mg/Kg	0.50	0.20	5	12/14/17 13:45	12/09/17	
Cadmium	6020A	**0.077**	mg/Kg	0.020	0.003	5	12/14/17 13:45	12/09/17	
Iron	6020A	**72.7**	mg/Kg	1.00	0.09	5	12/14/17 13:45	12/09/17	
Lead	6020A	**0.074**	mg/Kg	0.020	0.003	5	12/14/17 13:45	12/09/17	
Magnesium	6010C	**2350**	mg/Kg	1.00	0.5	1	12/18/17 10:58	12/09/17	
Mercury	7471B	**0.078**	mg/Kg	0.020	0.004	2	12/07/17 11:19	12/07/17	
Selenium	6020A	**3.02**	mg/Kg	1.00	0.03	5	12/14/17 13:45	12/09/17	
Zinc	6020A	**118**	mg/Kg	0.50	0.08	5	12/14/17 13:45	12/09/17	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 13:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(BG)-LHL5-171011	**Basis:**	Dry
Lab Code:	K1712347-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.25 J**	mg/Kg	0.50	0.02	5	12/14/17 13:53	12/09/17	
Boron	6020A	**0.21 J**	mg/Kg	0.50	0.20	5	12/14/17 13:53	12/09/17	
Cadmium	6020A	**0.008 J**	mg/Kg	0.020	0.003	5	12/14/17 13:53	12/09/17	
Iron	6020A	**15.7**	mg/Kg	1.0	0.09	5	12/14/17 13:53	12/09/17	
Lead	6020A	**0.009** J UL	mg/Kg	0.020	0.003	5	12/14/17 13:53	12/09/17	
Magnesium	6010C	**1300**	mg/Kg	1.0	0.5	1	12/18/17 11:01	12/09/17	
Mercury	7471B	**0.130**	mg/Kg	0.020	0.004	2	12/07/17 11:22	12/07/17	
Selenium	6020A	**4.7**	mg/Kg	1.0	0.03	5	12/14/17 13:53	12/09/17	
Zinc	6020A	**67.5**	mg/Kg	0.50	0.08	5	12/14/17 13:53	12/09/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 13:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(BG)-LHL5-171011	**Basis:**	Dry
Lab Code:	K1712347-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.21 J**	mg/Kg	0.50	0.02	5	12/14/17 13:55	12/09/17	
Boron	6020A	**0.95**	mg/Kg	0.50	0.20	5	12/14/17 13:55	12/09/17	
Cadmium	6020A	**0.079**	mg/Kg	0.020	0.003	5	12/14/17 13:55	12/09/17	
Iron	6020A	**77.0**	mg/Kg	1.00	0.09	5	12/14/17 13:55	12/09/17	
Lead	6020A	**0.096**	mg/Kg	0.020	0.003	5	12/14/17 13:55	12/09/17	
Magnesium	6010C	**2310**	mg/Kg	1.00	0.5	1	12/18/17 11:13	12/09/17	
Mercury	7471B	**0.044**	mg/Kg	0.020	0.004	2	12/07/17 11:26	12/07/17	
Selenium	6020A	**2.97**	mg/Kg	1.00	0.03	5	12/14/17 13:55	12/09/17	
Zinc	6020A	**117**	mg/Kg	0.50	0.08	5	12/14/17 13:55	12/09/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-LHL5-171011	**Basis:**	Dry
Lab Code:	K1712347-011		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.29 J**	mg/Kg	0.50	0.02	5	12/14/17 13:58	12/09/17	
Boron	6020A	**0.28 J**	mg/Kg	0.50	0.20	5	12/14/17 13:58	12/09/17	
Cadmium	6020A	**0.010 J**	mg/Kg	0.020	0.003	5	12/14/17 13:58	12/09/17	
Iron	6020A	**18.7**	mg/Kg	0.99	0.09	5	12/14/17 13:58	12/09/17	
Lead	6020A	**0.010** J U 4	mg/Kg	0.020	0.003	5	12/14/17 13:58	12/09/17	
Magnesium	6010C	**1360**	mg/Kg	0.99	0.50	1	12/18/17 11:16	12/09/17	
Mercury	7471B	**0.182**	mg/Kg	0.020	0.004	2	12/07/17 11:29	12/07/17	
Selenium	6020A	**4.36**	mg/Kg	0.99	0.03	5	12/14/17 13:58	12/09/17	
Zinc	6020A	**63.0**	mg/Kg	0.50	0.08	5	12/14/17 13:58	12/09/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(BG)-LHL5-171011	**Basis:**	Dry
Lab Code:	K1712347-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.21 J**	mg/Kg	0.50	0.02	5	12/14/17 16:33	12/09/17	
Boron	6020A	**1.12**	mg/Kg	0.50	0.20	5	12/14/17 16:33	12/09/17	
Cadmium	6020A	**0.066**	mg/Kg	0.020	0.003	5	12/14/17 16:33	12/09/17	
Iron	6020A	**65.5**	mg/Kg	1.0	0.09	5	12/14/17 16:33	12/09/17	
Lead	6020A	**0.069**	mg/Kg	0.020	0.003	5	12/14/17 16:33	12/09/17	
Magnesium	6010C	**2450**	mg/Kg	1.0	0.5	1	12/18/17 11:26	12/09/17	
Mercury	7471B	**0.076**	mg/Kg	0.020	0.004	2	12/07/17 11:42	12/07/17	
Selenium	6020A	**2.8**	mg/Kg	1.0	0.03	5	12/14/17 16:33	12/09/17	
Zinc	6020A	**129**	mg/Kg	0.50	0.08	5	12/14/17 16:33	12/09/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 17:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(BG)-LHL6-171011	**Basis:**	Dry
Lab Code:	K1712347-014		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.25 J**	mg/Kg	0.50	0.02	5	12/14/17 16:47	12/09/17	
Boron	6020A	**0.35 J**	mg/Kg	0.50	0.20	5	12/14/17 16:47	12/09/17	
Cadmium	6020A	**0.007 J**	mg/Kg	0.020	0.003	5	12/14/17 16:47	12/09/17	
Iron	6020A	**18.2**	mg/Kg	1.0	0.09	5	12/14/17 16:47	12/09/17	
Lead	6020A	**0.012** J U [illegible]	mg/Kg	0.020	0.003	5	12/14/17 16:47	12/09/17	
Magnesium	6010C	**1320**	mg/Kg	1.0	0.5	1	12/18/17 11:34	12/09/17	
Mercury	7471B	**0.199**	mg/Kg	0.020	0.004	2	12/07/17 11:52	12/07/17	
Selenium	6020A	**4.9**	mg/Kg	1.0	0.03	5	12/14/17 16:47	12/09/17	
Zinc	6020A	**57.7**	mg/Kg	0.50	0.08	5	12/14/17 16:47	12/09/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 17:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(BG)-LHL6-171011	**Basis:**	Dry
Lab Code:	K1712347-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.21 J**	mg/Kg	0.50	0.02	5	12/14/17 16:49	12/09/17	
Boron	6020A	**0.80**	mg/Kg	0.50	0.20	5	12/14/17 16:49	12/09/17	
Cadmium	6020A	**0.049**	mg/Kg	0.020	0.003	5	12/14/17 16:49	12/09/17	
Iron	6020A	**61.4**	mg/Kg	0.99	0.09	5	12/14/17 16:49	12/09/17	
Lead	6020A	**0.060**	mg/Kg	0.020	0.003	5	12/14/17 16:49	12/09/17	
Magnesium	6010C	**2520**	mg/Kg	0.99	0.50	1	12/18/17 11:47	12/09/17	
Mercury	7471B	**0.065**	mg/Kg	0.020	0.004	2	12/07/17 11:59	12/07/17	
Selenium	6020A	**3.08**	mg/Kg	0.99	0.03	5	12/14/17 16:49	12/09/17	
Zinc	6020A	**109**	mg/Kg	0.50	0.08	5	12/14/17 16:49	12/09/17	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 18:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-LHL6-171011	**Basis:**	Dry
Lab Code:	K1712347-017		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.26 J**	mg/Kg	0.50	0.02	5	12/14/17 16:52	12/09/17	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	12/14/17 16:52	12/09/17	
Cadmium	6020A	**0.008 J**	mg/Kg	0.020	0.003	5	12/14/17 16:52	12/09/17	
Iron	6020A	**18.9**	mg/Kg	1.00	0.09	5	12/14/17 16:52	12/09/17	
Lead	6020A	**0.010** J U Q	mg/Kg	0.020	0.003	5	12/14/17 16:52	12/09/17	
Magnesium	6010C	**1380**	mg/Kg	1.00	0.5	1	12/18/17 11:49	12/09/17	
Mercury	7471B	**0.194**	mg/Kg	0.020	0.004	2	12/07/17 12:02	12/07/17	
Selenium	6020A	**4.20**	mg/Kg	1.00	0.03	5	12/14/17 16:52	12/09/17	
Zinc	6020A	**63.2**	mg/Kg	0.50	0.08	5	12/14/17 16:52	12/09/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 18:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(BG)-LHL6-171011	**Basis:**	Dry
Lab Code:	K1712347-018		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.22 J**	mg/Kg	0.50	0.02	5	12/14/17 17:00	12/09/17	
Boron	6020A	**0.81**	mg/Kg	0.50	0.20	5	12/14/17 17:00	12/09/17	
Cadmium	6020A	**0.052**	mg/Kg	0.020	0.003	5	12/14/17 17:00	12/09/17	
Iron	6020A	**61.2**	mg/Kg	1.00	0.09	5	12/14/17 17:00	12/09/17	
Lead	6020A	**0.069**	mg/Kg	0.020	0.003	5	12/14/17 17:00	12/09/17	
Magnesium	6010C	**2600**	mg/Kg	1.00	0.5	1	12/18/17 11:52	12/09/17	
Mercury	7471B	**0.067**	mg/Kg	0.020	0.004	2	12/07/17 12:05	12/07/17	
Selenium	6020A	**2.46**	mg/Kg	1.00	0.03	5	12/14/17 17:00	12/09/17	
Zinc	6020A	**134**	mg/Kg	0.50	0.08	5	12/14/17 17:00	12/09/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 13:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(GS)-DR-171014	**Basis:**	Dry
Lab Code:	K1712347-020		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.16 J**	mg/Kg	0.50	0.02	5	12/14/17 17:03	12/09/17	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	12/14/17 17:03	12/09/17	
Cadmium	6020A	**0.007 J**	mg/Kg	0.020	0.003	5	12/14/17 17:03	12/09/17	
Iron	6020A	**21.6**	mg/Kg	1.00	0.09	5	12/14/17 17:03	12/09/17	
Lead	6020A	**0.007** J U Q	mg/Kg	0.020	0.003	5	12/14/17 17:03	12/09/17	
Magnesium	6010C	**1160**	mg/Kg	1.00	0.5	1	12/18/17 11:54	12/09/17	
Mercury	7471B	**0.437**	mg/Kg	0.020	0.004	2	12/07/17 12:09	12/07/17	
Selenium	6020A	**3.32**	mg/Kg	1.00	0.03	5	12/14/17 17:03	12/09/17	
Zinc	6020A	**45.1**	mg/Kg	0.50	0.08	5	12/14/17 17:03	12/09/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 13:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(GS)-DR-171014	**Basis:**	Dry
Lab Code:	K1712347-021		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.18 J**	mg/Kg	0.50	0.02	5	12/14/17 17:48	12/09/17	
Boron	6020A	**0.29 J**	mg/Kg	0.50	0.20	5	12/14/17 17:48	12/09/17	
Cadmium	6020A	**0.042**	mg/Kg	0.020	0.003	5	12/14/17 17:48	12/09/17	
Iron	6020A	**82.2**	mg/Kg	1.0	0.09	5	12/14/17 17:48	12/09/17	
Lead	6020A	**0.072**	mg/Kg	0.020	0.003	5	12/14/17 17:48	12/09/17	
Magnesium	6010C	**2020**	mg/Kg	1.0	0.5	1	12/18/17 11:57	12/09/17	
Mercury	7471B	**0.176**	mg/Kg	0.020	0.004	2	12/07/17 12:12	12/07/17	
Selenium	6020A	**2.4**	mg/Kg	1.0	0.03	5	12/14/17 17:48	12/09/17	
Zinc	6020A	**99.7**	mg/Kg	0.50	0.08	5	12/14/17 17:48	12/09/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(BG)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712347-023		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.19 J**	mg/Kg	0.50	0.02	5	12/14/17 17:08	12/09/17	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	12/14/17 17:08	12/09/17	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	12/14/17 17:08	12/09/17	
Iron	6020A	**13.9**	mg/Kg	0.99	0.09	5	12/14/17 17:08	12/09/17	
Lead	6020A	**0.007** J U Q	mg/Kg	0.020	0.003	5	12/14/17 17:08	12/09/17	
Magnesium	6010C	**1310**	mg/Kg	0.99	0.50	1	12/18/17 12:00	12/09/17	
Mercury	7471B	**0.130**	mg/Kg	0.020	0.004	2	12/07/17 12:23	12/07/17	
Selenium	6020A	**1.01**	mg/Kg	0.99	0.03	5	12/14/17 17:08	12/09/17	
Zinc	6020A	**42.9**	mg/Kg	0.50	0.08	5	12/14/17 17:08	12/09/17	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(BG)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712347-024		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.18 J**	mg/Kg	0.50	0.02	5	12/14/17 18:16	12/11/17	
Boron	6020A	**0.39 J**	mg/Kg	0.50	0.20	5	12/14/17 18:16	12/11/17	
Cadmium	6020A	**0.028**	mg/Kg	0.020	0.003	5	12/14/17 18:16	12/11/17	
Iron	6020A	**56.6** J9	mg/Kg	1.00	0.09	5	12/14/17 18:16	12/11/17	
Lead	6020A	**0.277**	mg/Kg	0.020	0.003	5	12/14/17 18:16	12/11/17	
Magnesium	6010C	**2240**	mg/Kg	1.00	0.5	1	12/18/17 12:41	12/11/17	
Mercury	7471B	**0.056**	mg/Kg	0.020	0.004	2	12/07/17 12:26	12/07/17	
Selenium	6020A	**0.70 J**	mg/Kg	1.00	0.03	5	12/14/17 18:16	12/11/17	
Zinc	6020A	**100**	mg/Kg	0.50	0.08	5	12/14/17 18:16	12/11/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712347-026		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.22 J**	mg/Kg	0.50	0.02	5	12/14/17 17:11	12/09/17	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	12/14/17 17:11	12/09/17	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	12/14/17 17:11	12/09/17	
Iron	6020A	**13.5**	mg/Kg	1.00	0.09	5	12/14/17 17:11	12/09/17	
Lead	6020A	**0.004 J V U**	mg/Kg	0.020	0.003	5	12/14/17 17:11	12/09/17	
Magnesium	6010C	**1250**	mg/Kg	1.00	0.5	1	12/18/17 12:02	12/09/17	
Mercury	7471B	**0.163**	mg/Kg	0.020	0.004	2	12/07/17 12:30	12/07/17	
Selenium	6020A	**1.09**	mg/Kg	1.00	0.03	5	12/14/17 17:11	12/09/17	
Zinc	6020A	**50.0**	mg/Kg	0.50	0.08	5	12/14/17 17:11	12/09/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/15/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(BG)-MHL1-171015	**Basis:**	Dry
Lab Code:	K1712347-029		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.20**	**J**	mg/Kg	0.50	0.02	5	12/14/17 17:43	12/09/17	
Boron	6020A	**0.31**	**J**	mg/Kg	0.50	0.20	5	12/14/17 17:43	12/09/17	
Cadmium	6020A	**0.005**	**J**	mg/Kg	0.020	0.003	5	12/14/17 17:43	12/09/17	
Iron	6020A	**18.2**		mg/Kg	1.0	0.09	5	12/14/17 17:43	12/09/17	
Lead	6020A	**0.010**	JVQ	mg/Kg	0.020	0.003	5	12/14/17 17:43	12/09/17	
Magnesium	6010C	**1230**		mg/Kg	1.0	0.5	1	12/18/17 12:25	12/09/17	
Mercury	7471B	**0.246**		mg/Kg	0.020	0.004	2	12/07/17 12:43	12/07/17	
Selenium	6020A	**2.0**		mg/Kg	1.0	0.03	5	12/14/17 17:43	12/09/17	
Zinc	6020A	**50.6**		mg/Kg	0.50	0.08	5	12/14/17 17:43	12/09/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/15/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(BG)-MHL1-171015	**Basis:**	Dry
Lab Code:	K1712347-030		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.18 J**	mg/Kg	0.50	0.02	5	12/14/17 17:46	12/09/17	
Boron	6020A	**0.40 J**	mg/Kg	0.50	0.20	5	12/14/17 17:46	12/09/17	
Cadmium	6020A	**0.020 J**	mg/Kg	0.020	0.003	5	12/14/17 17:46	12/09/17	
Iron	6020A	**60.4**	mg/Kg	1.00	0.09	5	12/14/17 17:46	12/09/17	
Lead	6020A	**0.084**	mg/Kg	0.020	0.003	5	12/14/17 17:46	12/09/17	
Magnesium	6010C	**2510**	mg/Kg	1.00	0.5	1	12/18/17 12:28	12/09/17	
Mercury	7471B	**0.076**	mg/Kg	0.020	0.004	2	12/07/17 12:46	12/07/17	
Selenium	6020A	**1.31**	mg/Kg	1.00	0.03	5	12/14/17 17:46	12/09/17	
Zinc	6020A	**120**	mg/Kg	0.50	0.08	5	12/14/17 17:46	12/09/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/15/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-MHL1-171015	**Basis:**	Dry
Lab Code:	K1712347-032		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.22 J**	mg/Kg	0.50	0.02	5	12/14/17 18:51	12/08/17	
Boron	6020A	**0.28 J**	mg/Kg	0.50	0.20	5	12/14/17 18:51	12/08/17	
Cadmium	6020A	**0.009 J**	mg/Kg	0.020	0.003	5	12/14/17 18:51	12/08/17	
Iron	6020A	**24.6**	mg/Kg	1.0	0.09	5	12/14/17 18:51	12/08/17	
Lead	6020A	**0.011** JU 6	mg/Kg	0.020	0.003	5	12/14/17 18:51	12/08/17	
Magnesium	6010C	**1170**	mg/Kg	1.0	0.5	1	12/18/17 13:23	12/08/17	
Mercury	7471B	**0.161**	mg/Kg	0.020	0.004	2	12/07/17 12:49	12/07/17	
Selenium	6020A	**1.7**	mg/Kg	1.0	0.03	5	12/14/17 18:51	12/08/17	
Zinc	6020A	**48.5**	mg/Kg	0.50	0.08	5	12/14/17 18:51	12/08/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/15/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(BG)-MHL1-171015	**Basis:**	Dry
Lab Code:	K1712347-033		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.25 J**	mg/Kg	0.50	0.02	5	12/14/17 19:04	12/08/17	
Boron	6020A	**1.40**	mg/Kg	0.50	0.20	5	12/14/17 19:04	12/08/17	
Cadmium	6020A	**0.019 J**	mg/Kg	0.020	0.003	5	12/14/17 19:04	12/08/17	
Iron	6020A	**86.9**	mg/Kg	1.00	0.09	5	12/14/17 19:04	12/08/17	
Lead	6020A	**0.122**	mg/Kg	0.020	0.003	5	12/14/17 19:04	12/08/17	
Magnesium	6010C	**2330**	mg/Kg	1.00	0.5	1	12/18/17 13:44	12/08/17	
Mercury	7471B	**0.051**	mg/Kg	0.020	0.004	2	12/07/17 13:12	12/07/17	
Selenium	6020A	**1.31**	mg/Kg	1.00	0.03	5	12/14/17 19:04	12/08/17	
Zinc	6020A	**125**	mg/Kg	0.50	0.08	5	12/14/17 19:04	12/08/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(BG)-DR-171016	**Basis:**	Dry
Lab Code:	K1712347-035		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.09 J**	mg/Kg	0.50	0.02	5	12/14/17 19:12	12/08/17	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	12/14/17 19:12	12/08/17	
Cadmium	6020A	**0.007 J**	mg/Kg	0.020	0.003	5	12/14/17 19:12	12/08/17	
Iron	6020A	**19.4**	mg/Kg	1.0	0.09	5	12/14/17 19:12	12/08/17	
Lead	6020A	**0.008 J**	mg/Kg	0.020	0.003	5	12/14/17 19:12	12/08/17	
Magnesium	6010C	**1100**	mg/Kg	1.0	0.5	1	12/18/17 13:46	12/08/17	
Mercury	7471B	**0.182**	mg/Kg	0.020	0.004	2	12/07/17 13:15	12/07/17	
Selenium	6020A	**2.4**	mg/Kg	1.0	0.03	5	12/14/17 19:12	12/08/17	
Zinc	6020A	**48.3**	mg/Kg	0.50	0.08	5	12/14/17 19:12	12/08/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(BG)-DR-171016	**Basis:**	Dry
Lab Code:	K1712347-036		

Total Metals

Analyte Name	Analysis Method	Result	Q	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.13**	**J**	mg/Kg	0.50	0.02	5	12/14/17 19:15	12/08/17	
Boron	6020A	ND	U	mg/Kg	0.50	0.20	5	12/14/17 19:15	12/08/17	
Cadmium	6020A	**0.023**		mg/Kg	0.020	0.003	5	12/14/17 19:15	12/08/17	
Iron	6020A	**76.4**		mg/Kg	1.0	0.09	5	12/14/17 19:15	12/08/17	
Lead	6020A	**0.072**		mg/Kg	0.020	0.003	5	12/14/17 19:15	12/08/17	
Magnesium	6010C	**1980**		mg/Kg	1.0	0.5	1	12/18/17 13:49	12/08/17	
Mercury	7471B	**0.090**		mg/Kg	0.020	0.004	2	12/07/17 13:21	12/07/17	
Selenium	6020A	**1.8**		mg/Kg	1.0	0.03	5	12/14/17 19:15	12/08/17	
Zinc	6020A	**104**		mg/Kg	0.50	0.08	5	12/14/17 19:15	12/08/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 12:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(GS)-DR-171016	**Basis:**	Dry
Lab Code:	K1712347-038		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.37 J**	mg/Kg	0.50	0.02	5	12/14/17 19:17	12/08/17	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	12/14/17 19:17	12/08/17	
Cadmium	6020A	**0.020 J**	mg/Kg	0.020	0.003	5	12/14/17 19:17	12/08/17	
Iron	6020A	**21.6**	mg/Kg	1.00	0.09	5	12/14/17 19:17	12/08/17	
Lead	6020A	**0.011 J**	mg/Kg	0.020	0.003	5	12/14/17 19:17	12/08/17	
Magnesium	6010C	**1020**	mg/Kg	1.00	0.5	1	12/18/17 13:52	12/08/17	
Mercury	7471B	**0.394**	mg/Kg	0.020	0.004	2	12/07/17 13:25	12/07/17	
Selenium	6020A	**3.87**	mg/Kg	1.00	0.03	5	12/14/17 19:17	12/08/17	
Zinc	6020A	**55.2**	mg/Kg	0.50	0.08	5	12/14/17 19:17	12/08/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 12:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(GS)-DR-171016	**Basis:**	Dry
Lab Code:	K1712347-039		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.39 J**	mg/Kg	0.50	0.02	5	12/14/17 19:20	12/08/17	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	12/14/17 19:20	12/08/17	
Cadmium	6020A	**0.051**	mg/Kg	0.020	0.003	5	12/14/17 19:20	12/08/17	
Iron	6020A	**138**	mg/Kg	1.00	0.09	5	12/14/17 19:20	12/08/17	
Lead	6020A	**0.104**	mg/Kg	0.020	0.003	5	12/14/17 19:20	12/08/17	
Magnesium	6010C	**1870**	mg/Kg	1.00	0.5	1	12/18/17 13:54	12/08/17	
Mercury	7471B	**0.162**	mg/Kg	0.020	0.004	2	12/07/17 13:28	12/07/17	
Selenium	6020A	**3.00**	mg/Kg	1.00	0.03	5	12/14/17 19:20	12/08/17	
Zinc	6020A	**127**	mg/Kg	0.50	0.08	5	12/14/17 19:20	12/08/17	

Wet, dry fish tissue 1412 1

VALIDATION WORKSHEET

Method: Methyl mercury
Date Reviewed: 1.9.18
Sample Collection Dates: 10.5 - 16/17

SDG: K1712347
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-002(BG)-LHL3-171005	2 FWB-002(BG)-LHL3-171005	3 FF-001(BG)-LHL1-171011	4 FWB-001(BG)-LHL1-171011	5 FF-001(BG)-LHL5-171011	6 FWB-001(BG)-LHL5-171011	7 FF-002(BG)-LHL5-171011	8 FWB-002(BG)-LHL5-171011	9 FF-001(BG)-LHL6-171011	10 FWB-001(BG)-LHL6-171011	11 FF-002(BG)-LHL6-171011	12 FWB-002(BG)-LHL6-171011	13 FF-001(GS)-DL-171014	14 FWB-001(GS)-DL-171014	15 FF-001(BG)-MHL3-171014	16 FWB-001(BG)-MHL3-171014	17 FF-002(BG)-MHL3-171014	18 FWB-002(BG)-MHL3-171014	19 FF-001(BG)-MHL4-171005	20 FWB-001(BG)-MHL1-171005
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS QCS	A																			
duplicate RPD																				
MS/MSD: 27s -011s, 125, 260s	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

0°C

SPL 10.5.17; 10.11.17; 10.14.17 10.15.17, 10.16.17 90 day

prep 12.4.17, 12.6.17 12

MW 12.5.17 12.12.17

OPR ok

QCS ok

No FDs in this set

Fish tissue IVT 2

VALIDATION WORKSHEET

Method: Methyl Mercury

Date Reviewed: 1.10.18

Sample Collection Dates: 10.5 - 10.16.17

SDG: K1712347

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-002(BG)MeHg-171015	2 FWB-002(BG)-MeHg-171015	3 FF-001(BG)-02-171010	4 FWB-001(BG)-02-171010	5 FF-002(GS)-02-171010	6 FWB-002(GS)-02-171014	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A	→	→	→	→	→														
Holding Times	A	→	→	→	→	→														
Completion	A	→	→	→	→	→														
Method Blanks	A	→	→	→	→	→														
LCS QC	A	→	→	→	→	→														
duplicate RPD																				
MS/MSD:	A	→	→	→	→	→														

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712347
Date Collected: 10/05-14/17
Date Received: 11/08/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(BG)-LHL3-171005	K1712347-002	9.7	2.9	1	12/04/17	12/05/17	125	
FWB-002(BG)-LHL3-171005	K1712347-003	9.9	3.0	1	12/04/17	12/05/17	57.9	
FF-001(BG)-LHL1-171011	K1712347-005	9.9	3.0	1	12/04/17	12/05/17	186	
FWB-001(BG)-LHL1-171011	K1712347-006	9.9	3.0	1	12/04/17	12/05/17	74.9	
FF-001(BG)-LHL5-171011	K1712347-008	9.8	3.0	1	12/04/17	12/05/17	150	
FWB-001(BG)-LHL5-171011	K1712347-009	9.8	3.0	1	12/04/17	12/05/17	54.8	
FF-002(BG)-LHL5-171011	K1712347-011	10	3.0	1	12/04/17	12/05/17	187	
FWB-002(BG)-LHL5-171011	K1712347-012	9.9	3.0	1	12/04/17	12/05/17	69.2	
FF-001(BG)-LHL6-171011	K1712347-014	9.6	2.9	1	12/04/17	12/05/17	213	
FWB-001(BG)-LHL6-171011	K1712347-015	9.5	2.9	1	12/04/17	12/05/17	66.9	
FF-002(BG)-LHL6-171011	K1712347-017	9.9	3.0	1	12/04/17	12/05/17	183	
FWB-002(BG)-LHL6-171011	K1712347-018	9.8	3.0	1	12/04/17	12/05/17	69.1	
FF-001(GS)-DR-171014	K1712347-020	9.9	3.0	1	12/04/17	12/05/17	375	
FWB-001(GS)-DR-171014	K1712347-021	10	3.0	1	12/04/17	12/05/17	187	
Method Blank 1	K1712347-MB1	10	3.0	1	12/04/17	12/05/17	ND	
Method Blank 2	K1712347-MB2	10	3.0	1	12/04/17	12/05/17	ND	
Method Blank 3	K1712347-MB3	10	3.0	1	12/04/17	12/05/17	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14-16/17
Sample Matrix:	Tissue	**Date Received:**	11/08/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(BG)-MHL3-171014	K1712347-023	9.9	3.0	1	12/06/17	12/12/17	150	
FWB-001(BG)-MHL3-171014	K1712347-024	9.8	2.9	1	12/06/17	12/12/17	57.3	
FF-002(BG)-MHL3-171014	K1712347-026	9.8	3.0	1	12/06/17	12/12/17	156	
FWB-002(BG)-MHL3-171014	K1712347-027	9.8	3.0	1	12/06/17	12/12/17	62.4	
FF-001(BG)-MHL1-171015	K1712347-029	9.9	3.0	1	12/06/17	12/12/17	192	
FWB-001(BG)-MHL1-171015	K1712347-030	9.8	3.0	1	12/06/17	12/12/17	87.1	
FF-002(BG)-MHL1-171015	K1712347-032	9.7	2.9	1	12/06/17	12/12/17	169	
FWB-002(BG)-MHL1-171015	K1712347-033	9.9	3.0	1	12/06/17	12/12/17	65.8	
FF-001(BG)-DR-171016	K1712347-035	9.8	3.0	1	12/06/17	12/12/17	253	
FWB-001(BG)-DR-171016	K1712347-036	9.8	3.0	1	12/06/17	12/12/17	93.8	
FF-002(GS)-DR-171016	K1712347-038	10	3.0	1	12/06/17	12/12/17	334	
FWB-002(GS)-DR-171016	K1712347-039	9.8	3.0	1	12/06/17	12/12/17	162	
Method Blank 1	K1712347-MB1	10	3.0	1	12/06/17	12/12/17	ND	
Method Blank 2	K1712347-MB2	10	3.0	1	12/06/17	12/12/17	ND	
Method Blank 3	K1712347-MB3	10	3.0	1	12/06/17	12/12/17	ND	

1632A

fish tissue MS 1

VALIDATION WORKSHEET

Method: As III 1020A (ORG) ASV calculation only - not validated

Date Reviewed: 1.10.18

Sample Collection Dates: 10.5 - 10.16.17

SDG: 1717347

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-002(BG)-LHL3-171005	2 FWB-002(BG)-LHL3-171005	3 FF-001(BG)-LHL1-171011	4 FWB-001(BG)-LHL1-171011	5 FF-001(BG)-LHS5-171011	6 FWB-001(BG)-LHS5-171011	7 FF-002(BG)-LHL5-171011	8 FWB-002(BG)-LHL5-171011	9 FF-001(BG)-LHL6-171011	10 FWB-001(BG)-LHL6-171011	11 FF-002(BG)-LHL6-171011	12 FWB-002(BG)-LHL6-171011	13 FF-001(GS)-DL-171014	14 FWB-001(GS)-DL-171014	15 FF-001(BG)-MHL3-171014	16 FWB-001(BG)-MHL3-171014	17 FF-002(BG)-MHL3-171014	18 FWB-002(BG)-MHL3-171014	19 FF-001(BG)-MHL4-171015	20 FWB-001(BG)-MHL1-171015
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS	A																			
duplicate RPD																				
MS/MSD:	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

SpK 10.5, 10.11, 10.14, 10.15, 10.16.17

Prep 12.13, 12.20

Run 12.14.17 12.21.17

OPR ok

16324 Fish tissue IVT 2

VALIDATION WORKSHEET

Method: AS11 Dry only

Date Reviewed: 1.10.18

Sample Collection Dates: 10.5 - 10.16.17

SDG: K1712347

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-002(BG)-MHU-171005	2 FWB-002(BG)-MHU-171005	3 FF-001(BG)-DE-171010	4 FWB-001(BG)-DE-171010	5 FF-002(GS)-DE-171010	6 FWB-002(GS)-DE-171004	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A	→	→	→	→	→														
Holding Times	A	→	→	→	→	→														
Completion	A	→	→	→	→	→														
Method Blanks	A	→	→	→	→	→														
LCS	A	→	→	→	→	→														
duplicate RPD																				
MS/MSD:	A	→	→	→	→	→														

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17
Sample Matrix:	Tissue	**Date Received:**	11/08/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(BG)-LHL3-171005	K1712347-002	0.08	0.04	1	12/13/17	12/14/17	ND	
FWB-002(BG)-LHL3-171005	K1712347-003	0.08	0.04	1	12/13/17	12/14/17	0.04	J
FF-001(BG)-LHL1-171011	K1712347-005	0.08	0.04	1	12/13/17	12/14/17	ND	
FWB-001(BG)-LHL1-171011	K1712347-006	0.08	0.04	1	12/13/17	12/14/17	ND	
FF-001(BG)-LHL5-171011	K1712347-008	0.08	0.04	1	12/13/17	12/14/17	ND	
FWB-001(BG)-LHL5-171011	K1712347-009	0.08	0.04	1	12/13/17	12/14/17	ND	
FF-002(BG)-LHL5-171011	K1712347-011	0.08	0.04	1	12/13/17	12/14/17	ND	
FWB-002(BG)-LHL5-171011	K1712347-012	0.08	0.04	1	12/13/17	12/14/17	ND	
FF-001(BG)-LHL6-171011	K1712347-014	0.08	0.04	1	12/13/17	12/14/17	ND	
FWB-001(BG)-LHL6-171011	K1712347-015	0.08	0.04	1	12/13/17	12/14/17	ND	
FF-002(BG)-LHL6-171011	K1712347-017	0.08	0.04	1	12/13/17	12/14/17	ND	
FWB-002(BG)-LHL6-171011	K1712347-018	0.08	0.04	1	12/13/17	12/14/17	ND	
FF-001(GS)-DR-171014	K1712347-020	0.08	0.04	1	12/13/17	12/14/17	ND	
FWB-001(GS)-DR-171014	K1712347-021	0.08	0.04	1	12/13/17	12/14/17	ND	
FF-001(BG)-MHL3-171014	K1712347-023	0.08	0.04	1	12/13/17	12/14/17	ND	
FWB-001(BG)-MHL3-171014	K1712347-024	0.08	0.04	1	12/13/17	12/14/17	ND	
FF-001(BG)-MHL1-171015	K1712347-029	0.08	0.04	1	12/13/17	12/14/17	ND	
FWB-001(BG)-MHL1-171015	K1712347-030	0.08	0.04	1	12/13/17	12/14/17	ND	
FF-002(BG)-MHL1-171015	K1712347-032	0.08	0.04	1	12/13/17	12/14/17	ND	
FWB-002(BG)-MHL1-171015	K1712347-033	0.08	0.04	1	12/13/17	12/14/17	ND	
Method Blank	K1712347-MB1	0.08	0.04	1	12/13/17	12/14/17	ND	
Method Blank	K1712347-MB2	0.08	0.04	1	12/13/17	12/14/17	ND	
Method Blank	K1712347-MB3	0.08	0.04	1	12/13/17	12/14/17	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712347
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17
Sample Matrix:	Tissue	**Date Received:**	11/08/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(BG)-MHL3-171014	K1712347-026	0.08	0.04	1	12/20/17	12/21/17	ND	
FWB-002(BG)-MHL3-171014	K1712347-027	0.08	0.04	1	12/20/17	12/21/17	0.04	J
FF-001(BG)-DR-171016	K1712347-035	0.08	0.04	1	12/20/17	12/21/17	ND	
FWB-001(BG)-DR-171016	K1712347-036	0.08	0.04	1	12/20/17	12/21/17	ND	
FF-002(GS)-DR-171016	K1712347-038	0.08	0.04	1	12/20/17	12/21/17	ND	
FWB-002(GS)-DR-171016	K1712347-039	0.08	0.04	1	12/20/17	12/21/17	ND	
Method Blank	K1712347-MB1	0.08	0.04	1	12/20/17	12/21/17	ND	
Method Blank	K1712347-MB2	0.08	0.04	1	12/20/17	12/21/17	ND	
Method Blank	K1712347-MB3	0.08	0.04	1	12/20/17	12/21/17	ND	

16321A ~~UCT~~/dry 1N2

VALIDATION WORKSHEET

Method: Total Inorganic Arsenic

Date Reviewed: 1.10.18

Sample Collection Dates: 10.5-10.16.17

SDG: 1617/2347

Reviewer: C Jensen

The following data validation areas were reviewed:

Validation Criteria	1 FF-002(BG)-LHL3-171005	2 FWB-002(BG)-LHL3-171005	3 FF-001(BG)-LHL1-171011	4 FWB-001(BG)-LHL1-171011	5 FF-001(BG)-LHL5-171011	6 FWB-001(BG)-LHL5-171011	7 FF-002(BG)-LHL5-171011	8 FWB-002(BG)-LHL5-171011	9 FF-001(BG)-LHL6-171011	10 FWB-001(BG)-LHL6-171011	11 FF-002(BG)-LHL6-171011	12 FWB-002(BG)-LHL6-171011	13 FF-001(GS)-DL-171014	14 FWB-001(GS)-DL-171014	15 FF-001(BG)-MHL3-171014	16 FWB-001(BG)-MHL3-171014	17 FF-002(BG)-MHL3-171014	18 FWB-002(BG)-MHL3-171014	19 FF-001(BG)-MHL4-171005	20 FWB-001(BG)-MHL1-171005
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS QCS	A																			
Duplicate RPD	AR																			
MS/MSD: 0	X+						X										X	X		

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

OPR - OK MS/MSD -

QCS - OK

12/13/17 - OK ok

MS low %R 12/13/17 34,337-611 } all ~~more~~ ① FF-002(BG)-LHL5-171011 J/UJ 8 parent spl. only

12/20/17 42,327-826 } all ~~more~~ ① J/UJ 8 parent only

12/20 - 022 - OK FF-002(BG)-MHL3-171014

Spl 10.5-10/16.17

PMP 12.13.17 12.20.17

MM 12.15.17 ~~12.20.17~~ 12.22.17

Fish tissue IVT 2

VALIDATION WORKSHEET

Method: Total Inorg Arsenic

Date Reviewed: 1.10.18

Sample Collection Dates: 10.5-10.16.17

SDG: K1712347

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-002(BG) MWH-17105	2 FWB-002(BG) MWH-17105	3 FF-001(BG) DE-171016	4 FWB-001(BG) DE-171016	5 FF-002(GS) DE-171019	6 FWB-002(GS) DE-171019	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS QLS	A																			
duplicate RPD																				
MS/MSD:	A		X	X	X	X														

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712347
Date Collected: 10/05/17
Date Received: 11/08/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(BG)-LHL3-171005	K1712347-002	0.039	0.014	1	12/13/17	12/15/17	ND	
FWB-002(BG)-LHL3-171005	K1712347-003	0.039	0.014	1	12/13/17	12/15/17	0.049	
FF-001(BG)-LHL1-171011	K1712347-005	0.039	0.014	1	12/13/17	12/15/17	ND	
FWB-001(BG)-LHL1-171011	K1712347-006	0.039	0.014	1	12/13/17	12/15/17	0.030	J
FF-001(BG)-LHL5-171011	K1712347-008	0.040	0.014	1	12/13/17	12/15/17	ND	
FWB-001(BG)-LHL5-171011	K1712347-009	0.039	0.014	1	12/13/17	12/15/17	0.021	J
FF-002(BG)-LHL5-171011	K1712347-011	0.039	0.014	1	12/13/17	12/15/17	ND UJ	8
FWB-002(BG)-LHL5-171011	K1712347-012	0.040	0.014	1	12/13/17	12/15/17	0.019	J
FF-001(BG)-LHL6-171011	K1712347-014	0.040	0.014	1	12/13/17	12/15/17	ND	
FWB-001(BG)-LHL6-171011	K1712347-015	0.040	0.014	1	12/13/17	12/15/17	ND	
FF-002(BG)-LHL6-171011	K1712347-017	0.039	0.014	1	12/13/17	12/15/17	ND	
FWB-002(BG)-LHL6-171011	K1712347-018	0.039	0.014	1	12/13/17	12/15/17	0.016	J
FF-001(GS)-DR-171014	K1712347-020	0.040	0.014	1	12/13/17	12/15/17	ND	
FWB-001(GS)-DR-171014	K1712347-021	0.039	0.014	1	12/13/17	12/15/17	ND	
FF-001(BG)-MHL3-171014	K1712347-023	0.039	0.014	1	12/13/17	12/15/17	ND	
FWB-001(BG)-MHL3-171014	K1712347-024	0.040	0.014	1	12/13/17	12/15/17	0.019	J
FF-001(BG)-MHL1-171015	K1712347-029	0.039	0.014	1	12/13/17	12/15/17	ND	
FWB-001(BG)-MHL1-171015	K1712347-030	0.040	0.014	1	12/13/17	12/15/17	ND	
FF-002(BG)-MHL1-171015	K1712347-032	0.040	0.014	1	12/13/17	12/15/17	ND	
FWB-002(BG)-MHL1-171015	K1712347-033	0.040	0.014	1	12/13/17	12/15/17	0.020	J
Method Blank	K1712347-MB1	0.040	0.014	1	12/13/17	12/15/17	ND	
Method Blank	K1712347-MB2	0.040	0.014	1	12/13/17	12/15/17	ND	
Method Blank	K1712347-MB3	0.040	0.014	1	12/13/17	12/15/17	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712347
Date Collected: 10/14/17
Date Received: 11/08/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(BG)-MHL3-171014	K1712347-026	0.039	0.014	1	12/20/17	12/22/17	ND	U
FWB-002(BG)-MHL3-171014	K1712347-027	0.039	0.014	1	12/20/17	12/22/17	0.046	
FF-001(BG)-DR-171016	K1712347-035	0.040	0.014	1	12/20/17	12/22/17	ND	
FWB-001(BG)-DR-171016	K1712347-036	0.039	0.014	1	12/20/17	12/22/17	0.040	
FF-002(GS)-DR-171016	K1712347-038	0.039	0.014	1	12/20/17	12/22/17	ND	
FWB-002(GS)-DR-171016	K1712347-039	0.040	0.014	1	12/20/17	12/22/17	0.035	J
Method Blank	K1712347-MB1	0.040	0.014	1	12/20/17	12/22/17	ND	
Method Blank	K1712347-MB2	0.040	0.014	1	12/20/17	12/22/17	ND	
Method Blank	K1712347-MB3	0.040	0.014	1	12/20/17	12/22/17	ND	

ALS

CHAIN OF CUSTODY

83679

004

SR# K1712347

COC Set ____ of ____

COC# BIOTA#2

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
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Project Name: BU-HERRINGTON LAKE	Project Number: 62421243A
Project Manager: MARY SORENSEN	
Company: RAMBOLL ENVIRON	
Address: 1100 PARKWOOD CIR., SUITE 310, ATL, GA	
Phone #: 770.548.1799	email: msorensen@ramboll.com
Sampler Signature: Katrina Leigh	Sampler Printed Name: KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D 300.0 / SO4	28D 7471B / Hg	180D 1630 Methyl Hg	180D 6010C / Metals T	180D 6020A / Metals T	1 1632 / As INOR	2 1632 / As 3	3 1632 / As 5	4 PSTMDBAILEY WATER POINT	5 LIPIDS	Remarks
1. FUN-002(B6)-LHL3-I	71005	10-5-17	1630	T	4		X	X	X	X	X	X	X	X	X	
2. FUN-001(B6)-LHL-I	71011	10-11-17	0945	|	3		X	X	X	X	X	X	X	X	X	
3. FUN-001(B6)-LHL5-I	71011	10-11-17	1330	|	3		X	X	X	X	X	X	X	X	X	
4. FUN-002(B6)-LHL5-I	71011	10-11-17	1500	|	4		X	X	X	X	X	X	X	X	X	*MS/MSD
5. FUN-001(B6)-LHL6-I	71011	10-11-17	1700	|	3		X	X	X	X	X	X	X	X	X	
6. FUN-002(B6)-LHL6-I	71011	10-11-17	1800	|	3		X	X	X	X	X	X	X	X	X	
7. FUN-001(B5)-DR-I	71014	10-14-17	1330	|	3		X	X	X	X	X	X	X	X	X	
8. FUN-001(B6)-MHL3-I	71014	10-14-17	1400	|	3		X	X	X	X	X	X	X	X	X	
9. FUN-002(B6)-MHL3-I	71014	10-14-17	1500	|	4		X	X	X	X	X	X	X	X	X	*MS/MSD
10. FUN-001(B6)-MHL-I	71015	10-15-17	1030	↓	4		X	X	X	X	X	X	X	X	X	

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.# _____

Bill To: _____

Turnaround Requirements

- X 24 hr. ___ 48 hr.
- ___ 5 Day
- ___ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*FISH TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP

**EACH FISH TO BE SPLIT INTO FILLET (FF) + REMAINS (FWB) AND COMPOSITED ACCORDING TO EMAIL INSTRUCTIONS

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Katrina Leigh	Signature: CODY GRAVES	Signature	Signature	Signature	Signature
Printed Name: KATRINA LEIGH	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: REH	Firm: 11/8/17 0950	Firm	Firm	Firm	Firm
Date/Time: 11/7/17 1400	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

ALS

CHAIN OF CUSTODY
83679

004

SR# K1712347

COC Set ____ of ____

COC# BOTA#3

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name	BU-HERRINGTON LAKE
Project Number	0212143A
Project Manager	MARY SORENSEN
Company	RAMBOLL ENVIRON
Address	11600 FAIRWOOD CIR, SUITE 310, ATL, GA
Phone #	770.548.1799
email	msorensen@ramboll.com
Sampler Signature	Katrina Leigh
Sampler Printed Name	KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D 300.0 / SO4	28D 7471B / Hg	180D 1630 ~~Modified~~ Methyl Hg	180D 6010C / Metals T	180D 6020A / Metals T	1 1633 / As IWDR	2 1632 / As 3	3 1632 / As 5	4 ASTM D5516 / WATER COLUMN	5 WPIDS	Remarks
1. FLW-002(B6)-MHLI-171015		10-5-17	1130	T	4		X	X	X	X	X	X	X	X	X	
2. FLW-001(B6)-DR-171016		10-16-17	1100	↓	2		X	X	X	X	X	X	X	X	X	
3. FLW-002(B6)-DR-171016		10-16-17	1200	↓	4		X	X	X	X	X	X	X	X	X	
4.																
5.																
6.																
7.																
8.																
9.																
10.																

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.# _____

Bill To: _____

Turnaround Requirements

___ 24 hr. ___ 48 hr.

X 5 Day Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

* FISH TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP

** EACH FISH TO BE SPLIT INTO FILLET (FF) + REMAINS (FWB) AND COMPOSITED ACCORDING TO EMAIL INSTRUCTIONS

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Katrina Leigh	Signature: CODY GRAVES	Signature	Signature	Signature	Signature
Printed Name: KATRINA LEIGH	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: REH	Firm	Firm	Firm	Firm	Firm
Date/Time: 11/7/17 1400	Date/Time: 11/8/17 0950	Date/Time	Date/Time	Date/Time	Date/Time

PC MH

Cooler Receipt and Preservation Form

Client Rambol Service Request K17 17347

Received: 11/8/17 Opened: 11/8/17 By: CG Unloaded: 11/8/17 By: CG

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? _____
   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
-18.1	-18.1	—	—	0.0	390	83679	7883 7072 4970	

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

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: _____

fish tissue LUL4

1

L6324 Dry

VALIDATION WORKSHEET

Method: Inorganic Arsenic

SDG: K1712350

Date Reviewed: 1.10.18

Reviewer: C Jensen

Sample Collection Dates: 10.3-10.5.17

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(BG)-LHL4-171003	2 FWB-001(BG)-LHL4-171003	3 FF-002(BG)-LHL4-171003	4 FWB-002(BG)-LHL4-171003	5 FF-001(BG)-CT-171004	6 FWB-001(BG)-CT-171004	7 FF-001(BG)-CT-171004-FD	8 FWB-001(BG)-CT-171004-FD	9 FF-002(BG)-CT-171004	10 FWB-002(BG)-CT-171004	11 FF-002(BG)-CT-171004-FD	12 FWB-002(BG)-CT-171004-FD	13 FF-001(BG)-HP-171004	14 FWB-001(BG)-HP-171004	15 FF-002(BG)-HP-171004	16 FWB-002(BG)-HP-171004	17 FF-002(BG)-HP-171004-FD	18 FWB-002(BG)-HP-171004-FD	19 FF-002(BG)-LHL4-171004	20 FWB-002(BG)-LHL4-171004
Completeness of Analyses	A																			
Holding Times	A																			
Initial Calibration	A																			
Continuing Calibration	A																			
Method Blanks	A																			
LCS																				
Surrogate %R or duplicate RPD																				
MS/MSD:	A																			
Reporting Limits	A																			
Completeness of Analyte List	A																			
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SM 10.3, 10.4, 10.5.17

prep 12.27.17 12.20.17

run 12.29.17 12.22.17

FD in spreadsheet in report

MS 12/20 low %R 42, 36% (50-150) all applicable extr 12/20 J/UJ &

FF-001(BG)-LHL2-171005

FWB-001(BG)-LHL2-171005

FF-002(BG)-LHL2-171005

FWB-002(BG)-LHL2-171005

FF-001(BG)-LHL3-171005

FWB-001(BG)-LHL3-171005

VALIDATION WORKSHEET

Method: 8260D As Dry
Date Reviewed: 1.11.18
Sample Collection Dates: 10.3 - 10.5.17
The following data validation areas were reviewed:

SDG: KL7 12350
Reviewer: C Jensen

Sample Identification / Validation Criteria	1 FF-001(BG)-LHL2-171005	2 FWB-001(BG)-LHL2-171005	3 FF-002(BG)-LHL2-171005	4 FWB-002(BG)-LHL2-171005	5 FF-001(BG)-LHL3-171005	6 FWB-001(BG)-LHL3-171005	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→	→	→														
Holding Times	A	→	→	→	→	→														
Initial Calibration	A	→	→	→	→	→														
Continuing Calibration	A	→	→	→	→	→														
Method Blanks	A	→	→	→	→	→														
LCS																				
Surrogate %R or duplicate RPD																				
MS/MSD:	X	X	X	X	X	X														
Reporting Limits	A	→	→	→	→	→	→													
Completeness of Analyte List	A	→	→	→	→	→	→													
Field Duplicate Pair :																				
Equip /Field Blank																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SDG: K17/2350

Project: Herr UL

Date: 1.11.18

Method: Mercury As 1632A

ICV %R	.191/.2=.95 .194/.2=.97	lab reported	95 97
CCV %R	.191/.2=.96 .196/.2=.98	lab reported	90 98
LCS	-.006 1.1 - .528/1.17=.91	lab reported	91
ICS %R	-.003 1.03-.019/1.16=.87	lab reported	86
MS %R		lab reported	
MS/MSD %RPD	.003 $\frac{1.03-1.1}{1.03+1.1/2} = \frac{-.07}{1.065} = .065$	lab reported	7
Duplicate %D		lab reported	
High Std Check	MS 12/20 -.026 low .502/1.19=.42 .421/1.18=.35	lab reported	42 35
Low Cal Check		lab reported	
Serial D %		lab reported	
Sample Recalculation		lab reported	
other (moisture)		lab reported	
OPR	.356/.4=89 .292/.4=73		89 73

SDG K1712350	Analyte Inorganics 16321	
Project: Herr. Lk		
Date: 1.19.18		
002 Sample ID FF-001(BG)-LHLU-171003	Lab reported ND ug/kg	mg/Kg mg/L
.06 X10 / 2 X .253 X 1000	= .001	ug/L
Calulation		
003 Sample ID FWB-001(BG)-LHLU-171003	Lab reported .019 ug/kg	mg/Kg mg/L
.95 X 10 / 2 X .253	/1000 = .0187	ug/L
Calulation		
005 Sample ID FF-002(BG)-LHLU-171003	Lab reported ND ug/kg	mg/Kg mg/L
		ug/L
Calulation -.013 X10 / 2 X .255 X 1000	= 0	
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712350
Date Collected: 10/03/17
Date Received: 11/08/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(BG)-LHL4-171003	K1712350-002	0.039	0.014	1	12/27/17	12/29/17	ND	
FWB-001(BG)-LHL4-171003	K1712350-003	0.040	0.014	1	12/27/17	12/29/17	0.019	J
FF-002(BG)-LHL4-171003	K1712350-005	0.039	0.014	1	12/27/17	12/29/17	ND	
FWB-002(BG)-LHL4-171003	K1712350-006	0.039	0.014	1	12/27/17	12/29/17	0.028	J
FF-001(BG)-CI-171004	K1712350-008	0.040	0.014	1	12/27/17	12/29/17	ND	
FWB-001(BG)-CI-171004	K1712350-009	0.039	0.014	1	12/27/17	12/29/17	0.274	
FF-001(BG)-CI-171004-FD	K1712350-011	0.039	0.014	1	12/27/17	12/29/17	0.020	J
FWB-001(BG)-CI-171004-FD	K1712350-012	0.039	0.014	1	12/27/17	12/29/17	0.277	
FF-002(BG)-CI-171004	K1712350-014	0.040	0.014	1	12/27/17	12/29/17	0.018	J
FWB-002(BG)-CI-171004	K1712350-015	0.039	0.014	1	12/27/17	12/29/17	0.402	
FF-002(BG)-CI-171004-FD	K1712350-017	0.039	0.014	1	12/27/17	12/29/17	ND	
FWB-002(BG)-CI-171004-FD	K1712350-018	0.040	0.014	1	12/27/17	12/29/17	0.402	
FF-001(BG)-HQ-171004	K1712350-020	0.040	0.014	1	12/27/17	12/29/17	0.019	J
FWB-001(BG)-HQ-171004	K1712350-021	0.039	0.014	1	12/27/17	12/29/17	0.182	
FF-002(BG)-HQ-171004	K1712350-023	0.039	0.014	1	12/27/17	12/29/17	ND	
FWB-002(BG)-HQ-171004	K1712350-024	0.039	0.014	1	12/27/17	12/29/17	0.161	
FF-002(BG)-HQ-171004-FD	K1712350-026	0.039	0.014	1	12/27/17	12/29/17	ND	
FWB-002(BG)-HQ-171004-FD	K1712350-027	0.039	0.014	1	12/27/17	12/29/17	0.133	
FF-002(BG)-LHL1-171004	K1712350-029	0.039	0.014	1	12/27/17	12/29/17	ND	
FWB-002(BG)-LHL1-171004	K1712350-030	0.039	0.014	1	12/27/17	12/29/17	0.035	J
Method Blank	K1712350-MB1	0.040	0.014	1	12/27/17	12/29/17	ND	
Method Blank	K1712350-MB2	0.040	0.014	1	12/27/17	12/29/17	ND	
Method Blank	K1712350-MB3	0.040	0.014	1	12/27/17	12/29/17	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712350
Date Collected: 10/05/17
Date Received: 11/08/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(BG)-LHL2-171005	K1712350-032	0.039	0.014	1	12/20/17	12/22/17	ND U J 8	
FWB-001(BG)-LHL2-171005	K1712350-033	0.040	0.014	1	12/20/17	12/22/17	0.037 J	J
FF-002(BG)-LHL2-171005	K1712350-035	0.039	0.014	1	12/20/17	12/22/17	ND U J	
FWB-002(BG)-LHL2-171005	K1712350-036	0.039	0.014	1	12/20/17	12/22/17	0.026 J	J
FF-001(BG)-LHL3-171005	K1712350-038	0.039	0.014	1	12/20/17	12/22/17	ND U J	
FWB-001(BG)-LHL3-171005	K1712350-039	0.040	0.014	1	12/20/17	12/22/17	0.023 J	J
Method Blank	K1712350-MB1	0.040	0.014	1	12/20/17	12/22/17	ND	
Method Blank	K1712350-MB2	0.040	0.014	1	12/20/17	12/22/17	ND	
Method Blank	K1712350-MB3	0.040	0.014	1	12/20/17	12/22/17	ND	

ALS SOP fish tissue LUL4 1

Dry Blue Gill

VALIDATION WORKSHEET

Method: Methyl Mercury

SDG: K1712350

Date Reviewed: 1.11.18

Reviewer: C Jensen

Sample Collection Dates: 10.3+ 10.4.17 + 10.5.17

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(BG)-LHL4-171003	2 FWB-002(BG)-LHL4-171003	3 FF-002(BG)-LHL4-171003	4 FWB-002(BG)-LHL4-171003	5 FF-001(BG)-CI-171004	6 FWB-001(BG)CI-171004	7 FF-001(BG)-CI-171004-FD	8 FWB-001(BG)-CI-171004-FD	9 FF-002(BG)-CI-171004	10 FWB-002(BG)-CI-171004	11 FF-002(BG)-CI-171004-FD	12 FWB-002(BG)-CI-171004-FD	13 FF-001(BG)-HQ-171004	14 FWB-001(BG)-HQ-171004	15 FF-002(BG)-HQ-171004	16 FWB-002(BG)-HQ-171004	17 FF-002(BG)-HQ-171004-FD	18 FWB-002(BG)-HQ-171004-FD	19 FF-002(BG)-LHL4-171004	20 FWB-002(BG)-LHL4-171004
Completeness of Analyses	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Holding Times	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Initial Calibration	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Continuing Calibration	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Method Blanks	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
LCS QCS	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Surrogate %R or duplicate RPD																				
MS/MSD: 003, 30,	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Reporting Limits	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Completeness of Analyte List	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

0°C

FDs on spreadsheet

SKL. 10.3 10.4 10.5.17

prep 12.27.17 12 18 17

run. 12 28 17 12 19 17

OPR-ok

VALIDATION WORKSHEET

2

Method: Metals

Date Reviewed: 1.11.18

Sample Collection Dates: 10.27 - 10.5.17

SDG: K1712350

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(BG)-LH2-171005	2 FWB-001(BG)-LH2-171005	3 FF-002(BG)-LH2-171005	4 FWB-002(BG)-LH2-171005	5 FF-001(BG)-LH3-171005	6 FWB-001(BG)-LH3-171005	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→	→	→														
Holding Times	A	→	→	→	→	→														
Initial Calibration	A	→	→	→	→	→														
Continuing Calibration	A	→	→	→	→	→														
Method Blanks	A	→	→	→	→	→														
LCS QCS	A	→	→	→	→	→														
Surrogate %R or duplicate RPD																				
MS/MSD:	A	→	→	→	→	→														
Reporting Limits	A	→	→	→	→	→														
Completeness of Analyte List	A	→	→	→	→	→														
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SDG: IC17123S0

Project: Hew. Lk.

Date: 1.11.18

Method: Metty

ICV %R	215/20=1.07 47.5/50=.95	lab reported 108 95
CCV %R		lab reported
LCS QCS	Dorm 317/354=.89	lab reported 90
ICS %R		lab reported
MS %R	083 2130-91/2130=.96	lab reported 96
MS/MSD %RPD	$\frac{2130-2160}{2130+2160/2}=\frac{30}{2145}=.014$	lab reported 1.
Duplicate %D		lab reported
High Std Check		lab reported
Low Cal Check		lab reported
Serial D %		lab reported
Sample Recalculation		lab reported
other (moisture)		lab reported
OPR	93.9/100=.939	94
	72.7/100=.72	73
	96/100=.96	96

SDG K1712350	Analyte Mercury	
Project: Harv. Ck		
Date: 1-11-18		
002 Sample ID FF-001(BG)-UHL4-171003	Lab reported 131 ng/g	mg/Kg mg/L
Instr. raw 131		ug/L .819
Calulation 33.6 / .256 = 131		
003 Sample ID FWB-001(BG)-UHL4-171003	Lab reported 91 ng/g	mg/Kg mg/L
Instr. raw 91		ug/L .689
Calulation 23.5 / .256 = 91.7		
005 Sample ID FF-002(BG)-UHL4-171003	Lab reported 236 ng/g	mg/Kg mg/L .802
Instr. raw 236		ug/L
Calulation 60.4 / .256 = 236		
024 Sample ID FF-002(BG)-HQ-171004-FF	Lab reported 79.5	mg/Kg mg/L .798
20.6 / .259 = 79.5		ug/L 259
Calulation		
027 Sample ID FF-002(BG)-HQ-171004-FF	Lab reported 24.5	mg/Kg mg/L .705
6.29 / .256 = 24.5		ug/L 256
Calulation		
029 Sample ID FF-002(BG)-UHL4-171004	Lab reported 192	mg/Kg mg/L .795
48.6 / .253 = 192		ug/L 253
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712350
Date Collected: 10/03, 04/17
Date Received: 11/08/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(BG)-LHL4-171003	K1712350-002	9.8	2.9	1	12/27/17	12/28/17	131	
FWB-001(BG)-LHL4-171003	K1712350-003	9.8	2.9	1	12/27/17	12/28/17	91.0	
FF-002(BG)-LHL4-171003	K1712350-005	9.8	2.9	1	12/27/17	12/28/17	236	
FWB-002(BG)-LHL4-171003	K1712350-006	9.9	3.0	1	12/27/17	12/28/17	66.2	
FF-001(BG)-CI-171004	K1712350-008	9.9	3.0	1	12/27/17	12/28/17	118	
FWB-001(BG)-CI-171004	K1712350-009	9.9	3.0	1	12/27/17	12/28/17	27.8	
FF-001(BG)-CI-171004-FD	K1712350-011	10	3.0	1	12/27/17	12/28/17	120	
FWB-001(BG)-CI-171004-FD	K1712350-012	9.8	2.9	1	12/27/17	12/28/17	26.8	
FF-002(BG)-CI-171004	K1712350-014	9.8	2.9	1	12/27/17	12/28/17	104	
FWB-002(BG)-CI-171004	K1712350-015	10	3.0	1	12/27/17	12/28/17	32.2	
FF-002(BG)-CI-171004-FD	K1712350-017	9.8	3.0	1	12/27/17	12/28/17	114	
FWB-002(BG)-CI-171004-FD	K1712350-018	10	3.0	1	12/27/17	12/28/17	25.5	
FF-001(BG)-HQ-171004	K1712350-020	10	3.0	1	12/27/17	12/28/17	128	
FWB-001(BG)-HQ-171004	K1712350-021	10	3.0	1	12/27/17	12/28/17	54.7	
FF-002(BG)-HQ-171004	K1712350-023	9.8	3.0	1	12/27/17	12/28/17	126	
FWB-002(BG)-HQ-171004	K1712350-024	9.8	2.9	1	12/27/17	12/28/17	42.8	
Method Blank 1	K1712350-MB1	10	3.0	1	12/27/17	12/28/17	ND	
Method Blank 2	K1712350-MB2	10	3.0	1	12/27/17	12/28/17	ND	
Method Blank 3	K1712350-MB3	10	3.0	1	12/27/17	12/28/17	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712350
Date Collected: 10/04, 05/17
Date Received: 11/08/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(BG)-HQ-171004-FD	K1712350-026	9.7	2.9	1	12/18/17	12/19/17	79.5	
FWB-002(BG)-HQ-171004-FD	K1712350-027	9.8	2.9	1	12/18/17	12/19/17	24.5	
FF-002(BG)-LHL1-171004	K1712350-029	9.9	3.0	1	12/18/17	12/19/17	192	
FWB-002(BG)-LHL1-171004	K1712350-030	9.7	2.9	1	12/18/17	12/19/17	62.1	
FF-001(BG)-LHL2-171005	K1712350-032	9.9	3.0	1	12/18/17	12/19/17	102	
FWB-001(BG)-LHL2-171005	K1712350-033	9.7	2.9	1	12/18/17	12/19/17	48.9	
FF-002(BG)-LHL2-171005	K1712350-035	9.8	2.9	1	12/18/17	12/19/17	173	
FWB-002(BG)-LHL2-171005	K1712350-036	9.9	3.0	1	12/18/17	12/19/17	74.0	
FF-001(BG)-LHL3-171005	K1712350-038	9.8	2.9	1	12/18/17	12/19/17	110	
FWB-001(BG)-LHL3-171005	K1712350-039	9.9	3.0	1	12/18/17	12/19/17	38.6	
Method Blank 1	K1712350-MB1	10	3.0	1	12/18/17	12/19/17	ND	
Method Blank 2	K1712350-MB2	10	3.0	1	12/18/17	12/19/17	ND	
Method Blank 3	K1712350-MB3	10	3.0	1	12/18/17	12/19/17	ND	

fish tissue LUL4

6020 747.7 Hg

VALIDATION WORKSHEET

Method: Metals Hg
Date Reviewed: 1.11.18
Sample Collection Dates: 10.3 - 10.5.17

SDG: K1712350
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(BG)-LHL4-171003	2 FWB-002(BG)-LHL4-171003	3 FF-002(BG)-LHL4-171003	4 FWB-002(BG)-LHL4-171003	5 FF-001(BG)-CI-171004	6 FWB-001(BG)-CI-171004	7 FF-001(BG)-CI-171004-FD	8 FWB-001(BG)-CI-171004-FD	9 FF-002(BG)-CI-171004	10 FWB-002(BG)-CI-171004	11 FF-002(BG)-CI-171004-FD	12 FWB-002(BG)-CI-171004-FD	13 FF-001(BG)-HQ-171004	14 FWB-001(BG)-HQ-171004	15 FF-002(BG)-HQ-171004	16 FWB-002(BG)-HQ-171004	17 FF-002(BG)-HQ-171004-FD	18 FWB-002(BG)-HQ-171004-FD	19 FF-002(BG)-LHL4-171004	20 FWB-002(BG)-LHL4-171004
Completeness of Analyses	A	→																		
Holding Times	A	→																		
Initial Calibration	A	→																		
Continuing Calibration	A	→																		
Method Blanks	~~A~~	A	X	A	→								X	A	X		X		X	
LCS	A	→																		
Surrogate %R or duplicate RPD*:	A	→																		
MS/MSD:	A	→																		
Reporting Limits	A	→																		
Completeness of Analyte List	A	→																		
Field Duplicate Pair :																				
Equip /Field Blank																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Metals Hg

SDG 10.3 10.4 10.5

prep 12.13.17 12.28.17

run 12.14.17 12.29.17
12.18.17

Sbup run. ok

12.14.17
Ph. 3.16.18 ICB .0071 ug/L

FF-001(BG)-LHL4-171003
FF-002(BG)-LHL4-171003
FF-001(BG)CI-171004
FF-001(BG)-CI-171004-FD
FF-002(BG)CI-171004-FD
FF-001(BG)-LHL2-171005
FF-002(BG)-LHL2-171005
FF-001(BG)-LHL3-171005

• ICB flags 4,6 for B, Cd, Pb

VALIDATION WORKSHEET

Method: Metals / Hg

Date Reviewed: 1.16.18

Sample Collection Dates: 10.3-10.5.17

SDG: K1712350

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(BG)-LHL2-171005	2 FWB-001(BG)-LHL2-171005	3 FF-002(BG)-LHL2-171005	4 FWB-002(BG)-LHL2-171005	5 FF-003(BG)-LHL3-171005	6 FWB-003(BG)-LHL3-171005	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→	→	→														
Holding Times	A	→	→	→	→	→														
Initial Calibration	A	→	→	→	→	→														
Continuing Calibration	A	→	→	→	→	→														
Method Blanks	A	A	X	A	X	A														
LCS	A	→	→	→	→	→														
Surrogate %R or ~~duplicate RPD~~ MS/MSD:	A	→	→	→	→	→														
Reporting Limits	A	→	→	→	→	→														
Completeness of Analyte List	A	→	→	→	→	→														
Field Duplicate Pair :																				
Equip /Field Blank																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SDG: K17/2350

Project: Harr. Uk.

Date: 1.11.18

Method: 6020 / 7471

ICV %R

CCV %R

LCS

ICS %R

MS %R

MS/MSD %RPD

Duplicate %D

High Std Check

Low Cal Check

Serial D %

Sample Recalculation

other (moisture)

As 24.9/25=1 Hg 5/5=1.

As 24.9/25=1 B 25.2/25=1.01 lab reported 101

As 16.7/16.7=1. lab reported 100

Hg 1.67/1.67=1. lab reported

.002 .2 lab reported

MS As 17.1 − 16.7 = .4 lab reported 101

16.7 / (17.1+16.7)/2 16.9 1.01 lab reported

.002 B 8.69 − .33 / 8.33 = 1. lab reported 100

.002 Hg .735 − .257 / .481 = .993 lab reported 100

As .2 − .21 / (.2+.212)/2 = .01 / .205 = .048 lab reported 5

Cd .017 − .019 = .002 / (.017+.019)/2 = .002 / .018 = .111 lab reported 11

Hg .257 − .257 / (.257+.257)/2 = 0 / 0 lab reported 0

FF.002(BG).LHL4.171004
FF.002.BG.HG.171004.FP
FF.002(BG).HG.171004
FF.001(BG).LHL4.171003
FF.002(BG).LHL4.171003
FF.001(BG)-HG.171004
FF.002(BG).LHL2.171005
FF.001(BG).LHL3.171005

Serial D: Fe 169-100 / 169 = .04 lab reported

Zn 479-399 / 479 = .16 lab reported

CCV As 24.4/25=.9 98

B 25.8/25=1.03 103

Zn 24.5/25=.98 98

Se 24.6/25=.9 98

PS: B 47.4-.7/50=.93 93

Se 64-12/50=1.04 103

100 100

B 8.19/8.33=.98 101 98

100

100

100

100

100

11

6

Sample Recalculation: ICB B .6 J U,6 / Cd .007 J / Hg -.02 → U,6 cd

FF.001(BG).LHL3.171005
FF.002(BG).LHL4.171004
FF.001(BG).LHL2.171005

MB Zn .11 J - no flags to data

Low level check

Pb .191/.225=.848

Sr2 As 6.6/6.8=.97 97. As .97/1=.97 97

Cd .3/.306=.98 98 Cd .049/.04=1.23 123?

Zn 48/52.2=.919 92 Se 2/2=1 100

ICS As 23.3/25=.93 93 Se 24.3/25=.97 97

SDG 177350	Analyte Metals Hg	211
Project: Hanford Lab		
Date: 1-11-18		
505		
002 Sample ID FF-001(BG)-LHLL-177003	Lab reported	mg/Kg mg/L 81.9
1.108/2= .2	As .2	ug/L .301 30
Calulation		
.679/2= .33	B .33	
Sample ID	Lab reported	mg/Kg mg/L
12.48/2= 6.2	Se 6.2	ug/L
Calulation		
.257	Hg .257	
Sample ID 11.94 HWD 11.94	Lab reported Mg 11.90	mg/Kg mg/L
		ug/L
Calulation		
003 Sample ID FWB-001(BG)-LHL4-177003	Lab reported ~~As .13~~	mg/Kg mg/L 68.9
.269/2= .13	As .13	ug/L
Calulation		
.188/2= .094	Cd .094	
Sample ID	Lab reported	mg/Kg mg/L
~~6.19/2=~~ 3.1	Se 3.6	ug/L
Calulation 7.13/2= 3.56		
Sample ID	Lab reported	mg/Kg mg/L #
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

ALS Group USA, Corp.
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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(BG)-LHL4-171003	**Basis:**	Dry
Lab Code:	K1712350-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.20 J**	mg/Kg	0.50	0.02	5	12/14/17 19:44	12/13/17	
Boron	6020A	**0.33** J U L	mg/Kg	0.50	0.20	5	12/14/17 19:44	12/13/17	
Cadmium	6020A	**0.028**	mg/Kg	0.020	0.003	5	12/14/17 19:44	12/13/17	
Iron	6020A	**16.9**	mg/Kg	1.0	0.09	5	12/14/17 19:44	12/13/17	
Lead	6020A	**0.006** J U L	mg/Kg	0.020	0.003	5	12/14/17 19:44	12/13/17	
Magnesium	6010C	**1190**	mg/Kg	1.0	0.5	1	12/18/17 14:07	12/13/17	
Mercury	7471B	**0.257**	mg/Kg	0.020	0.004	2	12/29/17 10:10	12/28/17	
Selenium	6020A	**6.2**	mg/Kg	1.0	0.03	5	12/14/17 19:44	12/13/17	
Zinc	6020A	**55.7**	mg/Kg	0.50	0.08	5	12/14/17 19:44	12/13/17	

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712350
Date Collected: 10/03/17 10:30
Date Received: 11/08/17 09:50

Sample Name: FWB-001(BG)-LHL4-171003
Lab Code: K1712350-003

Basis: Dry

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.13 J**	mg/Kg	0.50	0.02	5	12/14/17 19:57	12/13/17	
Boron	6020A	**1.62**	mg/Kg	0.50	0.20	5	12/14/17 19:57	12/13/17	
Cadmium	6020A	**0.094**	mg/Kg	0.020	0.003	5	12/14/17 19:57	12/13/17	
Iron	6020A	**56.8**	mg/Kg	1.0	0.09	5	12/14/17 19:57	12/13/17	
Lead	6020A	**0.074**	mg/Kg	0.020	0.003	5	12/14/17 19:57	12/13/17	
Magnesium	6010C	**2770**	mg/Kg	1.0	0.5	1	12/18/17 14:24	12/13/17	
Mercury	7471B	**0.073**	mg/Kg	0.019	0.004	2	12/29/17 10:23	12/28/17	
Selenium	6020A	**3.6**	mg/Kg	1.0	0.03	5	12/14/17 19:57	12/13/17	
Zinc	6020A	**112**	mg/Kg	0.50	0.08	5	12/14/17 19:57	12/13/17	

ALS Group USA, Corp.
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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-LHL4-171003	**Basis:**	Dry
Lab Code:	K1712350-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.18 J**	mg/Kg	0.50	0.02	5	12/14/17 20:05	12/13/17	
Boron	6020A	**0.24** J U Q	mg/Kg	0.50	0.20	5	12/14/17 20:05	12/13/17	
Cadmium	6020A	**0.020**	mg/Kg	0.020	0.003	5	12/14/17 20:05	12/13/17	
Iron	6020A	**21.6**	mg/Kg	0.99	0.09	5	12/14/17 20:05	12/13/17	
Lead	6020A	**0.006** J U Q	mg/Kg	0.020	0.003	5	12/14/17 20:05	12/13/17	
Magnesium	6010C	**1160**	mg/Kg	0.99	0.50	1	12/18/17 14:27	12/13/17	
Mercury	7471B	**0.252**	mg/Kg	0.020	0.004	2	12/29/17 10:26	12/28/17	
Selenium	6020A	**5.75**	mg/Kg	0.99	0.03	5	12/14/17 20:05	12/13/17	
Zinc	6020A	**56.2**	mg/Kg	0.50	0.08	5	12/14/17 20:05	12/13/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(BG)-LHL4-171003	**Basis:**	Dry
Lab Code:	K1712350-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.16 J**	mg/Kg	0.50	0.02	5	12/14/17 20:08	12/13/17	
Boron	6020A	**0.96**	mg/Kg	0.50	0.20	5	12/14/17 20:08	12/13/17	
Cadmium	6020A	**0.103**	mg/Kg	0.020	0.003	5	12/14/17 20:08	12/13/17	
Iron	6020A	**61.8**	mg/Kg	0.99	0.09	5	12/14/17 20:08	12/13/17	
Lead	6020A	**0.062**	mg/Kg	0.020	0.003	5	12/14/17 20:08	12/13/17	
Magnesium	6010C	**2580**	mg/Kg	0.99	0.50	1	12/18/17 14:30	12/13/17	
Mercury	7471B	**0.068**	mg/Kg	0.020	0.004	2	12/29/17 10:29	12/28/17	
Selenium	6020A	**3.27**	mg/Kg	0.99	0.03	5	12/14/17 20:08	12/13/17	
Zinc	6020A	**127**	mg/Kg	0.50	0.08	5	12/14/17 20:08	12/13/17	

ALS Group USA, Corp.
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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(BG)-CI-171004	**Basis:**	Dry
Lab Code:	K1712350-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.39 J**	mg/Kg	0.50	0.02	5	12/14/17 20:11	12/13/17	
Boron	6020A	**0.66**	mg/Kg	0.50	0.20	5	12/14/17 20:11	12/13/17	
Cadmium	6020A	**0.040**	mg/Kg	0.020	0.003	5	12/14/17 20:11	12/13/17	
Iron	6020A	**19.1**	mg/Kg	1.00	0.09	5	12/14/17 20:11	12/13/17	
Lead	6020A	**0.004** J U Q	mg/Kg	0.020	0.003	5	12/14/17 20:11	12/13/17	
Magnesium	6010C	**959**	mg/Kg	1.00	0.5	1	12/18/17 14:32	12/13/17	
Mercury	7471B	**0.110**	mg/Kg	0.019	0.004	2	12/29/17 10:32	12/28/17	
Selenium	6020A	**8.91**	mg/Kg	1.00	0.03	5	12/14/17 20:11	12/13/17	
Zinc	6020A	**35.8**	mg/Kg	0.50	0.08	5	12/14/17 20:11	12/13/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(BG)-CI-171004	**Basis:**	Dry
Lab Code:	K1712350-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.71**	mg/Kg	0.50	0.02	5	12/14/17 20:14	12/13/17	
Boron	6020A	**2.97**	mg/Kg	0.50	0.20	5	12/14/17 20:14	12/13/17	
Cadmium	6020A	**0.316**	mg/Kg	0.020	0.003	5	12/14/17 20:14	12/13/17	
Iron	6020A	**130**	mg/Kg	0.99	0.09	5	12/14/17 20:14	12/13/17	
Lead	6020A	**0.127**	mg/Kg	0.020	0.003	5	12/14/17 20:14	12/13/17	
Magnesium	6010C	**1900**	mg/Kg	0.99	0.50	1	12/18/17 14:35	12/13/17	
Mercury	7471B	**0.032**	mg/Kg	0.019	0.004	2	12/29/17 10:36	12/28/17	
Selenium	6020A	**5.08**	mg/Kg	0.99	0.03	5	12/14/17 20:14	12/13/17	
Zinc	6020A	**84.4**	mg/Kg	0.50	0.08	5	12/14/17 20:14	12/13/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(BG)-CI-171004-FD	**Basis:**	Dry
Lab Code:	K1712350-011		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.45** J	mg/Kg	0.50	0.02	5	12/14/17 20:16	12/13/17	
Boron	6020A	**0.80**	mg/Kg	0.50	0.20	5	12/14/17 20:16	12/13/17	
Cadmium	6020A	**0.045**	mg/Kg	0.020	0.003	5	12/14/17 20:16	12/13/17	
Iron	6020A	**20.2**	mg/Kg	1.0	0.09	5	12/14/17 20:16	12/13/17	
Lead	6020A	**0.008** J U Q	mg/Kg	0.020	0.003	5	12/14/17 20:16	12/13/17	
Magnesium	6010C	**1080**	mg/Kg	1.0	0.5	1	12/18/17 14:37	12/13/17	
Mercury	7471B	**0.105**	mg/Kg	0.019	0.004	2	12/29/17 10:42	12/28/17	
Selenium	6020A	**10.2**	mg/Kg	1.0	0.03	5	12/14/17 20:16	12/13/17	
Zinc	6020A	**42.4**	mg/Kg	0.50	0.08	5	12/14/17 20:16	12/13/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(BG)-CI-171004-FD	**Basis:**	Dry
Lab Code:	K1712350-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.78**	mg/Kg	0.50	0.02	5	12/14/17 20:19	12/13/17	
Boron	6020A	**3.17**	mg/Kg	0.50	0.20	5	12/14/17 20:19	12/13/17	
Cadmium	6020A	**0.357**	mg/Kg	0.020	0.003	5	12/14/17 20:19	12/13/17	
Iron	6020A	**153**	mg/Kg	1.00	0.09	5	12/14/17 20:19	12/13/17	
Lead	6020A	**0.159**	mg/Kg	0.020	0.003	5	12/14/17 20:19	12/13/17	
Magnesium	6010C	**1950**	mg/Kg	1.00	0.5	1	12/18/17 14:40	12/13/17	
Mercury	7471B	**0.031**	mg/Kg	0.020	0.004	2	12/29/17 10:45	12/28/17	
Selenium	6020A	**5.78**	mg/Kg	1.00	0.03	5	12/14/17 20:19	12/13/17	
Zinc	6020A	**92.4**	mg/Kg	0.50	0.08	5	12/14/17 20:19	12/13/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-CI-171004	**Basis:**	Dry
Lab Code:	K1712350-014		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.50 J**	mg/Kg	0.50	0.02	5	12/14/17 20:22	12/13/17	
Boron	6020A	**2.44**	mg/Kg	0.50	0.20	5	12/14/17 20:22	12/13/17	
Cadmium	6020A	**0.038**	mg/Kg	0.020	0.003	5	12/14/17 20:22	12/13/17	
Iron	6020A	**13.3**	mg/Kg	1.0	0.09	5	12/14/17 20:22	12/13/17	
Lead	6020A	ND U	mg/Kg	0.020	0.003	5	12/14/17 20:22	12/13/17	
Magnesium	6010C	**1200**	mg/Kg	1.0	0.5	1	12/18/17 14:50	12/13/17	
Mercury	7471B	**0.091**	mg/Kg	0.019	0.004	2	12/29/17 10:49	12/28/17	
Selenium	6020A	**10.6**	mg/Kg	1.0	0.03	5	12/14/17 20:22	12/13/17	
Zinc	6020A	**35.4**	mg/Kg	0.50	0.08	5	12/14/17 20:22	12/13/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(BG)-CI-171004	**Basis:**	Dry
Lab Code:	K1712350-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.98**	mg/Kg	0.50	0.02	5	12/14/17 20:24	12/13/17	
Boron	6020A	**6.33**	mg/Kg	0.50	0.20	5	12/14/17 20:24	12/13/17	
Cadmium	6020A	**0.300**	mg/Kg	0.020	0.003	5	12/14/17 20:24	12/13/17	
Iron	6020A	**197**	mg/Kg	1.00	0.09	5	12/14/17 20:24	12/13/17	
Lead	6020A	**0.208**	mg/Kg	0.020	0.003	5	12/14/17 20:24	12/13/17	
Magnesium	6010C	**2100**	mg/Kg	1.00	0.5	1	12/18/17 14:53	12/13/17	
Mercury	7471B	**0.027**	mg/Kg	0.019	0.004	2	12/29/17 10:52	12/28/17	
Selenium	6020A	**4.99**	mg/Kg	1.00	0.03	5	12/14/17 20:24	12/13/17	
Zinc	6020A	**77.2**	mg/Kg	0.50	0.08	5	12/14/17 20:24	12/13/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-CI-171004-FD	**Basis:**	Dry
Lab Code:	K1712350-017		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.46** J	mg/Kg	0.50	0.02	5	12/14/17 20:27	12/13/17	
Boron	6020A	**2.26**	mg/Kg	0.50	0.20	5	12/14/17 20:27	12/13/17	
Cadmium	6020A	**0.036**	mg/Kg	0.020	0.003	5	12/14/17 20:27	12/13/17	
Iron	6020A	**16.7**	mg/Kg	0.99	0.09	5	12/14/17 20:27	12/13/17	
Lead	6020A	**0.004** J U 6	mg/Kg	0.020	0.003	5	12/14/17 20:27	12/13/17	
Magnesium	6010C	**1090**	mg/Kg	0.99	0.50	1	12/18/17 14:56	12/13/17	
Mercury	7471B	**0.089**	mg/Kg	0.019	0.004	2	12/29/17 10:55	12/28/17	
Selenium	6020A	**9.18**	mg/Kg	0.99	0.03	5	12/14/17 20:27	12/13/17	
Zinc	6020A	**31.7**	mg/Kg	0.50	0.08	5	12/14/17 20:27	12/13/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(BG)-CI-171004-FD	**Basis:**	Dry
Lab Code:	K1712350-018		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.00**	mg/Kg	0.50	0.02	5	12/14/17 20:29	12/13/17	
Boron	6020A	**6.52**	mg/Kg	0.50	0.20	5	12/14/17 20:29	12/13/17	
Cadmium	6020A	**0.317**	mg/Kg	0.020	0.003	5	12/14/17 20:29	12/13/17	
Iron	6020A	**216**	mg/Kg	1.00	0.09	5	12/14/17 20:29	12/13/17	
Lead	6020A	**0.204**	mg/Kg	0.020	0.003	5	12/14/17 20:29	12/13/17	
Magnesium	6010C	**2110**	mg/Kg	1.00	0.5	1	12/18/17 14:58	12/13/17	
Mercury	7471B	**0.028**	mg/Kg	0.020	0.004	2	12/29/17 11:01	12/28/17	
Selenium	6020A	**5.19**	mg/Kg	1.00	0.03	5	12/14/17 20:29	12/13/17	
Zinc	6020A	**76.5**	mg/Kg	0.50	0.08	5	12/14/17 20:29	12/13/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 13:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
		Basis:	Dry
Sample Name:	FF-001(BG)-HQ-171004		
Lab Code:	K1712350-020		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.35** J	mg/Kg	0.50	0.02	5	12/14/17 20:38	12/13/17	
Boron	6020A	**0.35** J U Q	mg/Kg	0.50	0.20	5	12/14/17 20:38	12/13/17	
Cadmium	6020A	**0.045**	mg/Kg	0.020	0.003	5	12/14/17 20:38	12/13/17	
Iron	6020A	**17.0**	mg/Kg	1.0	0.09	5	12/14/17 20:38	12/13/17	
Lead	6020A	ND U	mg/Kg	0.020	0.003	5	12/14/17 20:38	12/13/17	
Magnesium	6010C	**1050**	mg/Kg	1.0	0.5	1	12/18/17 15:01	12/13/17	
Mercury	7471B	**0.160**	mg/Kg	0.019	0.004	2	12/29/17 11:05	12/28/17	
Selenium	6020A	**6.5**	mg/Kg	1.0	0.03	5	12/14/17 20:38	12/13/17	
Zinc	6020A	**52.0**	mg/Kg	0.50	0.08	5	12/14/17 20:38	12/13/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 13:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(BG)-HQ-171004	**Basis:**	Dry
Lab Code:	K1712350-021		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.49 J**	mg/Kg	0.50	0.02	5	12/14/17 20:40	12/13/17	
Boron	6020A	**0.97**	mg/Kg	0.50	0.20	5	12/14/17 20:40	12/13/17	
Cadmium	6020A	**0.126**	mg/Kg	0.020	0.003	5	12/14/17 20:40	12/13/17	
Iron	6020A	**106**	mg/Kg	1.0	0.09	5	12/14/17 20:40	12/13/17	
Lead	6020A	**0.103**	mg/Kg	0.020	0.003	5	12/14/17 20:40	12/13/17	
Magnesium	6010C	**2470**	mg/Kg	1.0	0.5	1	12/18/17 15:03	12/13/17	
Mercury	7471B	**0.045**	mg/Kg	0.018	0.004	2	12/29/17 11:08	12/28/17	
Selenium	6020A	**3.8**	mg/Kg	1.0	0.03	5	12/14/17 20:40	12/13/17	
Zinc	6020A	**109**	mg/Kg	0.50	0.08	5	12/14/17 20:40	12/13/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 14:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-HQ-171004	**Basis:**	Dry
Lab Code:	K1712350-023		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.30** J	mg/Kg	0.50	0.02	5	12/14/17 20:43	12/13/17	
Boron	6020A	**0.34** JV L	mg/Kg	0.50	0.20	5	12/14/17 20:43	12/13/17	
Cadmium	6020A	**0.031**	mg/Kg	0.020	0.003	5	12/14/17 20:43	12/13/17	
Iron	6020A	**25.5**	mg/Kg	1.00	0.09	5	12/14/17 20:43	12/13/17	
Lead	6020A	ND U	mg/Kg	0.020	0.003	5	12/14/17 20:43	12/13/17	
Magnesium	6010C	**1050**	mg/Kg	1.00	0.5	1	12/18/17 15:06	12/13/17	
Mercury	7471B	**0.147**	mg/Kg	0.020	0.004	2	12/29/17 11:11	12/28/17	
Selenium	6020A	**6.99**	mg/Kg	1.00	0.03	5	12/14/17 20:43	12/13/17	
Zinc	6020A	**53.0**	mg/Kg	0.50	0.08	5	12/14/17 20:43	12/13/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 14:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(BG)-HQ-171004	**Basis:**	Dry
Lab Code:	K1712350-024		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.53**	mg/Kg	0.50	0.02	5	12/14/17 20:46	12/13/17	
Boron	6020A	**1.47**	mg/Kg	0.50	0.20	5	12/14/17 20:46	12/13/17	
Cadmium	6020A	**0.131**	mg/Kg	0.020	0.003	5	12/14/17 20:46	12/13/17	
Iron	6020A	**120**	mg/Kg	1.0	0.09	5	12/14/17 20:46	12/13/17	
Lead	6020A	**0.118**	mg/Kg	0.020	0.003	5	12/14/17 20:46	12/13/17	
Magnesium	6010C	**2430**	mg/Kg	1.0	0.5	1	12/18/17 15:09	12/13/17	
Mercury	7471B	**0.066**	mg/Kg	0.019	0.004	2	12/29/17 11:14	12/28/17	
Selenium	6020A	**3.8**	mg/Kg	1.0	0.03	5	12/14/17 20:46	12/13/17	
Zinc	6020A	**127**	mg/Kg	0.50	0.08	5	12/14/17 20:46	12/13/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 14:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-HQ-171004-FD	**Basis:**	Dry
Lab Code:	K1712350-026		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.33** J	mg/Kg	0.50	0.02	5	12/14/17 20:48	12/13/17	
Boron	6020A	U U **0.36** J U U	mg/Kg	0.50	0.20	5	12/14/17 20:48	12/13/17	
Cadmium	6020A	**0.034**	mg/Kg	0.020	0.003	5	12/14/17 20:48	12/13/17	
Iron	6020A	**11.4**	mg/Kg	1.00	0.09	5	12/14/17 20:48	12/13/17	
Lead	6020A	ND U	mg/Kg	0.020	0.003	5	12/14/17 20:48	12/13/17	
Magnesium	6010C	**1160**	mg/Kg	1.00	0.5	1	12/18/17 15:11	12/13/17	
Mercury	7471B	**0.136**	mg/Kg	0.019	0.004	2	12/29/17 11:21	12/28/17	
Selenium	6020A	**6.27**	mg/Kg	1.00	0.03	5	12/14/17 20:48	12/13/17	
Zinc	6020A	**51.6**	mg/Kg	0.50	0.08	5	12/14/17 20:48	12/13/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 14:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(BG)-HQ-171004-FD	**Basis:**	Dry
Lab Code:	K1712350-027		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.53**	mg/Kg	0.50	0.02	5	12/14/17 20:51	12/13/17	
Boron	6020A	**1.50**	mg/Kg	0.50	0.20	5	12/14/17 20:51	12/13/17	
Cadmium	6020A	**0.114**	mg/Kg	0.020	0.003	5	12/14/17 20:51	12/13/17	
Iron	6020A	**126**	mg/Kg	0.99	0.09	5	12/14/17 20:51	12/13/17	
Lead	6020A	**0.116**	mg/Kg	0.020	0.003	5	12/14/17 20:51	12/13/17	
Magnesium	6010C	**2230**	mg/Kg	0.99	0.50	1	12/18/17 15:14	12/13/17	
Mercury	7471B	**0.053**	mg/Kg	0.019	0.004	2	12/29/17 11:24	12/28/17	
Selenium	6020A	**3.78**	mg/Kg	0.99	0.03	5	12/14/17 20:51	12/13/17	
Zinc	6020A	**128**	mg/Kg	0.50	0.08	5	12/14/17 20:51	12/13/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-LHL1-171004	**Basis:**	Dry
Lab Code:	K1712350-029		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.22** J	mg/Kg	0.50	0.02	5	12/14/17 20:53	12/13/17	
Boron	6020A	**0.25** J U Q	mg/Kg	0.50	0.20	5	12/14/17 20:53	12/13/17	
Cadmium	6020A	**0.019** J U Q	mg/Kg	0.020	0.003	5	12/14/17 20:53	12/13/17	
Iron	6020A	**14.9**	mg/Kg	1.00	0.09	5	12/14/17 20:53	12/13/17	
Lead	6020A	ND U	mg/Kg	0.020	0.003	5	12/14/17 20:53	12/13/17	
Magnesium	6010C	**1140**	mg/Kg	1.00	0.5	1	12/18/17 15:24	12/13/17	
Mercury	7471B	**0.227**	mg/Kg	0.020	0.004	2	12/29/17 11:27	12/28/17	
Selenium	6020A	**5.01**	mg/Kg	1.00	0.03	5	12/14/17 20:53	12/13/17	
Zinc	6020A	**52.8**	mg/Kg	0.50	0.08	5	12/14/17 20:53	12/13/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(BG)-LHL1-171004	**Basis:**	Dry
Lab Code:	K1712350-030		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.24 J**	mg/Kg	0.50	0.02	5	12/14/17 20:56	12/13/17	
Boron	6020A	**1.44**	mg/Kg	0.50	0.20	5	12/14/17 20:56	12/13/17	
Cadmium	6020A	**0.091**	mg/Kg	0.020	0.003	5	12/14/17 20:56	12/13/17	
Iron	6020A	**108**	mg/Kg	1.0	0.09	5	12/14/17 20:56	12/13/17	
Lead	6020A	**0.114**	mg/Kg	0.020	0.003	5	12/14/17 20:56	12/13/17	
Magnesium	6010C	**2720**	mg/Kg	1.0	0.5	1	12/18/17 15:27	12/13/17	
Mercury	7471B	**0.078**	mg/Kg	0.019	0.004	2	12/29/17 11:31	12/28/17	
Selenium	6020A	**2.9**	mg/Kg	1.0	0.03	5	12/14/17 20:56	12/13/17	
Zinc	6020A	**125**	mg/Kg	0.50	0.08	5	12/14/17 20:56	12/13/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(BG)-LHL2-171005	**Basis:**	Dry
Lab Code:	K1712350-032		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.24 J**	mg/Kg	0.50	0.02	5	12/14/17 21:20	12/13/17	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	12/14/17 21:20	12/13/17	
Cadmium	6020A	**0.017** J U Q	mg/Kg	0.020	0.003	5	12/14/17 21:20	12/13/17	
Iron	6020A	**16.7**	mg/Kg	1.0	0.09	5	12/14/17 21:20	12/13/17	
Lead	6020A	**0.005** J U Q	mg/Kg	0.020	0.003	5	12/14/17 21:20	12/13/17	
Magnesium	6010C	**1090**	mg/Kg	1.0	0.5	1	12/18/17 15:39	12/13/17	
Mercury	7471B	**0.142**	mg/Kg	0.020	0.004	2	12/29/17 11:43	12/28/17	
Selenium	6020A	**4.7**	mg/Kg	1.0	0.03	5	12/14/17 21:20	12/13/17	
Zinc	6020A	**47.9**	mg/Kg	0.50	0.08	5	12/14/17 21:20	12/13/17	

ALS Group USA, Corp.
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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(BG)-LHL2-171005	**Basis:**	Dry
Lab Code:	K1712350-033		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.28 J**	mg/Kg	0.50	0.02	5	12/14/17 21:33	12/13/17	
Boron	6020A	**0.80**	mg/Kg	0.50	0.20	5	12/14/17 21:33	12/13/17	
Cadmium	6020A	**0.071**	mg/Kg	0.020	0.003	5	12/14/17 21:33	12/13/17	
Iron	6020A	**58.5**	mg/Kg	0.99	0.09	5	12/14/17 21:33	12/13/17	
Lead	6020A	**0.069**	mg/Kg	0.020	0.003	5	12/14/17 21:33	12/13/17	
Magnesium	6010C	**2150**	mg/Kg	0.99	0.50	1	12/18/17 16:00	12/13/17	
Mercury	7471B	**0.052**	mg/Kg	0.020	0.004	2	12/29/17 11:47	12/28/17	
Selenium	6020A	**2.94**	mg/Kg	0.99	0.03	5	12/14/17 21:33	12/13/17	
Zinc	6020A	**113**	mg/Kg	0.50	0.08	5	12/14/17 21:33	12/13/17	

ALS Group USA, Corp.
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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-002(BG)-LHL2-171005	**Basis:**	Dry
Lab Code:	K1712350-035		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.31** J	mg/Kg	0.50	0.02	5	12/14/17 21:41	12/13/17	
Boron	6020A	**0.29** JU Q	mg/Kg	0.50	0.20	5	12/14/17 21:41	12/13/17	
Cadmium	6020A	**0.036**	mg/Kg	0.020	0.003	5	12/14/17 21:41	12/13/17	
Iron	6020A	**24.0**	mg/Kg	0.99	0.09	5	12/14/17 21:41	12/13/17	
Lead	6020A	**0.009** JU Q	mg/Kg	0.020	0.003	5	12/14/17 21:41	12/13/17	
Magnesium	6010C	**1060**	mg/Kg	0.99	0.50	1	12/18/17 16:02	12/13/17	
Mercury	7471B	**0.257**	mg/Kg	0.020	0.004	2	12/29/17 12:00	12/28/17	
Selenium	6020A	**6.29**	mg/Kg	0.99	0.03	5	12/14/17 21:41	12/13/17	
Zinc	6020A	**65.1**	mg/Kg	0.50	0.08	5	12/14/17 21:41	12/13/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-002(BG)-LHL2-171005	**Basis:**	Dry
Lab Code:	K1712350-036		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.29 J**	mg/Kg	0.50	0.02	5	12/14/17 21:44	12/13/17	
Boron	6020A	**0.97**	mg/Kg	0.50	0.20	5	12/14/17 21:44	12/13/17	
Cadmium	6020A	**0.121**	mg/Kg	0.020	0.003	5	12/14/17 21:44	12/13/17	
Iron	6020A	**68.6**	mg/Kg	0.99	0.09	5	12/14/17 21:44	12/13/17	
Lead	6020A	**0.101**	mg/Kg	0.020	0.003	5	12/14/17 21:44	12/13/17	
Magnesium	6010C	**2730**	mg/Kg	0.99	0.50	1	12/18/17 16:05	12/13/17	
Mercury	7471B	**0.086**	mg/Kg	0.020	0.004	2	12/29/17 12:03	12/28/17	
Selenium	6020A	**3.61**	mg/Kg	0.99	0.03	5	12/14/17 21:44	12/13/17	
Zinc	6020A	**143**	mg/Kg	0.50	0.08	5	12/14/17 21:44	12/13/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 15:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FF-001(BG)-LHL3-171005	**Basis:**	Dry
Lab Code:	K1712350-038		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.27 J**	mg/Kg	0.50	0.02	5	12/14/17 21:47	12/13/17	
Boron	6020A	**0.30** J U 6	mg/Kg	0.50	0.20	5	12/14/17 21:47	12/13/17	
Cadmium	6020A	**0.016** J U 6	mg/Kg	0.020	0.003	5	12/14/17 21:47	12/13/17	
Iron	6020A	**19.7**	mg/Kg	1.0	0.09	5	12/14/17 21:47	12/13/17	
Lead	6020A	**0.019** J U 6	mg/Kg	0.020	0.003	5	12/14/17 21:47	12/13/17	
Magnesium	6010C	**1050**	mg/Kg	1.0	0.5	1	12/18/17 16:08	12/13/17	
Mercury	7471B	**0.144**	mg/Kg	0.020	0.004	2	12/29/17 12:06	12/28/17	
Selenium	6020A	**4.9**	mg/Kg	1.0	0.03	5	12/14/17 21:47	12/13/17	
Zinc	6020A	**44.9**	mg/Kg	0.50	0.08	5	12/14/17 21:47	12/13/17	

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dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 15:30
Sample Matrix:	Tissue	**Date Received:**	11/08/17 09:50
Sample Name:	FWB-001(BG)-LHL3-171005	**Basis:**	Dry
Lab Code:	K1712350-039		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.24 J**	mg/Kg	0.50	0.02	5	12/14/17 21:49	12/13/17	
Boron	6020A	**1.24**	mg/Kg	0.50	0.20	5	12/14/17 21:49	12/13/17	
Cadmium	6020A	**0.096**	mg/Kg	0.020	0.003	5	12/14/17 21:49	12/13/17	
Iron	6020A	**57.3**	mg/Kg	1.0	0.09	5	12/14/17 21:49	12/13/17	
Lead	6020A	**0.083**	mg/Kg	0.020	0.003	5	12/14/17 21:49	12/13/17	
Magnesium	6010C	**2400**	mg/Kg	1.0	0.5	1	12/18/17 16:10	12/13/17	
Mercury	7471B	**0.043**	mg/Kg	0.018	0.004	2	12/29/17 12:09	12/28/17	
Selenium	6020A	**3.5**	mg/Kg	1.0	0.03	5	12/14/17 21:49	12/13/17	
Zinc	6020A	**102**	mg/Kg	0.50	0.08	5	12/14/17 21:49	12/13/17	

fish tissue LUL4

1

16324 Dry

VALIDATION WORKSHEET

Method: ASLM

Date Reviewed: 1.11.18

Sample Collection Dates: 10.3, 10.4, 10.5.17

SDG: K1712350

Reviewer: C Jensen

The following data validation areas were reviewed:

Validation Criteria	1 FF-001(BG)-LUL4-171003	2 FWB-001(BG)-LUL4-171003	3 FF-002(BG)-LUL4-171003	4 FWB-002(BG)-LUL4-171003	5 FF-001(BG)-CI-171004	6 FWB-001(BG)-CI-171004	7 FF-001(BG)-CI-171004-FD	8 FWB-001(BG)-CI-171004-FD	9 FF-002(BG)-CI-171004	10 FWB-002(BG)-CI-171004	11 FF-002(BG)-CI-171004-FD	12 FWB-002(BG)-CI-171004-FD	13 FF-001(BG)-HQ-171004	14 FWB-001(BG)-HQ-171004	15 FF-002(BG)-HQ-171004	16 FWB-002(BG)-HQ-171004	17 FF-002(BG)-HQ-171004-FD	18 FWB-002(BG)-HQ-171004-FD	19 FF-002(BG)-LUL4-171004	20 FWB-002(BG)-LUL4-171004
Completeness of Analyses	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Holding Times	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Initial Calibration	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Continuing Calibration OPR	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Method Blanks	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
LCS																				
Surrogate %R or duplicate RPD																				
MS/MSD: ①	A	→	→	→	X	A	X	A	X	X	X	A	X	A	X	A	X	A	X	X
Reporting Limits	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Completeness of Analyte List	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

~~FWB-002(BG)-LUL2-171005~~
~~FWB-002-BG-LUL4-171004~~
FWB-002(BG)-HQ-171004-FD.

FWB-001(BG)-CI-171004
FWB-001(BG)-CI-171004-FD
FWB-002(BG)-CI-171004
FWB-002(BG)-CI-171004-FD
FF ~~FWB-002(BG)~~-CI-171004-FD
FWB-002(BG)-HQ-171004
FWB-002(BG)-HQ-171004

Spl 10.3, 10.4. 10.5.17

prep 12.27.17 12.20.17

run 12.28.17 12.21.17

① -003
12/27 MS ASLM high %R by, 185 (30-130), } both spikes high -
12/27 MSD -004 188 176

only flagging detects for ASLM 1, 3, 8 for 12/27 spike

12/20 -024 ok

ASM-Lipids LHL4

VALIDATION WORKSHEET

Method: ASM dry
Date Reviewed: 1.11.18
Sample Collection Dates: 10.3-10.5.17

SDG: KL712350
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(BG)-LHL2-171005	2 FWB-001(BG)-LHL2-171005	3 FF-002(BG)-LHL2-171005	4 FWB-002(BG)-LHL2-171005	5 FF-001(BG)-LHL3-171005	6 FWB-001(BG)-LHL3-171005	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→	→	→														
Holding Times	A	→	→	→	→	→														
Initial Calibration	A	→	→	→	→	→														
Continuing Calibration DRL	A	→	→	→	→	→														
Method Blanks	A	→	→	→	→	→														
LCS																				
Surrogate %R or duplicate RPD																				
MS/MSD:	A	A	A	X	A	A														
Reporting Limits	A	→	→	→	→	→														
Completeness of Analyte List	A	→	→	→	→	→														
Field Duplicate Pair :																				
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SDG: K1712350

Project: Hwy. UK

Date: 1.11.18

Method: 1632A

ICV %R	.189/.2=.94	.248/.2=1.24	lab reported 94 124
CCV %R	.202/.2=1.	.223/.2=1.12	lab reported 101 112
LCS			lab reported
ICS %R			lab reported
MS %R	1.01/.58=1.74	1.09/.58=1.87	lab reported 174; 187
MS/MSD %RPD	$\frac{1.09-1.04}{1.09+1.04/2}=\frac{.05}{1.065}=5$		lab reported RPD - ok.
Duplicate %D	$\frac{.72-.82}{.72+.82/2}=\frac{.1}{.77}=$		lab reported
High Std Check	.72 .82/2	.77	lab reported
Low Cal Check	$\frac{.68-.78}{.68+.78/2}$	$\frac{.1}{.73}=.13$	lab reported
Serial D %	.68+.78/2	.73	lab reported
Sample Recalculation	$\frac{115-132}{115+132/2}$	$\frac{17}{123.5}=13$	lab reported
other (moisture)			lab reported

OPR of .125/.200= ~~.62~~

.127/.2=.64

62

~~64~~

~~q .202/.2= 1.01~~

.124/.2=.62

62

SDG KI712350	Analyte As111	
Project: HW. UL		
Date: 1.11.18		
002 Sample ID FF.001(BG).UL4.171003	Lab reported ND ug/g	mg/Kg mg/L
19 / 1000 =	.019	ug/L
Calulation		
004 Sample ID FWB.001(BG).CL.171004	Lab reported 0.21 ug/kg	mg/Kg mg/L
205 / 1000 = .205		ug/L
Calulation		
012 Sample ID FWB.001(BG).CL.171004FD	Lab reported 0.24 ug/g	mg/Kg mg/L
241. / 1000 = .241		ug/L
Calulation		
023 Sample ID FF.002(BG).HQ.171004	Lab reported ND ug/g	mg/Kg mg/L
35.9 / 1000 =	.035	ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

ALS Group USA, Corp.
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Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712350
Date Collected: 10/03/17
Date Received: 11/08/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(BG)-LHL4-171003	K1712350-002	0.08	0.04	1	12/27/17	12/28/17	ND	
FWB-001(BG)-LHL4-171003	K1712350-003	0.08	0.04	1	12/27/17	12/28/17	ND	
FF-002(BG)-LHL4-171003	K1712350-005	0.08	0.04	1	12/27/17	12/28/17	ND	
FWB-002(BG)-LHL4-171003	K1712350-006	0.08	0.04	1	12/27/17	12/28/17	ND	
FF-001(BG)-CI-171004	K1712350-008	0.08	0.04	1	12/27/17	12/28/17	ND	
FWB-001(BG)-CI-171004	K1712350-009	0.08	0.04	1	12/27/17	12/28/17	0.21 J	
FF-001(BG)-CI-171004-FD	K1712350-011	0.08	0.04	1	12/27/17	12/28/17	ND	
FWB-001(BG)-CI-171004-FD	K1712350-012	0.08	0.04	1	12/27/17	12/28/17	0.24 J	
FF-002(BG)-CI-171004	K1712350-014	0.08	0.04	1	12/27/17	12/28/17	ND	
FWB-002(BG)-CI-171004	K1712350-015	0.08	0.04	1	12/27/17	12/28/17	0.30 J	
FF-002(BG)-CI-171004-FD	K1712350-017	0.08	0.04	1	12/27/17	12/28/17	0.04 J	J
FWB-002(BG)-CI-171004-FD	K1712350-018	0.08	0.04	1	12/27/17	12/28/17	0.32 J	
FF-001(BG)-HQ-171004	K1712350-020	0.08	0.04	1	12/27/17	12/28/17	ND	
FWB-001(BG)-HQ-171004	K1712350-021	0.08	0.04	1	12/27/17	12/28/17	0.21 J	
FF-002(BG)-HQ-171004	K1712350-023	0.08	0.04	1	12/27/17	12/28/17	ND	
FWB-002(BG)-HQ-171004	K1712350-024	0.08	0.04	1	12/27/17	12/28/17	0.17 J	
FF-002(BG)-HQ-171004-FD	K1712350-026	0.08	0.04	1	12/27/17	12/28/17	ND	
FWB-002(BG)-HQ-171004-FD	K1712350-027	0.08	0.04	1	12/27/17	12/28/17	0.13 J	
FF-002(BG)-LHL1-171004	K1712350-029	0.08	0.04	1	12/27/17	12/28/17	ND	
FWB-002(BG)-LHL1-171004	K1712350-030	0.08	0.04	1	12/27/17	12/28/17	0.05 J	J
Method Blank	K1712350-MB1	0.08	0.04	1	12/27/17	12/28/17	ND	
Method Blank	K1712350-MB2	0.08	0.04	1	12/27/17	12/28/17	ND	
Method Blank	K1712350-MB3	0.08	0.04	1	12/27/17	12/28/17	ND	

ALS Group USA, Corp.
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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712350
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17
Sample Matrix:	Tissue	**Date Received:**	11/08/17

Arsenic (III)

Prep Method:	Method	Units:	ug/g
Analysis Method:	1632A	Basis:	Dry
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(BG)-LHL2-171005	K1712350-032	0.08	0.04	1	12/20/17	12/21/17	ND	
FWB-001(BG)-LHL2-171005	K1712350-033	0.08	0.04	1	12/20/17	12/21/17	ND	
FF-002(BG)-LHL2-171005	K1712350-035	0.08	0.04	1	12/20/17	12/21/17	ND	
FWB-002(BG)-LHL2-171005	K1712350-036	0.08	0.04	1	12/20/17	12/21/17	0.05 JC	J
FF-001(BG)-LHL3-171005	K1712350-038	0.08	0.04	1	12/20/17	12/21/17	ND	
FWB-001(BG)-LHL3-171005	K1712350-039	0.08	0.04	1	12/20/17	12/21/17	ND	
Method Blank	K1712350-MB1	0.08	0.04	1	12/20/17	12/21/17	ND	
Method Blank	K1712350-MB2	0.08	0.04	1	12/20/17	12/21/17	ND	
Method Blank	K1712350-MB3	0.08	0.04	1	12/20/17	12/21/17	ND	

ALS

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004

SR# 571250

COC Set ____ of ____

COC# BIOTA #1

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www.alsglobal.com

Project Name: KD-HERRINGTON LAKE	Project Number: 02921413A
Project Manager: MARY SORENSEN	
Company: RAMBOLL ENVIRON	
Address: 11200 PARKWOOD CIR, SUITE 310, ATL, GA	
Phone #: 770.548.1799	Email: msorensen@ramboll.com
Sampler Signature: Katrina Leigh	Sampler Printed Name: KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	300.0 / SO4 (28D)	7471B / Hg (28D)	1630 ~~Modified~~ Methyl Hg (180D)	6010C / Metals T (180D)	6020A / Metals T (180D)	1 1632/As INOR.	2 1632/As 3	3 1632/As 5	4 ASTM Paraffin WAFTER FRONT	5 LIPIDS	Remarks
1. FUN-001(B6)-LHL4	171003	10-3-17	1030	T	4		X	X	X	X	X	X	X	X	X	
2. FUN-002(B6)-LHL4	171003	10-3-17	1130		4		X	X	X	X	X	X	X	X	X	* INCLUDES DUPLICATE
3. FUN-001(B6)-CI-171004		10-4-17	1000		4		X	X	X	X	X	X	X	X	X	* INCLUDES DUPLICATE
4. FUN-002(B6)-CI-171004		10-4-17	1030		3		X	X	X	X	X	X	X	X	X	
5. FUN-001(B6)-HQ-171004		10-4-17	1330		3		X	X	X	X	X	X	X	X	X	
6. FUN-002(B6)-HQ-171004		10-4-17	1430		4		X	X	X	X	X	X	X	X	X	* INCLUDES DUPLICATE
7. FUN-002(B6)-LHL4-171004		10-4-17	1500		4		X	X	X	X	X	X	X	X	X	
8. FUN-001(B6)-LHL2-171005		10-5-17	1400		3		X	X	X	X	X	X	X	X	X	
9. FUN-002(B6)-LHL2-171005		10-5-17	1500		5		X	X	X	X	X	X	X	X	X	
10. FUN-001(B6)-LHL3-171005		10-5-17	1530	↓	3		X	X	X	X	X	X	X	X	X	

1 - 3
4 - 6
7 - 12
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22 - 27
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31 - 33
34 - 36
37 - 39

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
X IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.#_____
Bill To:_____

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

* FISH TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP

** EACH FISH TO BE SPLIT INTO FILLET (FF) + REMAINS (FLOB) AND COMPOSITED ACCORDING TO EMAIL INSTRUCTIONS

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Katrina Leigh	Signature: CODY GRAVES	Signature	Signature	Signature	Signature
Printed Name: KATRINA LEIGH	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: RTH	Firm	Firm	Firm	Firm	Firm
Date/Time: 11/7/17 1400	Date/Time: 11/8/17 0950	Date/Time	Date/Time	Date/Time	Date/Time

PC MH

Cooler Receipt and Preservation Form

Client Rambol Service Request K17 12350

Received: 11/8/17 Opened: 11/8/17 By: CG Unloaded: 11/8/17 By: CG

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?_____

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
-18.1	-18.1	—	—	0.0	390	83679	7883 7072 4970	

4. Packing material: *Inserts* (*Baggies*) *Bubble Wrap* *Gel Packs* *Wet Ice* (*Dry Ice*) *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N

If applicable, tissue samples were received: (*Frozen*) *Partially Thawed* *Thawed*

7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

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

*Notes, Discrepancies, & Resolutions:*_____

*Page*____ *of*____

6010C 6020A 7471B

VALIDATION WORKSHEET

Method: Metals / Hg
Date Reviewed: 4.4.18
Sample Collection Dates: 10.5 10.16.18

SDG: IC17124168
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria	FF-001(SS)-D2-171016	FWB-001(SS)-D2-171016	FF-001(HS)-D2-171016	FWB-001(HS)-D2-171016	FF-001(FHC)-LHL2-171005	FWB-001(FHC)-LHL2-171005	FF-001(CC)-LHL5-171007	FWB001(CC)-LHL5-171007	FF-001(FHC)-LHL4-171012	FWB-001(FHC)-LHL4-171012	FF-002(FHC)-MHL1-171014	FWB-002(FHC)-MHL1-171014	FF-002(CC)-MHL3-171014	FWB-002(CC)-MHL3-171014	FD-02 (HS)-D2-171016	FD-001(CC)-LHL5-171007				
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks (1)	A																			
LCS	A																			
~~duplicate RPD~~	A																			
MS/MSD: 2,18 (2)	X									A										

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

metals Hg Se ICV CCV

spl 10.5-10.16.18

prep 3.15.18 2.16.18 3.23.18 3.26.18 12.29.17

run 3.20.18 3.23.18 2.14.18 2038 12.29.17

MWB 2154.01 Fe.3] - no flags
2154.01 Fe.4]

MSL Hg -002 24168-002 8,J/UJ Hg -002, -003, 5, 6, 9, 10, 12, 13, 15/16
3/23/18 3427-05

131

ICB CCB ~~2.14.18 18:02 0.4 µg/L~~ x5 ok for ICV

ICS

SEM Doc 4 ICAL > ok
CCAL

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Analytical Report

Client:	Ramboll Environ US Corporation		
Project:	KU-Herrington Lake/0242643A	**Service Request:**	K1712468
Sample Matrix:	Tissue	**Date Collected:**	10/05/17 09:30
		Date Received:	11/16/17 09:30
Sample Name:	FF-001(FHC)-LHL2-171005		
Lab Code:	K1712468-002	**Basis:**	Dry

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.08 J**	mg/Kg	0.50	0.02	5	03/20/18 13:21	03/15/18	
Boron	6020A	**0.67**	mg/Kg	0.50	0.20	5	03/20/18 13:21	03/15/18	
Cadmium	6020A	**0.012 J**	mg/Kg	0.020	0.003	5	03/20/18 13:21	03/15/18	
Iron	6020A	**21.7**	mg/Kg	0.99	0.09	5	03/20/18 13:21	03/15/18	
Lead	6020A	**0.016 J**	mg/Kg	0.020	0.003	5	03/20/18 13:21	03/15/18	
Magnesium	6010C	**1200**	mg/Kg	0.99	0.50	1	03/26/18 10:32	03/15/18	
Mercury	7471B	**0.929** J8	mg/Kg	0.020	0.004	2	03/23/18 12:31	03/23/18	
Selenium	6020A	**7.34**	mg/Kg	0.99	0.03	5	03/20/18 13:21	03/15/18	
Zinc	6020A	**28.6**	mg/Kg	0.50	0.08	5	03/20/18 13:21	03/15/18	

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Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712468
Date Collected: 10/05/17 09:30
Date Received: 11/16/17 09:30

Sample Name: FWB-001(FHC)-LHL2-171005
Lab Code: K1712468-003

Basis: Dry

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.12** J	mg/Kg	0.50	0.02	5	03/20/18 13:41	03/15/18	
Boron	6020A	**2.12**	mg/Kg	0.50	0.20	5	03/20/18 13:41	03/15/18	
Cadmium	6020A	**0.047**	mg/Kg	0.020	0.003	5	03/20/18 13:41	03/15/18	
Iron	6020A	**74.0**	mg/Kg	1.00	0.09	5	03/20/18 13:41	03/15/18	
Lead	6020A	**0.073**	mg/Kg	0.020	0.003	5	03/20/18 13:41	03/15/18	
Magnesium	6010C	**1940**	mg/Kg	1.00	0.5	1	03/26/18 10:44	03/15/18	
Mercury	7471B	**0.307** J q	mg/Kg	0.019	0.004	2	03/23/18 12:44	03/23/18	
Selenium	6020A	**3.72**	mg/Kg	1.00	0.03	5	03/20/18 13:41	03/15/18	
Zinc	6020A	**114**	mg/Kg	0.50	0.08	5	03/20/18 13:41	03/15/18	

Superset Reference:

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 08:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(CC)-LHL5-171007	**Basis:**	Dry
Lab Code:	K1712468-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.14 J**	mg/Kg	0.50	0.02	5	03/20/18 13:44	03/15/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 13:44	03/15/18	
Cadmium	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/20/18 13:44	03/15/18	
Iron	6020A	**10.9**	mg/Kg	1.00	0.09	5	03/20/18 13:44	03/15/18	
Lead	6020A	**0.008 J**	mg/Kg	0.020	0.003	5	03/20/18 13:44	03/15/18	
Magnesium	6010C	**688**	mg/Kg	1.00	0.5	1	03/26/18 10:54	03/15/18	
Mercury	7471B	**0.388** J 8	mg/Kg	0.018	0.004	2	03/23/18 12:47	03/23/18	
Selenium	6020A	**1.50**	mg/Kg	1.00	0.03	5	03/20/18 13:44	03/15/18	
Zinc	6020A	**28.1**	mg/Kg	0.50	0.08	5	03/20/18 13:44	03/15/18	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 08:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(CC)-LHL5-171007	**Basis:**	Dry
Lab Code:	K1712468-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.09 J**	mg/Kg	0.50	0.02	5	03/20/18 13:47	03/15/18	
Boron	6020A	**0.35 J**	mg/Kg	0.50	0.20	5	03/20/18 13:47	03/15/18	
Cadmium	6020A	**0.021**	mg/Kg	0.020	0.003	5	03/20/18 13:47	03/15/18	
Iron	6020A	**26.0**	mg/Kg	1.0	0.09	5	03/20/18 13:47	03/15/18	
Lead	6020A	**0.033**	mg/Kg	0.020	0.003	5	03/20/18 13:47	03/15/18	
Magnesium	6010C	**1670**	mg/Kg	1.0	0.5	1	03/26/18 10:56	03/15/18	
Mercury	7471B	**0.180** J 8	mg/Kg	0.020	0.004	2	03/23/18 12:50	03/23/18	
Selenium	6020A	**1.1**	mg/Kg	1.0	0.03	5	03/20/18 13:47	03/15/18	
Zinc	6020A	**72.3**	mg/Kg	0.50	0.08	5	03/20/18 13:47	03/15/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 08:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(CC)-LHL5-171007	**Basis:**	Dry
Lab Code:	K1712468-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**6.6**	mg/Kg	1.0	0.03	5	12/29/17 15:10	12/28/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(FHC)-LHL4-171012	**Basis:**	Dry
Lab Code:	K1712468-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.17 J**	mg/Kg	0.50	0.02	5	03/20/18 13:50	03/15/18	
Boron	6020A	**0.63**	mg/Kg	0.50	0.20	5	03/20/18 13:50	03/15/18	
Cadmium	6020A	**0.007 J**	mg/Kg	0.020	0.003	5	03/20/18 13:50	03/15/18	
Iron	6020A	**25.4**	mg/Kg	1.00	0.09	5	03/20/18 13:50	03/15/18	
Lead	6020A	**0.010 J**	mg/Kg	0.020	0.003	5	03/20/18 13:50	03/15/18	
Magnesium	6010C	**999**	mg/Kg	1.00	0.5	1	03/26/18 10:59	03/15/18	
Mercury	7471B	**1.05** J B	mg/Kg	0.019	0.004	2	03/23/18 12:53	03/23/18	
Selenium	6020A	**4.77**	mg/Kg	1.00	0.03	5	03/20/18 13:50	03/15/18	
Zinc	6020A	**30.5**	mg/Kg	0.50	0.08	5	03/20/18 13:50	03/15/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(FHC)-LHL4-171012	**Basis:**	Dry
Lab Code:	K1712468-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.18 J**	mg/Kg	0.50	0.02	5	03/20/18 15:00	03/15/18	
Boron	6020A	**1.56**	mg/Kg	0.50	0.20	5	03/20/18 15:00	03/15/18	
Cadmium	6020A	**0.073**	mg/Kg	0.020	0.003	5	03/20/18 15:00	03/15/18	
Iron	6020A	**54.8**	mg/Kg	1.00	0.09	5	03/20/18 15:00	03/15/18	
Lead	6020A	**0.064**	mg/Kg	0.020	0.003	5	03/20/18 15:00	03/15/18	
Magnesium	6010C	**1490**	mg/Kg	1.00	0.5	1	03/26/18 11:01	03/15/18	
Mercury	7471B	**0.344** J	mg/Kg	0.019	0.004	2	03/23/18 12:57	03/23/18	
Selenium	6020A	**2.21**	mg/Kg	1.00	0.03	5	03/20/18 15:00	03/15/18	
Zinc	6020A	**85.0**	mg/Kg	0.50	0.08	5	03/20/18 15:00	03/15/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-002(FHC)-MHL1-171014	**Basis:**	Dry
Lab Code:	K1712468-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.11 J**	mg/Kg	0.50	0.02	5	03/20/18 15:03	03/15/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 15:03	03/15/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/20/18 15:03	03/15/18	
Iron	6020A	**10.1**	mg/Kg	1.0	0.09	5	03/20/18 15:03	03/15/18	
Lead	6020A	**0.005 J**	mg/Kg	0.020	0.003	5	03/20/18 15:03	03/15/18	
Magnesium	6010C	**836**	mg/Kg	1.0	0.5	1	03/26/18 11:04	03/15/18	
Mercury	7471B	**1.52** J 8	mg/Kg	0.019	0.004	2	03/23/18 13:03	03/23/18	
Selenium	6020A	**1.9**	mg/Kg	1.0	0.03	5	03/20/18 15:03	03/15/18	
Zinc	6020A	**27.5**	mg/Kg	0.50	0.08	5	03/20/18 15:03	03/15/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-002(FHC)-MHL1-171014	**Basis:**	Dry
Lab Code:	K1712468-013		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.13 J**	mg/Kg	0.50	0.02	5	03/20/18 15:06	03/15/18	
Boron	6020A	**0.20 J**	mg/Kg	0.50	0.20	5	03/20/18 15:06	03/15/18	
Cadmium	6020A	**0.030**	mg/Kg	0.020	0.003	5	03/20/18 15:06	03/15/18	
Iron	6020A	**30.0**	mg/Kg	1.00	0.09	5	03/20/18 15:06	03/15/18	
Lead	6020A	**0.064**	mg/Kg	0.020	0.003	5	03/20/18 15:06	03/15/18	
Magnesium	6010C	**1590**	mg/Kg	1.00	0.5	1	03/26/18 11:06	03/15/18	
Mercury	7471B	**0.570 J**	mg/Kg	0.019	0.004	2	03/23/18 13:06	03/23/18	
Selenium	6020A	**0.80 J**	mg/Kg	1.00	0.03	5	03/20/18 15:06	03/15/18	
Zinc	6020A	**90.0**	mg/Kg	0.50	0.08	5	03/20/18 15:06	03/15/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 12:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-002(CC)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712468-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.16 J**	mg/Kg	0.50	0.02	5	03/20/18 14:02	03/15/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 14:02	03/15/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/20/18 14:02	03/15/18	
Iron	6020A	**15.1**	mg/Kg	0.99	0.09	5	03/20/18 14:02	03/15/18	
Lead	6020A	**0.005 J**	mg/Kg	0.020	0.003	5	03/20/18 14:02	03/15/18	
Magnesium	6010C	**791**	mg/Kg	0.99	0.50	1	03/26/18 11:08	03/15/18	
Mercury	7471B	**0.191 J**	mg/Kg	0.019	0.004	2	03/23/18 13:13	03/23/18	
Selenium	6020A	**0.95 J**	mg/Kg	0.99	0.03	5	03/20/18 14:02	03/15/18	
Zinc	6020A	**27.6**	mg/Kg	0.50	0.08	5	03/20/18 14:02	03/15/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 12:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-002(CC)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712468-016		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.20 J**	mg/Kg	0.50	0.02	5	03/20/18 14:05	03/15/18	
Boron	6020A	**0.25 J**	mg/Kg	0.50	0.20	5	03/20/18 14:05	03/15/18	
Cadmium	6020A	**0.019 J**	mg/Kg	0.020	0.003	5	03/20/18 14:05	03/15/18	
Iron	6020A	**134**	mg/Kg	1.00	0.09	5	03/20/18 14:05	03/15/18	
Lead	6020A	**0.143**	mg/Kg	0.020	0.003	5	03/20/18 14:05	03/15/18	
Magnesium	6010C	**1350**	mg/Kg	1.00	0.5	1	03/26/18 11:11	03/15/18	
Mercury	7471B	**0.080 J**	mg/Kg	0.019	0.004	2	03/23/18 13:16	03/23/18	
Selenium	6020A	**0.95 J**	mg/Kg	1.00	0.03	5	03/20/18 14:05	03/15/18	
Zinc	6020A	**66.6**	mg/Kg	0.50	0.08	5	03/20/18 14:05	03/15/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(SS)-DR-171016	**Basis:**	Dry
Lab Code:	K1712468-018		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.12 J**	mg/Kg	0.50	0.02	5	02/19/18 17:43	02/16/18	
Boron	6020A	**0.65**	mg/Kg	0.50	0.20	5	02/19/18 17:43	02/16/18	
Cadmium	6020A	**0.016 J**	mg/Kg	0.020	0.003	5	02/19/18 17:43	02/16/18	
Iron	6020A	**19.4**	mg/Kg	1.00	0.09	5	02/19/18 17:43	02/16/18	
Lead	6020A	**0.011 J**	mg/Kg	0.020	0.003	5	02/19/18 17:43	02/16/18	
Magnesium	6010C	**1250**	mg/Kg	1.00	0.5	1	02/22/18 10:19	02/16/18	
Mercury	7471B	**0.157**	mg/Kg	0.019	0.004	2	02/23/18 10:01	02/22/18	
Selenium	6020A	**6.29**	mg/Kg	1.00	0.03	5	02/19/18 17:43	02/16/18	
Zinc	6020A	**39.2**	mg/Kg	0.50	0.08	5	02/19/18 17:43	02/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(SS)-DR-171016	**Basis:**	Dry
Lab Code:	K1712468-019		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.14 J**	mg/Kg	0.50	0.02	5	02/19/18 18:05	02/16/18	
Boron	6020A	**1.40**	mg/Kg	0.50	0.20	5	02/19/18 18:05	02/16/18	
Cadmium	6020A	**0.022**	mg/Kg	0.020	0.003	5	02/19/18 18:05	02/16/18	
Iron	6020A	**108**	mg/Kg	1.0	0.09	5	02/19/18 18:05	02/16/18	
Lead	6020A	**0.108**	mg/Kg	0.020	0.003	5	02/19/18 18:05	02/16/18	
Magnesium	6010C	**2180**	mg/Kg	1.0	0.5	1	02/22/18 10:28	02/16/18	
Mercury	7471B	**0.078**	mg/Kg	0.020	0.004	2	02/23/18 10:14	02/22/18	
Selenium	6020A	**4.5**	mg/Kg	1.0	0.03	5	02/19/18 18:05	02/16/18	
Zinc	6020A	**93.6**	mg/Kg	0.50	0.08	5	02/19/18 18:05	02/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 12:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(HS)-DR-171016	**Basis:**	Dry
Lab Code:	K1712468-021		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.23 J**	mg/Kg	0.50	0.02	5	02/19/18 18:08	02/16/18	
Boron	6020A	**0.51**	mg/Kg	0.50	0.20	5	02/19/18 18:08	02/16/18	
Cadmium	6020A	**0.013 J**	mg/Kg	0.020	0.003	5	02/19/18 18:08	02/16/18	
Iron	6020A	**22.6**	mg/Kg	1.00	0.09	5	02/19/18 18:08	02/16/18	
Lead	6020A	**0.008 J**	mg/Kg	0.020	0.003	5	02/19/18 18:08	02/16/18	
Magnesium	6010C	**1360**	mg/Kg	1.00	0.5	1	02/22/18 10:31	02/16/18	
Mercury	7471B	**0.130**	mg/Kg	0.019	0.004	2	02/23/18 10:17	02/22/18	
Selenium	6020A	**5.10**	mg/Kg	1.00	0.03	5	02/19/18 18:08	02/16/18	
Zinc	6020A	**46.5**	mg/Kg	0.50	0.08	5	02/19/18 18:08	02/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 12:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(HS)-DR-171016	**Basis:**	Dry
Lab Code:	K1712468-022		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.13 J**	mg/Kg	0.50	0.02	5	02/19/18 18:11	02/16/18	
Boron	6020A	**0.88**	mg/Kg	0.50	0.20	5	02/19/18 18:11	02/16/18	
Cadmium	6020A	**0.056**	mg/Kg	0.020	0.003	5	02/19/18 18:11	02/16/18	
Iron	6020A	**34.9**	mg/Kg	1.0	0.09	5	02/19/18 18:11	02/16/18	
Lead	6020A	**0.028**	mg/Kg	0.020	0.003	5	02/19/18 18:11	02/16/18	
Magnesium	6010C	**1790**	mg/Kg	1.0	0.5	1	02/22/18 10:41	02/16/18	
Mercury	7471B	**0.053**	mg/Kg	0.019	0.004	2	02/23/18 10:21	02/22/18	
Selenium	6020A	**3.4**	mg/Kg	1.0	0.03	5	02/19/18 18:11	02/16/18	
Zinc	6020A	**71.4**	mg/Kg	0.50	0.08	5	02/19/18 18:11	02/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 12:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(HS)-DR-171016	**Basis:**	Dry
Lab Code:	K1712468-023		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**5.86**	mg/Kg	1.00	0.03	5	12/29/17 15:12	12/28/17	

Fish VLV

VALIDATION WORKSHEET

Method: Methyl Mercury
Date Reviewed: 4.3.18
Sample Collection Dates: 10.5 10.16.17

SDG: K1712468
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(SS)-D2-171016	2 FWB-001(SS)-D2-171016	3 FF-001(HS)-D2-171016	4 FWB-001(HS)-D2-171016	5 FF-001(FHC)-LHL2-171005	6 FWB-001(FHC)-LHL2-171005	7 FF-001(LC)-LHL5-171007	8 FWB001(LC)-LHL5-171007	9 FF-001(FHC)-LHL4-171012	10 FWB-001(FHC)-LHL4-171012	11 FF-002(FHC)-MHL1-171014	12 FWB-002(FHC)-MHL1-171014	13 FF-002(LC)-MHL3-171014	14 FWB-002(LC)-MHL3-171014	15	16	17	18	19	20
Sample results	A	→																		
Holding Times	A	→																		
Completion	A	→																		
Method Blanks	A	→																		
LCS QC's	A	→																		
duplicate RPD																				
MS/MSD: 19 12	A	→																		

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

frozen -19 to 2.2 C

Spl W.S.17 - 10.16.17 -22.1

prep 2 2018 3 14 18

run 2 21 18 3 20 18

[No notes recd spl not on COC FO-001(KB)LHL3.171003
Biota tag - corresponds w/ FWB-001(KB)-LHL3.171003
[↑ not in this SDG] ← ~~run for AW SC~~.

OPR - OK

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712468
Date Collected: 10/05-16/17
Date Received: 11/16/17-01/12/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(FHC)-LHL2-171005	K1712468-002	9.7	3.9	1	03/14/18	03/20/18	1050	
FWB-001(FHC)-LHL2-171005	K1712468-003	9.7	3.9	1	03/14/18	03/20/18	389	
FF-001(CC)-LHL5-171007	K1712468-005	9.7	3.9	1	03/14/18	03/20/18	552	
FWB-001(CC)-LHL5-171007	K1712468-006	9.8	3.9	1	03/14/18	03/20/18	177	
FF-001(FHC)-LHL4-171012	K1712468-009	9.7	3.9	1	03/14/18	03/20/18	1670	
FWB-001(FHC)-LHL4-171012	K1712468-010	9.9	4.0	1	03/14/18	03/20/18	398	
FF-002(FHC)-MHL1-171014	K1712468-012	9.9	4.0	1	03/14/18	03/20/18	1980	
FWB-002(FHC)-MHL1-171014	K1712468-013	9.9	4.0	1	03/14/18	03/20/18	477	
FF-002(CC)-MHL3-171014	K1712468-015	9.8	3.9	1	03/14/18	03/20/18	300	
FWB-002(CC)-MHL3-171014	K1712468-016	9.8	3.9	1	03/14/18	03/20/18	93.4	
Method Blank 1	K1712468-MB1	10.0	4.0	1	03/14/18	03/20/18	ND	
Method Blank 2	K1712468-MB2	10.0	4.0	1	03/14/18	03/20/18	ND	
Method Blank 3	K1712468-MB3	10.0	4.0	1	03/14/18	03/20/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712468
Date Collected: 10/05-16/17
Date Received: 11/16/17-01/12/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(SS)-DR-171016	K1712468-018	10.0	4.0	1	02/20/18	02/21/18	191	
FWB-001(SS)-DR-171016	K1712468-019	9.9	4.0	1	02/20/18	02/21/18	118	
FF-001(HS)-DR-171016	K1712468-021	9.9	4.0	1	02/20/18	02/21/18	132	
FWB-001(HS)-DR-171016	K1712468-022	9.8	3.9	1	02/20/18	02/21/18	98.6	
Method Blank 1	K1712468-MB1	10.0	4.0	1	02/20/18	02/21/18	ND	
Method Blank 2	K1712468-MB2	10.0	4.0	1	02/20/18	02/21/18	ND	
Method Blank 3	K1712468-MB3	10.0	4.0	1	02/20/18	02/21/18	ND	

fish HG2

1632A

VALIDATION WORKSHEET

Method: AS III
Date Reviewed: 4.3.18
Sample Collection Dates: 10.5-10.16.17

SDG: 1617124168
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(SS)-D2-171016	2 FWB-001(SS)-D2-171016	3 FF-001(HS)-D2-171016	4 FWB-001(HS)-D2-171016	5 FF-001(FHC)-HG2-171005	6 FWB-001(FHC)-HG2-171005	7 FF-001(LC)-HGS-171007	8 FWB001(LC)-HGS-171007	9 FF-001(FHC)-LHG4-171012	10 FWB-001(FHC)-LHG4-171012	11 FF-002(FHC)-MHL1-171014	12 FWB-002(FHC)-MHL1-171014	13 FF-002(LC)-MHG3-171014	14 FWB-002(LC)-MHG3-171014	15 FD-01	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS / QCS																				
duplicate RPD																				
MS/MSD: 2, 3, 18, 19	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Opl 10.5-10.16.17
pw 2 22618 3 19 18
WM 2 22718 3 20 18

OPR - ok

calves ok.

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05-14/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(FHC)-LHL2-171005	K1712468-002	0.079	0.039	1	03/19/18	03/20/18	ND	
FWB-001(FHC)-LHL2-171005	K1712468-003	0.078	0.039	1	03/19/18	03/20/18	ND	
FF-001(CC)-LHL5-171007	K1712468-005	0.079	0.039	1	03/19/18	03/20/18	ND	
FWB-001(CC)-LHL5-171007	K1712468-006	0.078	0.039	1	03/19/18	03/20/18	ND	
FF-001(FHC)-LHL4-171012	K1712468-009	0.078	0.039	1	03/19/18	03/20/18	ND	
FWB-001(FHC)-LHL4-171012	K1712468-010	0.079	0.039	1	03/19/18	03/20/18	ND	
FF-002(FHC)-MHL1-171014	K1712468-012	0.079	0.040	1	03/19/18	03/20/18	ND	
FWB-002(FHC)-MHL1-171014	K1712468-013	0.077	0.039	1	03/19/18	03/20/18	ND	
FF-002(CC)-MHL3-171014	K1712468-015	0.078	0.039	1	03/19/18	03/20/18	ND	
FWB-002(CC)-MHL3-171014	K1712468-016	0.078	0.039	1	03/19/18	03/20/18	ND	
Method Blank 1	K1712468-MB1	0.080	0.040	1	03/19/18	03/20/18	ND	
Method Blank 2	K1712468-MB2	0.080	0.040	1	03/19/18	03/20/18	ND	
Method Blank 3	K1712468-MB3	0.080	0.040	1	03/19/18	03/20/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(SS)-DR-171016	K1712468-018	0.079	0.039	1	02/26/18	02/27/18	ND	
FWB-001(SS)-DR-171016	K1712468-019	0.078	0.039	1	02/26/18	02/27/18	ND	
FF-001(HS)-DR-171016	K1712468-021	0.078	0.039	1	02/26/18	02/27/18	ND	
FWB-001(HS)-DR-171016	K1712468-022	0.079	0.040	1	02/26/18	02/27/18	ND	
Method Blank 1	K1712468-MB1	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 2	K1712468-MB2	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 3	K1712468-MB3	0.040	0.040	1	02/26/18	02/27/18	ND	

1637A fish IVL2

VALIDATION WORKSHEET

Method: Total Inorganic Arsenic — ASV by calc not validated

Date Reviewed: 4.3.18

Sample Collection Dates: 10.5 - 10.16.17

SDG: KI7124168

Reviewer: C Jensen

The following data validation areas were reviewed:

Validation Criteria	1 FF-001(SS)-DR-171016	2 FWB-001(SS)-DR-171016	3 FF-001(HS)-DR-171016	4 FWB-001(HS)-DR-171016	5 FF-001(FHC)-LHL2-171005	6 FWB-001(FHC)-LHL2-171005	7 FF-001(LC)-LHLS-171007	8 FWB001(LC)-LHLS-171007	9 FF-001(FHC)-LHL4-171012	10 FWB-001(FHC)-LHL4-171012	11 FF-002(FHC)-MHL1-171014	12 FWB-002(FHC)-MHL1-171014	13 FF-002(LC)-MHL3-171014	14 FWB-002(LC)-MHL3-171014	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS																				
duplicate RPD																				
MS/MSD: 2,3,18	X	A	→		X	A	→													

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

spl 10.5 - 10.14.17

prep 2 2618 3 1918

run 3 1 18 3 2 18

① Inorg As ms/msd ~~RPD 23~~ MSL msd L 18, 14

3/19 3/21 -002 FF-001(FHC)-LHL2-171005 -003 -ok

2/26 -018 FF-001(SS)-DR-171016 -019 -ok

~~OR~~ OPR. Inorg As only for parent spls 1/4/8

calves. ok.

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712468
Date Collected: 10/05-14/17
Date Received: 11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(FHC)-LHL2-171005	K1712468-002	0.039	0.014	1	03/19/18	03/21/18	ND UJ 8	
FWB-001(FHC)-LHL2-171005	K1712468-003	0.039	0.014	1	03/19/18	03/21/18	ND	
FF-001(CC)-LHL5-171007	K1712468-005	0.039	0.014	1	03/19/18	03/21/18	ND	
FWB-001(CC)-LHL5-171007	K1712468-006	0.039	0.014	1	03/19/18	03/21/18	ND	
FF-001(FHC)-LHL4-171012	K1712468-009	0.039	0.014	1	03/19/18	03/21/18	ND	
FWB-001(FHC)-LHL4-171012	K1712468-010	0.039	0.014	1	03/19/18	03/21/18	ND	
FF-002(FHC)-MHL1-171014	K1712468-012	0.040	0.014	1	03/19/18	03/21/18	ND	
FWB-002(FHC)-MHL1-171014	K1712468-013	0.039	0.014	1	03/19/18	03/21/18	ND	
FF-002(CC)-MHL3-171014	K1712468-015	0.039	0.014	1	03/19/18	03/21/18	ND	
FWB-002(CC)-MHL3-171014	K1712468-016	0.039	0.014	1	03/19/18	03/21/18	0.016	J
Method Blank	K1712468-MB1	0.040	0.014	1	03/19/18	03/21/18	ND	
Method Blank	K1712468-MB2	0.040	0.014	1	03/19/18	03/21/18	ND	
Method Blank	K1712468-MB3	0.040	0.014	1	03/19/18	03/21/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712468
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(SS)-DR-171016	K1712468-018	0.039	0.014	1	02/26/18	03/01/18	ND	UJ 8
FWB-001(SS)-DR-171016	K1712468-019	0.039	0.014	1	02/26/18	03/01/18	0.032	J
FF-001(HS)-DR-171016	K1712468-021	0.039	0.014	1	02/26/18	03/01/18	ND	
FWB-001(HS)-DR-171016	K1712468-022	0.040	0.014	1	02/26/18	03/01/18	0.018	J
Method Blank 1	K1712468-MB1	0.040	0.014	1	02/26/18	03/01/18	ND	
Method Blank 2	K1712468-MB2	0.040	0.014	1	02/26/18	03/01/18	ND	
Method Blank 3	K1712468-MB3	0.040	0.014	1	02/26/18	03/01/18	ND	

ALS

CHAIN OF COUSTODY

CHAIN OF CUSTODY

83679

004

SR# K1712468
COC Set 1 of 1
COC# BIOTA#11
Page 1 of 1

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: RD-HERRINGTON LAKE
Project Number: 0342643A
Project Manager: MARY SORENSEN
Company: RAMBOLL ENVIRON
Address: 1600 PARKWOOD CIR, SUITE 310, ATL, GA
Phone #: 770.548.1799
email: msorensen@ramboll.com
Sampler Signature: [signature]
Sampler Printed Name: KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	300.0 / SO4 (28D)	7471B / Hg (28D)	1630 Modified / Methyl Hg	6010C / Metals T (180D)	6020A / Metals T	1 1632/As INOR	2 1632/As 3	3 1632/As 5	4 ASTM D3...	5 LIPIDS	Remarks
1. FUN-001(FHC)-LHL2-171005		10-5-17	0930	T	1		X	X	X	X	X	X	X	X	X	
2. FUN-001(CC)-LHL5-171007		10-7-17	0830		2		X	X	X	X	X	X	X	X	X	
3. FD-001(CC)-LHL5-171007		10-7-17	0830		1				X	X				X	X	*Se ONLY
4. FUN-001(FHC)-LHL4-171012		10-12-17	1030		1		X	X	X	X	X	X	X	X	X	
5. FUN-002(FHC)-MHL1-171014		10-14-17	1000		1		X	X	X	X	X	X	X	X	X	
6. FUN-002(CC)-MHL3-171014		10-14-17	1230		2		X	X	X	X	X	X	X	X	X	
7. FUN-001(SS)-DR-171016		10-16-17	1130		2		X	X	X	X	X	X	X	X	X	
8. FUN-001(HS)-DR-171016		10-16-17	1230		2		X	X	X	X	X	X	X	X	X	
9. FD-001(HS)-DR-171016		10-16-17	1230	↓	1				X	X				X	X	*Se ONLY
10.																

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
X II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.# ______
Bill To: ______

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____ (Circle One)

Special Instructions/Comments:

* FISH TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP
** EACH FISH TO BE SPLIT INTO FILLET (FF) + REMAINS (FWB) AND COMPOSITED ACCORDING TO EMAIL INSTRUCTIONS

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature [signature]	Signature [signature] CODY GRAVES	Signature	Signature	Signature	Signature
Printed Name KATRINA LEIGH	Printed Name ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm RAMBOLL	Firm 11/16/17 0930	Firm	Firm	Firm	Firm
Date/Time 11/14/17 1800	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

ALS

PC MH

Cooler Receipt and Preservation Form

ient RAMBOLL ENVIRON Service Request K17 12468

ceived: 11-16-17 Opened: 11-16-17 By: ASP Unloaded: 11-16-17 By: ASP/CG

Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*

Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*

Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

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
-11.2	-11.3	N/A	N/A	-0.1	356	83679	7884 7816 1592	
2.2	2.2	N/A	N/A	0.0	391	83679	7884 7816 1679	
-13.0	-12.9	N/A	N/A	+0.1	376	83679	7884 7816 16 18	
-19.0	-19.0	N/A	N/A	0.0	379	83679	7884 7816 1607	
-12.0	-12.0	N/A	N/A	0.0	373	83679	7884 7816 1630	

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) CG 11/16

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: Received sample not on COC - "FO-001(KB)LHL3-171003" (Bota #9 - corresponds w/ FUW-001(KB)-LHL3-171003.

7/25/16

Page 1 *of* 2

ALS

PC MH

Cooler Receipt and Preservation Form

ient Rambell Service Request K17 17468

eceived: 11/16/17 Opened: 11/16/17 By: CG Unloaded: 11/16/17 By: CG/DP

Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*

Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other*_____ *NA*

. Were custody seals on coolers? NA Y (N) If yes, how many and where?_____

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
-21.0	-21.1	/	/	-0.1	349	83679	7884 7816 1640	
-22.0	-22.1	/	/	-0.1	328		1651	
-10.4	-10.4	/	/	0.0	325		1581	

4. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* *Wet Ice* (*Dry Ice*) *Sleeves* _____

5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N

6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N

If applicable, tissue samples were received: (*Frozen*) *Partially Thawed* *Thawed*

7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N

8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y (N)

9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N

10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N

11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N

12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: See pg. 1

7/25/16

Page 2 *of* 2

LEOIOC
LEO20A

FWTTBFish lvl 2

VALIDATION WORKSHEET

Method: Total Metals, Mercury
Date Reviewed: 4.4.18
Sample Collection Dates: 10.4; 10.13.14

SDG: K1712469
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-002(KB)-LHC3-171007	2 FF-001(CC)-LHC2-171005	3 FWB-001(CC)-LHC2-171005	4 FF-001(LMB)-LHC2-171005	5 FWB-001(LMB)-LHC2-171005	6 FF-001(LMB)-LHC2-171005-FD	7 FWB-001(LMB)-LHC2-171005-FD	8 FF-001(CC)-LHC4-171012	9 FWB-001(CC)-LHC4-171012	10 FWB-002(KB)-LHC3-171007	11 FF-001(FHC)-CI-171013	12 FWB-001(FHC)-CI-171013	13 FF-001(CC)-CI-171013	14 FWB-001(CC)-CI-171013	15 FD-001(FHC)-CI-171013	16 FD-002(KB)-LHC3-171007	17	18	19	20
Sample results	A →	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→				
Holding Times	A →	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→				
Completion	A →	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→				
Method Blanks	A →	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→				
LCS	A →	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→				
duplicate RPD ①	A →	→	→	→	→	→	→	→	→	→	X	A	A	X	A	A				
MS/MSD: ②	A →	→	→	→	→	→	→	→	→	→	X	A	A	X	A	A				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Hg
ICAL/CCAL ok LCS - ok
ICB/CCB ok Serial D ok

Spl 10.4. - 10.13.18 "
prep 2/16 18 2.23.18 3.20.18 12.28.17 2.22.18 2.23.18 3.27.18
run 2.19.18 3.5.18 3.20.18 12.29.17 2.23.18 2.26.18 3.28.18

extr
MB Fe 2.16 .3 J mg/kg .9 J mg/kg
Mg .7 J mg/kg) extr. 2.23
B .25 J mg/kg) extr 2.26
Fe .1 J mg/kg
Fe .6 mg/kg) extr 3.15
Hg .004 J mg/kg extr. 2.27.
— no MB flags

Serus Dom. 4, TOA3. ok

① dup 2459-05 RPD limit 20, Mg, Zn high (-19, -23) J 9

② • MS high 2459-06 Se J 8 - detects only
MS low 3776-05 Hg - no flag, 2 MS in batch, parent is batch.

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-002(KB)-LHL3-171004	**Basis:**	Dry
Lab Code:	K1712469-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.53**	mg/Kg	0.50	0.02	5	02/19/18 18:14	02/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	02/19/18 18:14	02/16/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	02/19/18 18:14	02/16/18	
Iron	6020A	**13.2**	mg/Kg	1.00	0.09	5	02/19/18 18:14	02/16/18	
Lead	6020A	**0.005 J**	mg/Kg	0.020	0.003	5	02/19/18 18:14	02/16/18	
Magnesium	6010C	**1010**	mg/Kg	1.00	0.5	1	02/22/18 10:43	02/16/18	
Mercury	7471B	**0.354**	mg/Kg	0.019	0.004	2	02/23/18 10:24	02/22/18	
Selenium	6020A	**4.67**	mg/Kg	1.00	0.03	5	02/19/18 18:14	02/16/18	
Zinc	6020A	**36.7**	mg/Kg	0.50	0.08	5	02/19/18 18:14	02/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-002(KB)-LHL3-171004	**Basis:**	Dry
Lab Code:	K1712469-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.51**	mg/Kg	0.50	0.02	5	03/05/18 11:22	02/23/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/05/18 11:22	02/23/18	
Cadmium	6020A	**0.030**	mg/Kg	0.020	0.003	5	03/05/18 11:22	02/23/18	
Iron	6020A	**32.5**	mg/Kg	1.00	0.09	5	03/05/18 11:22	02/23/18	
Lead	6020A	**0.020 J**	mg/Kg	0.020	0.003	5	03/05/18 11:22	02/23/18	
Magnesium	6010C	**1420**	mg/Kg	1.00	0.6	1	02/26/18 13:19	02/23/18	
Mercury	7471B	**0.187**	mg/Kg	0.020	0.004	2	02/28/18 14:04	02/27/18	
Selenium	6020A	**3.08**	mg/Kg	1.00	0.03	5	03/05/18 11:22	02/23/18	
Zinc	6020A	**64.0**	mg/Kg	0.50	0.08	5	03/05/18 11:22	02/23/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-002(KB)-LHL3-171004	**Basis:**	Dry
Lab Code:	K1712469-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**5.4**	mg/Kg	1.0	0.03	5	12/29/17 15:46	12/28/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 09:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(CC)-LHL2-171005	**Basis:**	Dry
Lab Code:	K1712469-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.10 J**	mg/Kg	0.50	0.02	5	03/20/18 15:09	03/15/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 15:09	03/15/18	
Cadmium	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/20/18 15:09	03/15/18	
Iron	6020A	**18.0**	mg/Kg	1.00	0.09	5	03/20/18 15:09	03/15/18	
Lead	6020A	**0.008 J**	mg/Kg	0.020	0.003	5	03/20/18 15:09	03/15/18	
Magnesium	6010C	**794**	mg/Kg	1.00	0.5	1	03/26/18 11:13	03/15/18	
Mercury	7471B	**0.163**	mg/Kg	0.019	0.004	2	03/28/18 10:59	03/27/18	
Selenium	6020A	**2.41**	mg/Kg	1.00	0.03	5	03/20/18 15:09	03/15/18	
Zinc	6020A	**33.9**	mg/Kg	0.50	0.08	5	03/20/18 15:09	03/15/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 09:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(CC)-LHL2-171005	**Basis:**	Dry
Lab Code:	K1712469-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.24 J**	mg/Kg	0.50	0.02	5	03/20/18 14:20	03/15/18	
Boron	6020A	**1.11**	mg/Kg	0.50	0.20	5	03/20/18 14:20	03/15/18	
Cadmium	6020A	**0.029**	mg/Kg	0.020	0.003	5	03/20/18 14:20	03/15/18	
Iron	6020A	**143**	mg/Kg	0.99	0.09	5	03/20/18 14:20	03/15/18	
Lead	6020A	**0.092**	mg/Kg	0.020	0.003	5	03/20/18 14:20	03/15/18	
Magnesium	6010C	**1210**	mg/Kg	0.99	0.50	1	03/26/18 11:16	03/15/18	
Mercury	7471B	**0.046**	mg/Kg	0.019	0.004	2	03/28/18 11:02	03/27/18	
Selenium	6020A	**1.71**	mg/Kg	0.99	0.03	5	03/20/18 14:20	03/15/18	
Zinc	6020A	**59.8**	mg/Kg	0.50	0.08	5	03/20/18 14:20	03/15/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 16:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FF-001(LMB)-LHL2-171005		
Lab Code:	K1712469-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.41**	mg/Kg	0.50	0.02	5	03/20/18 14:23	03/15/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 14:23	03/15/18	
Cadmium	6020A	**0.007 J**	mg/Kg	0.020	0.003	5	03/20/18 14:23	03/15/18	
Iron	6020A	**9.80**	mg/Kg	0.99	0.09	5	03/20/18 14:23	03/15/18	
Lead	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/20/18 14:23	03/15/18	
Magnesium	6010C	**1030**	mg/Kg	0.99	0.50	1	03/26/18 11:32	03/15/18	
Mercury	7471B	**0.374**	mg/Kg	0.019	0.004	2	03/28/18 11:06	03/27/18	
Selenium	6020A	**4.31**	mg/Kg	0.99	0.03	5	03/20/18 14:23	03/15/18	
Zinc	6020A	**30.8**	mg/Kg	0.50	0.08	5	03/20/18 14:23	03/15/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 16:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(LMB)-LHL2-171005	**Basis:**	Dry
Lab Code:	K1712469-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.37**	mg/Kg	0.50	0.02	5	03/20/18 15:12	03/15/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 15:12	03/15/18	
Cadmium	6020A	**0.039**	mg/Kg	0.020	0.003	5	03/20/18 15:12	03/15/18	
Iron	6020A	**41.2**	mg/Kg	0.99	0.09	5	03/20/18 15:12	03/15/18	
Lead	6020A	**0.025**	mg/Kg	0.020	0.003	5	03/20/18 15:12	03/15/18	
Magnesium	6010C	**2000**	mg/Kg	0.99	0.50	1	03/26/18 11:34	03/15/18	
Mercury	7471B	**0.099**	mg/Kg	0.019	0.004	2	03/28/18 11:12	03/27/18	
Selenium	6020A	**2.30**	mg/Kg	0.99	0.03	5	03/20/18 15:12	03/15/18	
Zinc	6020A	**50.8**	mg/Kg	0.50	0.08	5	03/20/18 15:12	03/15/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 16:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FF-001(LMB)-LHL2-171005-FD		
Lab Code:	K1712469-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.48**	mg/Kg	0.50	0.02	5	03/20/18 14:29	03/15/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 14:29	03/15/18	
Cadmium	6020A	**0.005 J**	mg/Kg	0.020	0.003	5	03/20/18 14:29	03/15/18	
Iron	6020A	**10.1**	mg/Kg	1.0	0.09	5	03/20/18 14:29	03/15/18	
Lead	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/20/18 14:29	03/15/18	
Magnesium	6010C	**1080**	mg/Kg	1.0	0.5	1	03/26/18 11:37	03/15/18	
Mercury	7471B	**0.320**	mg/Kg	0.020	0.004	2	03/28/18 11:15	03/27/18	
Selenium	6020A	**4.3**	mg/Kg	1.0	0.03	5	03/20/18 14:29	03/15/18	
Zinc	6020A	**31.3**	mg/Kg	0.50	0.08	5	03/20/18 14:29	03/15/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 16:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(LMB)-LHL2-171005-FD	**Basis:**	Dry
Lab Code:	K1712469-013		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.52**	mg/Kg	0.50	0.02	5	03/20/18 14:32	03/15/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 14:32	03/15/18	
Cadmium	6020A	**0.040**	mg/Kg	0.020	0.003	5	03/20/18 14:32	03/15/18	
Iron	6020A	**43.0**	mg/Kg	0.99	0.09	5	03/20/18 14:32	03/15/18	
Lead	6020A	**0.021**	mg/Kg	0.020	0.003	5	03/20/18 14:32	03/15/18	
Magnesium	6010C	**1420**	mg/Kg	0.99	0.50	1	03/26/18 11:39	03/15/18	
Mercury	7471B	**0.110**	mg/Kg	0.019	0.004	2	03/28/18 11:19	03/27/18	
Selenium	6020A	**2.61**	mg/Kg	0.99	0.03	5	03/20/18 14:32	03/15/18	
Zinc	6020A	**51.2**	mg/Kg	0.50	0.08	5	03/20/18 14:32	03/15/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(CC)-LHL4-171012	**Basis:**	Dry
Lab Code:	K1712469-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.07 J**	mg/Kg	0.50	0.02	5	03/20/18 14:35	03/15/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 14:35	03/15/18	
Cadmium	6020A	**0.014 J**	mg/Kg	0.020	0.003	5	03/20/18 14:35	03/15/18	
Iron	6020A	**21.5**	mg/Kg	0.99	0.09	5	03/20/18 14:35	03/15/18	
Lead	6020A	**0.005 J**	mg/Kg	0.020	0.003	5	03/20/18 14:35	03/15/18	
Magnesium	6010C	**804**	mg/Kg	0.99	0.50	1	03/26/18 11:42	03/15/18	
Mercury	7471B	**0.723**	mg/Kg	0.019	0.004	2	03/28/18 11:22	03/27/18	
Selenium	6020A	**2.69**	mg/Kg	0.99	0.03	5	03/20/18 14:35	03/15/18	
Zinc	6020A	**35.9**	mg/Kg	0.50	0.08	5	03/20/18 14:35	03/15/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FWB-001(CC)-LHL4-171012		
Lab Code:	K1712469-016		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.07 J**	mg/Kg	0.50	0.02	5	03/20/18 14:38	03/15/18	
Boron	6020A	**0.56**	mg/Kg	0.50	0.20	5	03/20/18 14:38	03/15/18	
Cadmium	6020A	**0.072**	mg/Kg	0.020	0.003	5	03/20/18 14:38	03/15/18	
Iron	6020A	**90.4**	mg/Kg	0.99	0.09	5	03/20/18 14:38	03/15/18	
Lead	6020A	**0.058**	mg/Kg	0.020	0.003	5	03/20/18 14:38	03/15/18	
Magnesium	6010C	**1530**	mg/Kg	0.99	0.50	1	03/26/18 11:44	03/15/18	
Mercury	7471B	**0.204**	mg/Kg	0.020	0.004	2	03/28/18 11:25	03/27/18	
Selenium	6020A	**2.04**	mg/Kg	0.99	0.03	5	03/20/18 14:38	03/15/18	
Zinc	6020A	**84.5**	mg/Kg	0.50	0.08	5	03/20/18 14:38	03/15/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/13/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(FHC)-CI-171013	**Basis:**	Dry
Lab Code:	K1712469-018		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.18 J**	mg/Kg	0.50	0.02	5	02/26/18 17:59	02/23/18	
Boron	6020A	**0.95**	mg/Kg	0.50	0.20	5	02/26/18 17:59	02/23/18	
Cadmium	6020A	**0.042**	mg/Kg	0.020	0.003	5	02/26/18 17:59	02/23/18	
Iron	6020A	**13.9**	mg/Kg	1.0	0.09	5	02/26/18 17:59	02/23/18	
Lead	6020A	**0.007 J**	mg/Kg	0.020	0.003	5	02/26/18 17:59	02/23/18	
Magnesium	6010C	**876**	mg/Kg	1.0	0.6	1	02/26/18 13:29	02/23/18	
Mercury	7471B	**0.596**	mg/Kg	0.019	0.004	2	02/28/18 14:17	02/27/18	
Selenium	6020A	**6.0**	mg/Kg	1.0	0.03	5	02/26/18 17:59	02/23/18	
Zinc	6020A	**20.2**	mg/Kg	0.50	0.08	5	02/26/18 17:59	02/23/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/13/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FWB-001(FHC)-CI-171013		
Lab Code:	K1712469-019		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.26** J	mg/Kg	0.50	0.02	5	03/05/18 11:58	02/26/18	
Boron	6020A	**2.41**	mg/Kg	0.50	0.20	5	03/05/18 11:58	02/26/18	
Cadmium	6020A	**0.166**	mg/Kg	0.020	0.003	5	03/05/18 11:58	02/26/18	
Iron	6020A	**65.4**	mg/Kg	0.99	0.09	5	03/05/18 11:58	02/26/18	
Lead	6020A	**0.036**	mg/Kg	0.020	0.003	5	03/05/18 11:58	02/26/18	
Magnesium	6010C	**1090** J 9	mg/Kg	0.99	0.50	1	03/07/18 10:32	02/26/18	
Mercury	7471B	**0.166**	mg/Kg	0.019	0.004	2	03/08/18 15:52	03/08/18	
Selenium	6020A	**3.25** J 8 9	mg/Kg	0.99	0.03	5	03/05/18 11:58	02/26/18	
Zinc	6020A	**71.9** J 9	mg/Kg	0.50	0.08	5	03/05/18 11:58	02/26/18	

Printed 3/30/2018 5:02:41 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/13/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FO-001(FHC)-CI-171013		
Lab Code:	K1712469-020		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**14.5**	mg/Kg	1.00	0.03	5	12/29/17 15:16	12/28/17	

Printed 3/30/2018 5:02:43 PM

Superset Reference:

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712469
Date Collected: 10/13/17 14:00
Date Received: 11/16/17 09:30

Basis: Dry

Sample Name: FF-001(CC)-CI-171013
Lab Code: K1712469-022

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.17 J**	mg/Kg	0.50	0.02	5	02/26/18 18:02	02/23/18	
Boron	6020A	**0.31 J**	mg/Kg	0.50	0.20	5	02/26/18 18:02	02/23/18	
Cadmium	6020A	**0.010 J**	mg/Kg	0.020	0.003	5	02/26/18 18:02	02/23/18	
Iron	6020A	**16.4**	mg/Kg	1.0	0.09	5	02/26/18 18:02	02/23/18	
Lead	6020A	**0.012 J**	mg/Kg	0.020	0.003	5	02/26/18 18:02	02/23/18	
Magnesium	6010C	**759**	mg/Kg	1.0	0.6	1	02/26/18 13:31	02/23/18	
Mercury	7471B	**0.168**	mg/Kg	0.020	0.004	2	02/28/18 14:20	02/27/18	
Selenium	6020A	**2.6**	mg/Kg	1.0	0.03	5	02/26/18 18:02	02/23/18	
Zinc	6020A	**32.4**	mg/Kg	0.50	0.08	5	02/26/18 18:02	02/23/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/13/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FWB-001(CC)-CI-171013		
Lab Code:	K1712469-023		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.25 J**	mg/Kg	0.50	0.02	5	03/05/18 12:13	02/26/18	
Boron	6020A	**1.92**	mg/Kg	0.50	0.20	5	03/05/18 12:13	02/26/18	
Cadmium	6020A	**0.066**	mg/Kg	0.020	0.003	5	03/05/18 12:13	02/26/18	
Iron	6020A	**86.5**	mg/Kg	1.00	0.09	5	03/05/18 12:13	02/26/18	
Lead	6020A	**0.084**	mg/Kg	0.020	0.003	5	03/05/18 12:13	02/26/18	
Magnesium	6010C	**1200** J	mg/Kg	1.00	0.5	1	03/07/18 10:44	02/26/18	
Mercury	7471B	**0.079**	mg/Kg	0.019	0.004	2	03/08/18 16:05	03/08/18	
Selenium	6020A	**2.04** J	mg/Kg	1.00	0.03	5	03/05/18 12:13	02/26/18	
Zinc	6020A	**63.6** J	mg/Kg	0.50	0.08	5	03/05/18 12:13	02/26/18	

Superset Reference:

ALS SOP

Fish lvl 2

VALIDATION WORKSHEET

SDG: K1712469

Method: Methyl Mercury

Reviewer: C Jensen

Date Reviewed: 4.4.18

Sample Collection Dates: 10.4 - 10.13.17

The following data validation areas were reviewed

Sample Identification	1 FF-002 (HB) LHL3-171005	2 FF-001 (CC) LHL2/171005	3 FWB-001 (CC) LHL2-171005	4 FF-001 (LMB) LHL2-171005	5 FWB-001 (LMB) LHL2-171005 FD	6 FF-001 (LMB) LHL2-171005 FD	7 FWB-001 (LMB) LHL2-171005 FD	8 FF-001 (GC) LHL4-171012	9 FWB-001 (CC) LHL4-171012	10 FWB-002 (HB) LHL3-171012	11 EF-001 (FHC) CI-171013	12 FWB-001 (FHC) CI-171013	13 EF-001 (CC) CI-171013	14 FWB-001 (LB) CI-171013	15	16	17	18	19	20
Validation Criteria																				
Sample results	A													→						
Holding Times	A													→						
Completion	A													→						
Method Blanks	A													→						
LCS / OPRS	A													→						
duplicate RPD														→						
MS/MSD: 19, Batch	A													→						

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

frozen -19 to 2.2

SPL 10.4 - 10.13.17

prep 2.20.18 3.19.18 2.26.18

run 2.21.18 3.20.18 2.27.18

OPRS - ok

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712469
Date Collected: 10/04-13/17
Date Received: 11/16/17-01/16/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(KB)-LHL3-171004	K1712469-002	9.8	3.9	1	02/20/18	02/21/18	481	
Method Blank 1	K1712469-MB1	10.0	4.0	1	02/20/18	02/21/18	ND	
Method Blank 2	K1712469-MB2	10.0	4.0	1	02/20/18	02/21/18	ND	
Method Blank 3	K1712469-MB3	10.0	4.0	1	02/20/18	02/21/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712469
Date Collected: 10/04-13/17
Date Received: 11/16/17-01/16/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL2-171005	K1712469-006	9.6	3.8	1	03/14/18	03/20/18	235	
FWB-001(CC)-LHL2-171005	K1712469-007	9.8	3.9	1	03/14/18	03/20/18	72.4	
FF-001(LMB)-LHL2-171005	K1712469-009	10.0	4.0	1	03/14/18	03/20/18	445	
FWB-001(LMB)-LHL2-171005	K1712469-010	9.7	3.9	1	03/14/18	03/20/18	142	
FF-001(LMB)-LHL2-171005-FD	K1712469-012	10.0	4.0	1	03/14/18	03/20/18	427	
FWB-001(LMB)-LHL2-171005-FD	K1712469-013	9.7	3.9	1	03/14/18	03/20/18	125	
FF-001(CC)-LHL4-171012	K1712469-015	10.0	4.0	1	03/14/18	03/20/18	925	
FWB-001(CC)-LHL4-171012	K1712469-016	10.0	4.0	1	03/14/18	03/20/18	167	
Method Blank 1	K1712469-MB1	10.0	4.0	1	03/14/18	03/20/18	ND	
Method Blank 2	K1712469-MB2	10.0	4.0	1	03/14/18	03/20/18	ND	
Method Blank 3	K1712469-MB3	10.0	4.0	1	03/14/18	03/20/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712469
Date Collected: 10/04-13/17
Date Received: 11/16/17-01/16/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FWB-002(KB)-LHL3-171004	K1712469-003	9.8	3.9	1	02/26/18	02/27/18	188	
FF-001(FHC)-CI-171013	K1712469-018	9.7	3.9	1	02/26/18	02/27/18	554	
FWB-001(FHC)-CI-171013	K1712469-019	9.7	3.9	1	02/26/18	02/27/18	175	
FF-001(CC)-CI-171013	K1712469-022	9.9	4.0	1	02/26/18	02/27/18	184	
FWB-001(CC)-CI-171013	K1712469-023	9.9	4.0	1	02/26/18	02/27/18	79.4	
Method Blank 1	K1712469-MB1	10.0	4.0	1	02/26/18	02/27/18	ND	
Method Blank 2	K1712469-MB2	10.0	4.0	1	02/26/18	02/27/18	ND	
Method Blank 3	K1712469-MB3	10.0	4.0	1	02/26/18	02/27/18	ND	

Fish Inv 2

1632A

VALIDATION WORKSHEET

SDG: K1712469

Method: As III

Reviewer: C Jensen

Date Reviewed: 4.4.18

Sample Collection Dates: 10.4-10.13.17

The following data validation areas were reviewed

Sample Identification	1 FF-002 (FD) LHL3-171005	2 FF-001 (CC) LHL2-171005	3 FWB-001 (CC) LHL2-171005	4 FF-001 (LMB) LHL2-171005	5 FWB-001 (LMB) LHL2-171005	6 FF-001 (LMB) LHL2-171005-FD	7 FWB-001 (LMB) LHL2-171005-FD	8 FF-001 (CC) LHL4-171012	9 FWB-001 (CC) LHL4-171012	10 FWB-002 (LMB) LHL3-171005	11 FF-001 (FHC) CI-171013	12 FWB-001 (FHC) CI-171013	13 FF-001 (CC) CI-171013	14 FWB-001 (LM) CI-171013	15	16	17	18	19	20
Validation Criteria																				
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS																				
duplicate RPD																				
MS/MSD: batch 19	A																			

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

SPL 10.4-10.13.17

prep 2.26.18 3.7.18 3.19.18

run 2.27.18 3.8.18 3.20.18

Cal ver. ok

OPRs · OK

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712469
Date Collected: 10/04-13/17
Date Received: 11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(KB)-LHL3-171004	K1712469-002	0.079	0.040	1	02/26/18	02/27/18	ND	
FWB-002(KB)-LHL3-171004	K1712469-003	0.079	0.040	1	02/26/18	02/27/18	ND	
FF-001(FHC)-CI-171013	K1712469-018	0.078	0.039	1	02/26/18	02/27/18	ND	
FF-001(CC)-CI-171013	K1712469-022	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 1	K1712469-MB1	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 2	K1712469-MB2	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 3	K1712469-MB3	0.080	0.040	1	02/26/18	02/27/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/13/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FWB-001(FHC)-CI-171013	K1712469-019	0.079	0.039	1	03/07/18	03/08/18	ND	
FWB-001(CC)-CI-171013	K1712469-023	0.078	0.039	1	03/07/18	03/08/18	ND	
Method Blank 1	K1712469-MB1	0.080	0.040	1	03/07/18	03/08/18	ND	
Method Blank 2	K1712469-MB2	0.080	0.040	1	03/07/18	03/08/18	ND	
Method Blank 3	K1712469-MB3	0.080	0.040	1	03/07/18	03/08/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712469
Date Collected: 10/05-12/17
Date Received: 11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL2-171005	K1712469-006	0.079	0.040	1	03/19/18	03/20/18	ND	
FWB-001(CC)-LHL2-171005	K1712469-007	0.078	0.039	1	03/19/18	03/20/18	ND	
FF-001(LMB)-LHL2-171005	K1712469-009	0.079	0.040	1	03/19/18	03/20/18	ND	
FWB-001(LMB)-LHL2-171005	K1712469-010	0.077	0.039	1	03/19/18	03/20/18	ND	
FF-001(LMB)-LHL2-171005-FD	K1712469-012	0.079	0.040	1	03/19/18	03/20/18	ND	
FWB-001(LMB)-LHL2-171005-FD	K1712469-013	0.078	0.039	1	03/19/18	03/20/18	ND	
FF-001(CC)-LHL4-171012	K1712469-015	0.079	0.040	1	03/19/18	03/20/18	ND	
FWB-001(CC)-LHL4-171012	K1712469-016	0.078	0.039	1	03/19/18	03/20/18	ND	
Method Blank 1	K1712469-MB1	0.080	0.040	1	03/19/18	03/20/18	ND	
Method Blank 2	K1712469-MB2	0.080	0.040	1	03/19/18	03/20/18	ND	
Method Blank 3	K1712469-MB3	0.080	0.040	1	03/19/18	03/20/18	ND	

Fish lvl 2

1632A

VALIDATION WORKSHEET

Method: Inorganic Arsenic

Date Reviewed: 4.4.18

Sample Collection Dates: 10.4 - 10.13.17

SDG: K1712469

Reviewer: C Jensen

The following data validation areas were reviewed

Sample Identification	1 FF-002(HG)-LHL3-171007	2 FF-001(CC)-LHL2-171005	3 FWB-001(CC)-LHL2-171005	4 FF-001(LMB)-LHL2-171005	5 FWB-001(LMB)-LHL2-171005 FD	6 FF-001(LMB)-LHL2-171005 FD	7 FWB-001(LMB)-LHL2-171005	8 FF-001(CC)-LHL4-171012	9 FWB-001(CC)-LHL4-171012	10 FWB-002(HG)-LHL3-171012	11 FF-001(FHC)-CI-171013	12 FWB-001(FHC)-CI-171013	13 FF-001(CC)-CI-171013	14 FWB-001(LM)-CI-171013	15	16	17	18	19	20
Validation Criteria																				
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS																				
duplicate RPD																				
MS/MSD: 19 Batch	A																			

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

3rd 10.4.17 - 10.13.17

prep 2216 3718 31918

run 3118 3918 32118

OPRs ok

Calver. ok

3/19, 3/21

Batch MS 2216, 3/1. second MS ok, no flags since parent one was 'batch'.

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712469
Date Collected: 10/04-13/17
Date Received: 11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(KB)-LHL3-171004	K1712469-002	0.040	0.014	1	02/26/18	03/01/18	ND	
FWB-002(KB)-LHL3-171004	K1712469-003	0.040	0.014	1	02/26/18	03/01/18	ND	
FF-001(FHC)-CI-171013	K1712469-018	0.039	0.014	1	02/26/18	03/01/18	ND	
FF-001(CC)-CI-171013	K1712469-022	0.040	0.014	1	02/26/18	03/01/18	ND	
Method Blank 1	K1712469-MB1	0.040	0.014	1	02/26/18	03/01/18	ND	
Method Blank 2	K1712469-MB2	0.040	0.014	1	02/26/18	03/01/18	ND	
Method Blank 3	K1712469-MB3	0.040	0.014	1	02/26/18	03/01/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712469
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/13/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FWB-001(FHC)-CI-171013	K1712469-019	0.039	0.014	1	03/07/18	03/09/18	0.030	J
FWB-001(CC)-CI-171013	K1712469-023	0.039	0.014	1	03/07/18	03/09/18	0.027	J
Method Blank 1	K1712469-MB1	0.040	0.014	1	03/07/18	03/09/18	ND	
Method Blank 2	K1712469-MB2	0.040	0.014	1	03/07/18	03/09/18	ND	
Method Blank 3	K1712469-MB3	0.040	0.014	1	03/07/18	03/09/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712469
Date Collected: 10/05-12/17
Date Received: 11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL2-171005	K1712469-006	0.040	0.014	1	03/19/18	03/21/18	ND	
FWB-001(CC)-LHL2-171005	K1712469-007	0.039	0.014	1	03/19/18	03/21/18	0.028	J
FF-001(LMB)-LHL2-171005	K1712469-009	0.040	0.014	1	03/19/18	03/21/18	ND	
FWB-001(LMB)-LHL2-171005	K1712469-010	0.039	0.014	1	03/19/18	03/21/18	ND	
FF-001(LMB)-LHL2-171005-FD	K1712469-012	0.040	0.014	1	03/19/18	03/21/18	ND	
FWB-001(LMB)-LHL2-171005-FD	K1712469-013	0.039	0.014	1	03/19/18	03/21/18	ND	
FF-001(CC)-LHL4-171012	K1712469-015	0.040	0.014	1	03/19/18	03/21/18	ND	
FWB-001(CC)-LHL4-171012	K1712469-016	0.039	0.014	1	03/19/18	03/21/18	ND	
Method Blank 1	K1812469-MB1	0.040	0.014	1	03/19/18	03/21/18	ND	
Method Blank 2	K1812469-MB2	0.040	0.014	1	03/19/18	03/21/18	ND	
Method Blank 3	K1812469-MB3	0.040	0.014	1	03/19/18	03/21/18	ND	

C3

KI712469

SR#

COC Set 1 of 1

COC# BIOTA #8

Page 1 of 1

004

CHAIN OF CUSTODY
83679

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name	KD-HERRINGTON LAKE
Project Number	0221643A
Project Manager	MARY SORENSEN
Company	RAMBOLL ENVIRON
Address	1600 PARKWOOD CIR, SUITE 310, ATL, GA
Phone #	770.548.1799
email	msorensen@ramboll.com
Sampler Signature	Katrina Leigh
Sampler Printed Name	KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D 600.0 / SO4	28D 7471B / Hg	180D 1630 Modified Methyl Hg	180D 6010C / Metals T	180D 6020A / Metals T	1 1632 / As INOR	2 1632 / As 3	3 1632 / As 5	4 ASTM Rapid Water Prep	5 WPIDS	Remarks
3 1. FUN-002(KB)-LHL3-	171004	10-4-17	1100	T	3	X	X	X	X	X	X	X	X	X	X	
1 2. FD-002(KB)-LHL3-	171004	10-4-17	1100		1			X	X	X				X	X	*Se ONLY
67 3. FUN-001(CC)-LHL2-	171005	10-5-17	0900		1	X	X	X	X	X	X	X	X	X	X	
18 4. FUN-001(LMB)-LHL2-	171005	10-5-17	1100		3	X	X	X	X	X	X	X	X	X	X	*INCLUDES DUPLICATE
16 5. FUN-001(CC)-LHL4H	7105	10-12-17	1000		1	X	X	X	X	X	X	X	X	X	X	
14 6. FUN-001(FHC)-CI-171013		10-13-17	1000		2	X	X	X	X	X	X	X	X	X	X	
0 7. FD-001(FHC)-CI-171013		10-13-17	1000		1			X	X	X				X	X	+Se ONLY
23 8. FUN-001(CC)-CI-171013		10-13-17	1400	↓	2	X	X	X	X	X	X	X	X	X	X	
9.																
10.																

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.#_____

Bill To:_____

Turnaround Requirements

___ 24 hr. ___ 48 hr.

X 5 Day Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

* FISH TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP

** EACH FISH TO BE SPLIT INTO FILLET (FF)+ REMAINS (FWB) AND COMPOSITED ACCORDING TO EMAIL INSTRUCTIONS

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Katrina Leigh	Signature: DAN PEMPSON	Signature	Signature	Signature	Signature
Printed Name: KATRINA LEIGH	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: RAMBOLL	Firm: 11-16-17 0930	Firm	Firm	Firm	Firm
Date/Time: 11/14/17 1800	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

PC MH

Cooler Receipt and Preservation Form

Client RAMBOLL ENVIRON Service Request K17 12469

Received: 11-16-17 Opened: 11-16-17 By: ASP Unloaded: 11-16-17 By: ASP/CG

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? _____
   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
-11.2	-11.3	N/A	N/A	-0.1	356	83679	7884 7816 1592	
2.2	2.2	N/A	N/A	0.0	391	83679	7884 7816 1679	
-13.0	-12.9	N/A	N/A	+0.1	376	83679	7884 7816 1618	
-19.0	-19.0	N/A	N/A	0.0	379	83679	7884 7816 1607	
-12.0	-12.0	N/A	N/A	0.0	373	83679	7884 7816 1630	

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) CG 11/16
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: Received sample not on COC. "FO-001(KB)-LHL3-171003" (Bota #9 - corresponds w/ FUW-001(KB)-LHL3-171003.

PC MH

Cooler Receipt and Preservation Form

Client Rambol Service Request K17 12469

Received: 11/16/17 Opened: 11/16/17 By: CG Unloaded: 11/16/17 By: CG/UP

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?_____

   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
-21.0	-21.1	/	/	-0.1	349	83679	7884 7816 1640	
-22.0	-22.1	/	/	-0.1	328		1651	
-10.4	-10.4	/	/	0.0	325		1581	

4. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* *Wet Ice* (*Dry Ice*) *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N

   If applicable, tissue samples were received: (*Frozen*) *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y (N)
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: See Pg. 1

Page 2 *of* 2

7/25/16

from LWC2

L6010, L6020 74718

VALIDATION WORKSHEET

Method: Total Metals, Mercury

Date Reviewed: 4.6.18

Sample Collection Dates: 10.5-10.16.17

SDG: K1712471

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(CC)-LHL-171005	2 FWB-001(CC)-LHL-171005	3 FF-001(FHC)-MHL-171004	4 FWB-001(FHC)-MHL-171004	5 FF-001(LMB)-MHL-171004	6 FWB-001(LMB)-MHL-171004	7 FF-001(CC)-MHL3-171004	8 FWB-001(CC)-MHL3-171004	9 FF-001(LMB)-MHL-171005	10 FWB-001(LMB)-MHL-171005	11 FF-001(LMB)-DR-171016	12 FWB-001(LMB)-DR-171016	13 FD-001(CC)-MHL3-171004-005	14 FD-001(LB)-MHL-171004	15 FD-001(FHC)-MHL-171004	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS	A																			
duplicate RPD	A																			
MS/MSD: batch 2 ①	X	X	X	X	X	X	X	X	X	X										

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

metals ltg

SM 10.5.17 - 10.16.17

prep 3.16.18 2.26.18 12.28.18 3.22.18

run 3.20.18, 2.28.18 3.23.18

3.26.18

MB:

Fe, 3), 4) no flags

3427-05

① MS 24168-002 Hg low 59.2 J/UJ 8

Serial 4

Port 3

ICB Cd 3/20/18 Cd .007 low

LCB

CCB 8.7 ug/L. no flags

ICV ok

CCV ok

low level ok

ICS ok

Post Spike ok

Serial D ok

-002

-003

-005

-006

-009

-010

-013

-014

-017

-018

ALS Group USA, Corp.
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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(CC)-LHL1-171005	**Basis:**	Dry
Lab Code:	K1712471-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.04 J**	mg/Kg	0.50	0.02	5	03/20/18 17:32	03/16/18	
Boron	6020A	**0.20 J**	mg/Kg	0.50	0.20	5	03/20/18 17:32	03/16/18	
Cadmium	6020A	**0.008 J**	mg/Kg	0.020	0.003	5	03/20/18 17:32	03/16/18	
Iron	6020A	**24.6**	mg/Kg	1.0	0.09	5	03/20/18 17:32	03/16/18	
Lead	6020A	**0.014 J**	mg/Kg	0.020	0.003	5	03/20/18 17:32	03/16/18	
Magnesium	6010C	**790**	mg/Kg	1.0	0.5	1	03/26/18 12:04	03/16/18	
Mercury	7471B	**0.150 J**	mg/Kg	0.019	0.004	2	03/23/18 13:19	03/23/18	
Selenium	6020A	**1.8**	mg/Kg	1.0	0.03	5	03/20/18 17:32	03/16/18	
Zinc	6020A	**49.0**	mg/Kg	0.50	0.08	5	03/20/18 17:32	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(CC)-LHL1-171005	**Basis:**	Dry
Lab Code:	K1712471-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.04 J**	mg/Kg	0.50	0.02	5	03/20/18 17:46	03/16/18	
Boron	6020A	**0.72**	mg/Kg	0.50	0.20	5	03/20/18 17:46	03/16/18	
Cadmium	6020A	**0.031**	mg/Kg	0.020	0.003	5	03/20/18 17:46	03/16/18	
Iron	6020A	**75.3**	mg/Kg	0.99	0.09	5	03/20/18 17:46	03/16/18	
Lead	6020A	**0.077**	mg/Kg	0.020	0.003	5	03/20/18 17:46	03/16/18	
Magnesium	6010C	**1460**	mg/Kg	0.99	0.50	1	03/26/18 12:16	03/16/18	
Mercury	7471B	**0.067 J**	mg/Kg	0.019	0.004	2	03/23/18 13:26	03/23/18	
Selenium	6020A	**1.49**	mg/Kg	0.99	0.03	5	03/20/18 17:46	03/16/18	
Zinc	6020A	**80.7**	mg/Kg	0.50	0.08	5	03/20/18 17:46	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(FHC)-MHL1-171014	**Basis:**	Dry
Lab Code:	K1712471-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.08 J**	mg/Kg	0.50	0.02	5	03/20/18 17:55	03/16/18	
Boron	6020A	**0.24 J**	mg/Kg	0.50	0.20	5	03/20/18 17:55	03/16/18	
Cadmium	6020A	**0.012 J**	mg/Kg	0.020	0.003	5	03/20/18 17:55	03/16/18	
Iron	6020A	**16.8**	mg/Kg	0.99	0.09	5	03/20/18 17:55	03/16/18	
Lead	6020A	**0.008 J**	mg/Kg	0.020	0.003	5	03/20/18 17:55	03/16/18	
Magnesium	6010C	**973**	mg/Kg	0.99	0.50	1	03/26/18 12:18	03/16/18	
Mercury	7471B	**0.947** J8	mg/Kg	0.020	0.004	2	03/23/18 13:29	03/23/18	
Selenium	6020A	**1.97**	mg/Kg	0.99	0.03	5	03/20/18 17:55	03/16/18	
Zinc	6020A	**23.6**	mg/Kg	0.50	0.08	5	03/20/18 17:55	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(FHC)-MHL1-171014	**Basis:**	Dry
Lab Code:	K1712471-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.18 J**	mg/Kg	0.50	0.02	5	03/20/18 17:58	03/16/18	
Boron	6020A	**0.46 J**	mg/Kg	0.50	0.20	5	03/20/18 17:58	03/16/18	
Cadmium	6020A	**0.036**	mg/Kg	0.020	0.003	5	03/20/18 17:58	03/16/18	
Iron	6020A	**49.9**	mg/Kg	0.99	0.09	5	03/20/18 17:58	03/16/18	
Lead	6020A	**0.057**	mg/Kg	0.020	0.003	5	03/20/18 17:58	03/16/18	
Magnesium	6010C	**1520**	mg/Kg	0.99	0.50	1	03/26/18 12:21	03/16/18	
Mercury	7471B	**0.369** J 8	mg/Kg	0.018	0.004	2	03/23/18 13:32	03/23/18	
Selenium	6020A	**1.19**	mg/Kg	0.99	0.03	5	03/20/18 17:58	03/16/18	
Zinc	6020A	**83.4**	mg/Kg	0.50	0.08	5	03/20/18 17:58	03/16/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(FHC)-MHL1-171014	**Basis:**	Dry
Lab Code:	K1712471-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**10.9**	mg/Kg	1.0	0.03	5	12/29/17 15:22	12/28/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(KB)-MHL1-171014	**Basis:**	Dry
Lab Code:	K1712471-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.50**	mg/Kg	0.50	0.02	5	03/20/18 18:01	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 18:01	03/16/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/20/18 18:01	03/16/18	
Iron	6020A	**12.3**	mg/Kg	0.99	0.09	5	03/20/18 18:01	03/16/18	
Lead	6020A	**0.013 J**	mg/Kg	0.020	0.003	5	03/20/18 18:01	03/16/18	
Magnesium	6010C	**882**	mg/Kg	0.99	0.50	1	03/26/18 12:23	03/16/18	
Mercury	7471B	**0.304** J8	mg/Kg	0.019	0.004	2	03/23/18 13:35	03/23/18	
Selenium	6020A	**1.60**	mg/Kg	0.99	0.03	5	03/20/18 18:01	03/16/18	
Zinc	6020A	**28.4**	mg/Kg	0.50	0.08	5	03/20/18 18:01	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(KB)-MHL1-171014	**Basis:**	Dry
Lab Code:	K1712471-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.52**	mg/Kg	0.50	0.02	5	03/20/18 18:04	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 18:04	03/16/18	
Cadmium	6020A	**0.007 J**	mg/Kg	0.020	0.003	5	03/20/18 18:04	03/16/18	
Iron	6020A	**40.1**	mg/Kg	1.0	0.09	5	03/20/18 18:04	03/16/18	
Lead	6020A	**0.025**	mg/Kg	0.020	0.003	5	03/20/18 18:04	03/16/18	
Magnesium	6010C	**1350**	mg/Kg	1.0	0.5	1	03/26/18 12:26	03/16/18	
Mercury	7471B	**0.139 J**	mg/Kg	0.018	0.004	2	03/23/18 13:41	03/23/18	
Selenium	6020A	**1.2**	mg/Kg	1.0	0.03	5	03/20/18 18:04	03/16/18	
Zinc	6020A	**61.4**	mg/Kg	0.50	0.08	5	03/20/18 18:04	03/16/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(KB)-MHL1-171014	**Basis:**	Dry
Lab Code:	K1712471-011		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**3.3**	mg/Kg	1.0	0.03	5	12/29/17 15:24	12/28/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 12:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(CC)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712471-013		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.17 J**	mg/Kg	0.50	0.02	5	03/20/18 18:07	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 18:07	03/16/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/20/18 18:07	03/16/18	
Iron	6020A	**13.9**	mg/Kg	1.0	0.09	5	03/20/18 18:07	03/16/18	
Lead	6020A	**0.006 J**	mg/Kg	0.020	0.003	5	03/20/18 18:07	03/16/18	
Magnesium	6010C	**732**	mg/Kg	1.0	0.5	1	03/26/18 12:46	03/16/18	
Mercury	7471B	**0.542 J8**	mg/Kg	0.019	0.004	2	03/23/18 13:48	03/23/18	
Selenium	6020A	**0.7 J**	mg/Kg	1.0	0.03	5	03/20/18 18:07	03/16/18	
Zinc	6020A	**28.4**	mg/Kg	0.50	0.08	5	03/20/18 18:07	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 12:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(CC)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712471-014		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.22 J**	mg/Kg	0.50	0.02	5	03/20/18 18:10	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 18:10	03/16/18	
Cadmium	6020A	**0.016 J**	mg/Kg	0.020	0.003	5	03/20/18 18:10	03/16/18	
Iron	6020A	**64.9**	mg/Kg	0.99	0.09	5	03/20/18 18:10	03/16/18	
Lead	6020A	**0.052**	mg/Kg	0.020	0.003	5	03/20/18 18:10	03/16/18	
Magnesium	6010C	**820**	mg/Kg	0.99	0.50	1	03/26/18 12:49	03/16/18	
Mercury	7471B	**0.208 J8**	mg/Kg	0.020	0.004	2	03/23/18 13:51	03/23/18	
Selenium	6020A	**0.69 J**	mg/Kg	0.99	0.03	5	03/20/18 18:10	03/16/18	
Zinc	6020A	**52.2**	mg/Kg	0.50	0.08	5	03/20/18 18:10	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 12:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(CC)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712471-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**5.11**	mg/Kg	0.99	0.03	5	12/29/17 15:26	12/28/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/15/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(LMB)-MHL1-171015	**Basis:**	Dry
Lab Code:	K1712471-017		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.15**	mg/Kg	0.50	0.02	5	03/20/18 18:13	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 18:13	03/16/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/20/18 18:13	03/16/18	
Iron	6020A	**8.60**	mg/Kg	0.99	0.09	5	03/20/18 18:13	03/16/18	
Lead	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/20/18 18:13	03/16/18	
Magnesium	6010C	**957**	mg/Kg	0.99	0.50	1	03/26/18 12:51	03/16/18	
Mercury	7471B	**0.448** J Y	mg/Kg	0.020	0.004	2	03/23/18 13:54	03/23/18	
Selenium	6020A	**1.81**	mg/Kg	0.99	0.03	5	03/20/18 18:13	03/16/18	
Zinc	6020A	**31.0**	mg/Kg	0.50	0.08	5	03/20/18 18:13	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/15/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(LMB)-MHL1-171015	**Basis:**	Dry
Lab Code:	K1712471-018		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.39**	mg/Kg	0.50	0.02	5	03/20/18 18:16	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/20/18 18:16	03/16/18	
Cadmium	6020A	**0.018 J**	mg/Kg	0.020	0.003	5	03/20/18 18:16	03/16/18	
Iron	6020A	**48.1**	mg/Kg	1.00	0.09	5	03/20/18 18:16	03/16/18	
Lead	6020A	**0.018 J**	mg/Kg	0.020	0.003	5	03/20/18 18:16	03/16/18	
Magnesium	6010C	**1200**	mg/Kg	1.00	0.5	1	03/26/18 12:54	03/16/18	
Mercury	7471B	**0.162 J**	mg/Kg	0.020	0.004	2	03/23/18 13:58	03/23/18	
Selenium	6020A	**1.31**	mg/Kg	1.00	0.03	5	03/20/18 18:16	03/16/18	
Zinc	6020A	**50.3**	mg/Kg	0.50	0.08	5	03/20/18 18:16	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(LMB)-DR-171016	**Basis:**	Dry
Lab Code:	K1712471-020		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.32 J**	mg/Kg	0.50	0.02	5	02/19/18 18:17	02/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	02/19/18 18:17	02/16/18	
Cadmium	6020A	**0.010 J**	mg/Kg	0.020	0.003	5	02/19/18 18:17	02/16/18	
Iron	6020A	**16.0**	mg/Kg	0.99	0.09	5	02/19/18 18:17	02/16/18	
Lead	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	02/19/18 18:17	02/16/18	
Magnesium	6010C	**1200**	mg/Kg	0.99	0.50	1	02/22/18 10:46	02/16/18	
Mercury	7471B	**0.697**	mg/Kg	0.019	0.004	2	02/23/18 10:27	02/22/18	
Selenium	6020A	**4.28**	mg/Kg	0.99	0.03	5	02/19/18 18:17	02/16/18	
Zinc	6020A	**42.2**	mg/Kg	0.50	0.08	5	02/19/18 18:17	02/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(LMB)-DR-171016	**Basis:**	Dry
Lab Code:	K1712471-021		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.24**	mg/Kg	0.50	0.02	5	02/19/18 18:20	02/16/18	J
Boron	6020A	ND	mg/Kg	0.50	0.20	5	02/19/18 18:20	02/16/18	U
Cadmium	6020A	**0.038**	mg/Kg	0.020	0.003	5	02/19/18 18:20	02/16/18	
Iron	6020A	**61.9**	mg/Kg	1.00	0.09	5	02/19/18 18:20	02/16/18	
Lead	6020A	**0.029**	mg/Kg	0.020	0.003	5	02/19/18 18:20	02/16/18	
Magnesium	6010C	**1880**	mg/Kg	1.00	0.5	1	02/22/18 10:49	02/16/18	
Mercury	7471B	**0.253**	mg/Kg	0.020	0.004	2	02/23/18 10:33	02/22/18	
Selenium	6020A	**2.91**	mg/Kg	1.00	0.03	5	02/19/18 18:20	02/16/18	
Zinc	6020A	**60.4**	mg/Kg	0.50	0.08	5	02/19/18 18:20	02/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(LMB)-DR-171016	**Basis:**	Dry
Lab Code:	K1712471-021		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.24** J	mg/Kg	0.50	0.02	5	02/19/18 18:20	02/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	02/19/18 18:20	02/16/18	
Cadmium	6020A	**0.038**	mg/Kg	0.020	0.003	5	02/19/18 18:20	02/16/18	
Iron	6020A	**61.9**	mg/Kg	1.00	0.09	5	02/19/18 18:20	02/16/18	
Lead	6020A	**0.029**	mg/Kg	0.020	0.003	5	02/19/18 18:20	02/16/18	
Magnesium	6010C	**1880**	mg/Kg	1.00	0.5	1	02/22/18 10:49	02/16/18	
Mercury	7471B	**0.253**	mg/Kg	0.020	0.004	2	02/23/18 10:33	02/22/18	
Selenium	6020A	**2.91**	mg/Kg	1.00	0.03	5	02/19/18 18:20	02/16/18	
Zinc	6020A	**60.4**	mg/Kg	0.50	0.08	5	02/19/18 18:20	02/16/18	

fish LWL2

VALIDATION WORKSHEET

Method: Methyl Mercury
Date Reviewed: 4.12.18
Sample Collection Dates: 10.5 - 10.16.17

SDG: K1712471
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria	FF-001(cc)-LWL4-171005	FWB-001(cc)-LWL4-171005	FF-001(FHC)-MHL4-171004	FWB-001(FHC)-MHL4-171004	FF-001 (WB)-MHL4-171004	FWB-001(WB)-MHL4-171004	FF-001(cc)-MHL3-171004	FWB-001(cc)-MHL3-171004	FF-001(LWB)-MHL1-171005	FWB-001(LWB)-MHL1-171005	FF-001(LWB)-DR-171005	FWB-001(LWB)-DR-171004								
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS / QCS	A																			
duplicate RPD																				
MS/MSD: 2 19	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments: frozen -22 to 2.2

SM 10-5 -10-16-17
mp 3.21.18 2.20.18
hm 3.22.18 2.21.18

OPR.

QCS NRCC Tort 3

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712471
Date Collected: 10/05-16/17
Date Received: 11/16/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL1-171005	K1712471-002	9.8	3.9	1	03/21/18	03/22/18	209	
FWB-001(CC)-LHL1-171005	K1712471-003	9.7	3.9	1	03/21/18	03/22/18	69.1	
FF-001(FHC)-MHL1-171014	K1712471-005	9.6	3.8	1	03/21/18	03/22/18	1280	
FWB-001(FHC)-MHL1-171014	K1712471-006	9.7	3.9	1	03/21/18	03/22/18	350	
FF-001(KB)-MHL1-171014	K1712471-009	9.6	3.8	1	03/21/18	03/22/18	433	
FWB-001(KB)-MHL1-171014	K1712471-010	9.8	3.9	1	03/21/18	03/22/18	161	
FF-001(CC)-MHL3-171014	K1712471-013	9.8	3.9	1	03/21/18	03/22/18	689	
FWB-001(CC)-MHL3-171014	K1712471-014	9.7	3.9	1	03/21/18	03/22/18	201	
FF-001(LMB)-MHL1-171015	K1712471-017	9.7	3.9	1	03/21/18	03/22/18	614	
FWB-001(LMB)-MHL1-171015	K1712471-018	9.8	3.9	1	03/21/18	03/22/18	194	
Method Blank 1	K1712471-MB1	10.0	4.0	1	03/21/18	03/22/18	ND	
Method Blank 2	K1712471-MB2	10.0	4.0	1	03/21/18	03/22/18	ND	
Method Blank 3	K1712471-MB3	10.0	4.0	1	03/21/18	03/22/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712471
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05-16/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-DR-171016	K1712471-020	9.8	3.9	1	02/20/18	02/21/18	851	
FWB-001(LMB)-DR-171016	K1712471-021	9.7	3.9	1	02/20/18	02/21/18	341	
Method Blank 1	K1712471-MB1	10.0	4.0	1	02/20/18	02/21/18	ND	
Method Blank 2	K1712471-MB2	10.0	4.0	1	02/20/18	02/21/18	ND	
Method Blank 3	K1712471-MB3	10.0	4.0	1	02/20/18	02/21/18	ND	

16324 high LVL 2

VALIDATION WORKSHEET

Method: Arsenic III

SDG: K1712471

Date Reviewed: 4.6.18

Reviewer: C Jensen

Sample Collection Dates: 10.5 - 10.16.17

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(CC)-UHL-171005	2 FMB-001(CC)-UHL-171005	3 FF-001(FMC)-MHL-171004	4 FMB-001(FMC)-MHL-171004	5 FF-001 (UB)-MHL-171004	6 FMB-001(UB)-MHL-171004	7 FF-001(CC)-MHL3-171004	8 FMB-001(CC)-MHL3-171004	9 FF-001(UMB)-MHL-171005	10 FMB-001(UMB)-MH4-171005	11 FF-001(UMB)-DR-171016	12 FMB-001(UMB)-DR-171016	13	14	15	16	17	18	19	20
Sample results	A	→	→	→	→	→	→	→	→	→	→	→								
Holding Times	A	→	→	→	→	→	→	→	→	→	→	→								
Completion	A	→	→	→	→	→	→	→	→	→	→	→								
Method Blanks	A	→	→	→	→	→	→	→	→	→	→	→								
LCS QCD																				
duplicate RPD																				
MS/MSD: 3, 6, 18	A	→	→	→	→	→	→	→	→	→	→	→								

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

SPL 10.5 10.16.17

MEP 3.22.18 2.26.18

MH 3.23.18 2.27.18

ORDS ok

calVER's ok

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712471
Date Collected: 10/05-15/17
Date Received: 11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL1-171005	K1712471-002	0.079	0.039	1	03/22/18	03/23/18	ND	
FWB-001(CC)-LHL1-171005	K1712471-003	0.079	0.039	1	03/22/18	03/23/18	ND	
FF-001(FHC)-MHL1-171014	K1712471-005	0.079	0.039	1	03/22/18	03/23/18	ND	
FWB-001(FHC)-MHL1-171014	K1712471-006	0.080	0.040	1	03/22/18	03/23/18	ND	
FF-001(KB)-MHL1-171014	K1712471-009	0.078	0.039	1	03/22/18	03/23/18	ND	
FWB-001(KB)-MHL1-171014	K1712471-010	0.079	0.039	1	03/22/18	03/23/18	ND	
FF-001(CC)-MHL3-171014	K1712471-013	0.078	0.039	1	03/22/18	03/23/18	ND	
FWB-001(CC)-MHL3-171014	K1712471-014	0.079	0.039	1	03/22/18	03/23/18	ND	
FF-001(LMB)-MHL1-171015	K1712471-017	0.079	0.039	1	03/22/18	03/23/18	ND	
FWB-001(LMB)-MHL1-171015	K1712471-018	0.079	0.040	1	03/22/18	03/23/18	ND	
Method Blank 1	K1712471-MB1	0.080	0.040	1	03/22/18	03/23/18	ND	
Method Blank 2	K1712471-MB2	0.080	0.040	1	03/22/18	03/23/18	ND	
Method Blank 3	K1712471-MB3	0.080	0.040	1	03/22/18	03/23/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712471
Date Collected: 10/16/17
Date Received: 11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-DR-171016	K1712471-020	0.079	0.040	1	02/26/18	02/27/18	ND	
FWB-001(LMB)-DR-171016	K1712471-021	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 1	K1712471-MB1	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 2	K1712471-MB2	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 3	K1712471-MB3	0.080	0.040	1	02/26/18	02/27/18	ND	

fish LVL 2

16324

VALIDATION WORKSHEET

Method: Total Inorganic Arsenic

Date Reviewed: 4.6.18

Sample Collection Dates:

SDG: K1712471

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Validation Criteria	FF-001(cc)-LHLI-171005	FWB-001(cc)-LHLI-171005	FF-001(FHL)-MHLI-171014	FWB-001(FHL)-MHLI-171014	FF-001 (LMB)-MHLI-171014	FWB-001 (LMB)-MHLI-171014	FF-001(cc)-MHL3-171014	FWB-001(cc)-MHL3-171014	FF-001 (LMB)-MHLI-171015	FWB-001(LMB)-MHLI-171015	FF-001(LMB)-DR-171016	FWB-001(LMB)-DR-171016								
Sample results	A																			
Holding Times	A																			
Completion																				
Method Blanks	A			X	A															
LCS																				
duplicate RPD																				
MS/MSD: 3.6.18	A									X	A	A								

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

frozen

Spl 10.5-10.16.17
prep 3.22.18 2.26.18
anl 3.26.18 3.1.18

- MB.016 4, 6 assoc. Spl. -006 FWB.001(FHL).MHLI.171014

OPR's ok
calves ok

- MS 2468-018 low MS+ MSD (9, 9) J/UJ, 8 spls parent spl only qual.

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133 134

FWB.001(LMB).MHLI.171015

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712471
Date Collected: 10/05-15/17
Date Received: 11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL1-171005	K1712471-002	0.039	0.014	1	03/22/18	03/26/18	ND	
FWB-001(CC)-LHL1-171005	K1712471-003	0.039	0.014	1	03/22/18	03/26/18	ND	
FF-001(FHC)-MHL1-171014	K1712471-005	0.039	0.014	1	03/22/18	03/26/18	ND	
FWB-001(FHC)-MHL1-171014	K1712471-006	0.040	0.014	1	03/22/18	03/26/18	0.016	J U 6
FF-001(KB)-MHL1-171014	K1712471-009	0.039	0.014	1	03/22/18	03/26/18	ND	
FWB-001(KB)-MHL1-171014	K1712471-010	0.039	0.014	1	03/22/18	03/26/18	ND	
FF-001(CC)-MHL3-171014	K1712471-013	0.039	0.014	1	03/22/18	03/26/18	ND	
FWB-001(CC)-MHL3-171014	K1712471-014	0.039	0.014	1	03/22/18	03/26/18	ND	
FF-001(LMB)-MHL1-171015	K1712471-017	0.039	0.014	1	03/22/18	03/26/18	ND	
FWB-001(LMB)-MHL1-171015	K1712471-018	0.040	0.014	1	03/22/18	03/26/18	ND	UJ 8
Method Blank 1	K1712471-MB1	0.040	0.014	1	03/22/18	03/26/18	0.016	J
Method Blank 2	K1712471-MB2	0.040	0.014	1	03/22/18	03/26/18	ND	
Method Blank 3	K1712471-MB3	0.040	0.014	1	03/22/18	03/26/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712471
Date Collected: 10/16/17
Date Received: 11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-DR-171016	K1712471-020	0.040	0.014	1	02/26/18	03/01/18	ND	
FWB-001(LMB)-DR-171016	K1712471-021	0.040	0.014	1	02/26/18	03/01/18	0.025	J
Method Blank 1	K1712471-MB1	0.040	0.014	1	02/26/18	03/01/18	ND	
Method Blank 2	K1712471-MB2	0.040	0.014	1	02/26/18	03/01/18	ND	
Method Blank 3	K1712471-MB3	0.040	0.014	1	02/26/18	03/01/18	ND	

CI

CHAIN OF CUSTODY
83679

004

SR# K1712471

COC Set ___ of ___

COC# BLOTA#7

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name	KV-HERRINGTON LAKE
Project Number	02426143A
Project Manager	MARY SORENSEN
Company	RAMBOLL ENVIRON
Address	1600 PARKWOOD CIR, SUITE 310, ATL, GA
Phone #	770.548.1799
email	msorensen@ramboll.com
Sampler Signature	Katri Leigh
Sampler Printed Name	KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D 300.0 / SO4	28D 7471B / Hg	180D 1630 Methyl Hg	180D 6010C / Metals T	180D 6020A / Metals T	1 1632 / As INDR	2 1632 / As 3	3 1632 / As 5	4 ASTM D5516 / WATER ONLY	5 LIPIDS	Remarks
1. FUN-001(CC)-WHL1-I	171005	10-5-17	1030	T	1		X	X	X	X	X	X	X	X	X	
2. FUN-001(FHC)-MHL1-I	1710K1	10-K1-17	0930		2		X	X	X	X	X	X	X	X	X	
3. FD-001(FHC)-MHL1-I	1710K4	10-K1-17	0930		1				X	X				X	X	#Se ONLY
4. FUN-001(KB)-MHL1-I	1710K4	10-K1-17	1130		2		X	X	X	X	X	X	X	X	X	
5. FD-001(KB)-MHL1-I	1710K4	10-K1-17	1130		1				X	X				X	X	#Se ONLY
6. FUN-001(CC)-MHL3-I	1710K4	10-K1-17	1200		2		X	X	X	X	X	X	X	X	X	
7. FD-001(CC)-MHL3-I	1710K4	10-K1-17	1200		1				X	X				X	X	#Se ONLY
8. FUN-001(LMB)-MHL-I	171015	10-15-17	1100		2		X	X	X	X	X	X	X	X	X	
9. FUN-001(LMB)-DR-I	1710116	10-16-17	1000		1		X	X	X	X	X	X	X	X	X	
10. FD-001(LMB)-DR-I	1710116	10-16-17	1000		1				X	X				X	X	#Se ONLY

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.#_____

Bill To:_____

Turnaround Requirements

___ 24 hr. ___ 48 hr.

___ 5 Day

X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

* FISH TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP

** EACH FISH TO BE SPLIT INTO FILLET (FF) & REMAINS (FWB) AND COMPOSITED ACCORDING TO EMAIL INSTRUCTIONS

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Katri Leigh	Signature: Daniel S. Rumpton	Signature	Signature	Signature	Signature
Printed Name: KATRINA LEIGH	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: RAMBOLL	Firm	Firm	Firm	Firm	Firm
Date/Time: 11/14/17 1800	Date/Time: 11-16-17 0930	Date/Time	Date/Time	Date/Time	Date/Time

PC MH

Cooler Receipt and Preservation Form

Client RAMBOLL ENVIRON Service Request K17 12471

Received: 11-16-17 Opened: 11-16-17 By: ASP Unloaded: 11-16-17 By: ASP/CG

Samples were received via? USPS (Fed Ex) UPS DHL PDX Courier Hand Delivered

Samples were received in: (circle) (Cooler) Box Envelope Other _____ NA

Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

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
-11.2	-11.3	N/A	N/A	-0.1	356	83679	7884 7816 1592	
2.2	2.2	N/A	N/A	0.0	391	83679	7884 7816 1629	
-13.0	-12.9	N/A	N/A	+0.1	376	83679	7884 7816 1618	
-19.0	-19.0	N/A	N/A	0.0	379	83679	7884 7816 1607	
-12.0	-12.0	N/A	N/A	0.0	373	83679	7884 7816 1630	

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) CG 11/16

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: Received sample not on COC - "FO-001(KB)LHL3-171003" (Bota #9 - corresponds w/ FUW-001(KB)-LHL3-171003.

Page 1 of 2

7/25/16

PC MH

Cooler Receipt and Preservation Form

Client Rambol Service Request K17 17471

Received: 11/16/17 Opened: 11/16/17 By: CG Unloaded: 11/16/17 By: CG/DP

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? _____

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
-21.0	-21.1	/	/	-0.1	349	83679	7884 7816 1640	
-22.0	-22.1	/	/	-0.1	328		1651	
-10.4	-10.4	/	/	0.0	325		1581	

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

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: See Pg. 1.

Page 2 of 2

7/25/16

LVL 2 [varies LVL 4 sc]

VALIDATION WORKSHEET

Method: Total Metals, Mercury — DRY only
Date Reviewed: 4.11.18
Sample Collection Dates: 10.3.17 - 10.16.17
SDG: K1712476
Reviewer: C Jensen
The following data validation areas were reviewed:

Sample Identification	1 FF-001(LVB)-LVL3-171003	2 FF-002(LMW)-CT-171004	3 FF-001(BT)-DL-171016	4 FWB-001(BT)-DL-171016	5 FWB-001(LVB)-LVL3-171003	6 FWB-002(LMW)-CT-171004	7 FF-001(LMW)-LVL4-171003	8 FWB-001(LMW)-LVL4-171003	9 FF-001(LVB)-LVL4-171003	10 FWB-001(LVB)-LVL4-171003	11 FF-001(LVB)-LVL2-171005	12 FWB-001(LVB)-LVL2-171005	13 FF-001(FHC)-LVL1-171011	14 FWB-001(FHC)-LVL1-171011	15 FF-001(LMW)-LVL6-171011	16 FWB-001(LMW)-LVL6-171011	17 FF-002(LMW)-CT-171004-FD	18 FWB-002(LMW)-CT-171004-FD	19	20
Validation Criteria																				
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS	A																			
duplicate RPD	A														X					
MS/MSD: (1)																				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

metals
SPL 10.3.17 - 10.16.17 — frozen
prep 2.16.18 3.16.18 2.22.18 2.27.18 3.27.18
RM 2.19.18 2.26.18 2.23.18 2.28.18 3.28.18
2.22.18 3.26.18

ICV, CCV → ok
ICB CCB ok
low level ok
spiked
ICS
post spk.

SRM: DORM4, TORT3

MB.3) Fe. no flags
9) Fe
7) Hg

MB 2350.01 Hg .004J ug/kg. no flags
MS(1) Hg 542 2476.024 below 3776.05, second MS in, parent only flagged (-024) : J, 8 Hg FF-001(LMW)-LVL6-171011

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 13:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(KB)-LHL3-171003	**Basis:**	Dry
Lab Code:	K1712476-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.53**	mg/Kg	0.50	0.02	5	02/19/18 18:24	02/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	02/19/18 18:24	02/16/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	02/19/18 18:24	02/16/18	
Iron	6020A	**11.3**	mg/Kg	1.0	0.09	5	02/19/18 18:24	02/16/18	
Lead	6020A	**0.007 J**	mg/Kg	0.020	0.003	5	02/19/18 18:24	02/16/18	
Magnesium	6010C	**1040**	mg/Kg	1.0	0.5	1	02/22/18 10:51	02/16/18	
Mercury	7471B	**0.393**	mg/Kg	0.019	0.004	2	02/23/18 10:37	02/22/18	
Selenium	6020A	**5.5**	mg/Kg	1.0	0.03	5	02/19/18 18:24	02/16/18	
Zinc	6020A	**41.3**	mg/Kg	0.50	0.08	5	02/19/18 18:24	02/16/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 13:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(KB)-LHL3-171003	**Basis:**	Dry
Lab Code:	K1712476-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.48**	mg/Kg	0.50	0.02	5	02/26/18 18:05	02/23/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	02/26/18 18:05	02/23/18	
Cadmium	6020A	**0.017 J**	mg/Kg	0.020	0.003	5	02/26/18 18:05	02/23/18	
Iron	6020A	**36.9**	mg/Kg	1.00	0.09	5	02/26/18 18:05	02/23/18	
Lead	6020A	**0.035**	mg/Kg	0.020	0.003	5	02/26/18 18:05	02/23/18	
Magnesium	6010C	**1510**	mg/Kg	1.00	0.6	1	02/26/18 13:41	02/23/18	
Mercury	7471B	**0.197**	mg/Kg	0.019	0.004	2	02/28/18 14:23	02/27/18	
Selenium	6020A	**3.15**	mg/Kg	1.00	0.03	5	02/26/18 18:05	02/23/18	
Zinc	6020A	**74.5**	mg/Kg	0.50	0.08	5	02/26/18 18:05	02/23/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 14:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(LMB)-LHL4-171003	**Basis:**	Dry
Lab Code:	K1712476-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.74**	mg/Kg	0.50	0.02	5	03/26/18 14:14	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/26/18 14:14	03/16/18	
Cadmium	6020A	**0.011 J**	mg/Kg	0.020	0.003	5	03/26/18 14:14	03/16/18	
Iron	6020A	**8.17**	mg/Kg	1.00	0.09	5	03/26/18 14:14	03/16/18	
Lead	6020A	**0.010 J**	mg/Kg	0.020	0.003	5	03/26/18 14:14	03/16/18	
Magnesium	6010C	**1170**	mg/Kg	1.00	0.5	1	03/26/18 13:40	03/16/18	
Mercury	7471B	**0.250**	mg/Kg	0.018	0.004	2	03/28/18 11:31	03/27/18	
Selenium	6020A	**4.97**	mg/Kg	1.00	0.03	5	03/26/18 14:14	03/16/18	
Zinc	6020A	**38.7**	mg/Kg	0.50	0.08	5	03/26/18 14:14	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 14:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(LMB)-LHL4-171003	**Basis:**	Dry
Lab Code:	K1712476-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.92**	mg/Kg	0.50	0.02	5	03/26/18 14:17	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/26/18 14:17	03/16/18	
Cadmium	6020A	**0.038**	mg/Kg	0.020	0.003	5	03/26/18 14:17	03/16/18	
Iron	6020A	**37.6**	mg/Kg	0.99	0.09	5	03/26/18 14:17	03/16/18	
Lead	6020A	**0.028**	mg/Kg	0.020	0.003	5	03/26/18 14:17	03/16/18	
Magnesium	6010C	**1600**	mg/Kg	0.99	0.50	1	03/26/18 14:12	03/16/18	
Mercury	7471B	**0.089**	mg/Kg	0.019	0.004	2	03/28/18 11:35	03/27/18	
Selenium	6020A	**3.31**	mg/Kg	0.99	0.03	5	03/26/18 14:17	03/16/18	
Zinc	6020A	**63.6**	mg/Kg	0.50	0.08	5	03/26/18 14:17	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(KB)-LHL4-171003	**Basis:**	Dry
Lab Code:	K1712476-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.21**	mg/Kg	0.50	0.02	5	03/26/18 14:20	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/26/18 14:20	03/16/18	
Cadmium	6020A	**0.019 J**	mg/Kg	0.020	0.003	5	03/26/18 14:20	03/16/18	
Iron	6020A	**8.93**	mg/Kg	1.00	0.09	5	03/26/18 14:20	03/16/18	
Lead	6020A	**0.033**	mg/Kg	0.020	0.003	5	03/26/18 14:20	03/16/18	
Magnesium	6010C	**1060**	mg/Kg	1.00	0.5	1	03/26/18 14:14	03/16/18	
Mercury	7471B	**0.625**	mg/Kg	0.018	0.004	2	03/28/18 11:38	03/27/18	
Selenium	6020A	**5.44**	mg/Kg	1.00	0.03	5	03/26/18 14:20	03/16/18	
Zinc	6020A	**39.5**	mg/Kg	0.50	0.08	5	03/26/18 14:20	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(KB)-LHL4-171003	**Basis:**	Dry
Lab Code:	K1712476-011		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.17**	mg/Kg	0.50	0.02	5	03/26/18 14:23	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/26/18 14:23	03/16/18	
Cadmium	6020A	**0.054**	mg/Kg	0.020	0.003	5	03/26/18 14:23	03/16/18	
Iron	6020A	**50.4**	mg/Kg	0.99	0.09	5	03/26/18 14:23	03/16/18	
Lead	6020A	**0.068**	mg/Kg	0.020	0.003	5	03/26/18 14:23	03/16/18	
Magnesium	6010C	**1600**	mg/Kg	0.99	0.50	1	03/26/18 14:16	03/16/18	
Mercury	7471B	**0.187**	mg/Kg	0.019	0.004	2	03/28/18 11:41	03/27/18	
Selenium	6020A	**3.19**	mg/Kg	0.99	0.03	5	03/26/18 14:23	03/16/18	
Zinc	6020A	**85.4**	mg/Kg	0.50	0.08	5	03/26/18 14:23	03/16/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FF-002(LMB)-CI-171004		
Lab Code:	K1712476-014		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.89**	mg/Kg	0.50	0.02	5	02/19/18 18:27	02/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	02/19/18 18:27	02/16/18	
Cadmium	6020A	**0.014 J**	mg/Kg	0.020	0.003	5	02/19/18 18:27	02/16/18	
Iron	6020A	**8.05**	mg/Kg	1.00	0.09	5	02/19/18 18:27	02/16/18	
Lead	6020A	**0.005 J**	mg/Kg	0.020	0.003	5	02/19/18 18:27	02/16/18	
Magnesium	6010C	**1320**	mg/Kg	1.00	0.5	1	02/22/18 10:54	02/16/18	
Mercury	7471B	**0.423**	mg/Kg	0.019	0.004	2	02/23/18 10:40	02/22/18	
Selenium	6020A	**5.98**	mg/Kg	1.00	0.03	5	02/19/18 18:27	02/16/18	
Zinc	6020A	**50.6**	mg/Kg	0.50	0.08	5	02/19/18 18:27	02/16/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FWB-002(LMB)-CI-171004		
Lab Code:	K1712476-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.91**	mg/Kg	0.50	0.02	5	02/26/18 18:09	02/23/18	
Boron	6020A	**0.50**	mg/Kg	0.50	0.20	5	02/26/18 18:09	02/23/18	J
Cadmium	6020A	**0.360**	mg/Kg	0.020	0.003	5	02/26/18 18:09	02/23/18	
Iron	6020A	**338**	mg/Kg	1.00	0.09	5	02/26/18 18:09	02/23/18	
Lead	6020A	**0.072**	mg/Kg	0.020	0.003	5	02/26/18 18:09	02/23/18	
Magnesium	6010C	**2280**	mg/Kg	1.00	0.6	1	02/26/18 13:43	02/23/18	
Mercury	7471B	**0.158**	mg/Kg	0.019	0.004	2	02/28/18 14:26	02/27/18	
Selenium	6020A	**2.79**	mg/Kg	1.00	0.03	5	02/26/18 18:09	02/23/18	
Zinc	6020A	**82.8**	mg/Kg	0.50	0.08	5	02/26/18 18:09	02/23/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 16:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FF-001(KB)-LHL2-171005		
Lab Code:	K1712476-017		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.43**	mg/Kg	0.50	0.02	5	03/26/18 14:34	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/26/18 14:34	03/16/18	
Cadmium	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/26/18 14:34	03/16/18	
Iron	6020A	**10.8**	mg/Kg	1.0	0.09	5	03/26/18 14:34	03/16/18	
Lead	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/26/18 14:34	03/16/18	
Magnesium	6010C	**1060**	mg/Kg	1.0	0.5	1	03/26/18 14:19	03/16/18	
Mercury	7471B	**0.364**	mg/Kg	0.020	0.004	2	03/28/18 11:44	03/27/18	
Selenium	6020A	**5.3**	mg/Kg	1.0	0.03	5	03/26/18 14:34	03/16/18	
Zinc	6020A	**37.2**	mg/Kg	0.50	0.08	5	03/26/18 14:34	03/16/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 16:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FWB-001(KB)-LHL2-171005		
Lab Code:	K1712476-018		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.17**	mg/Kg	0.50	0.02	5	03/26/18 14:37	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/26/18 14:37	03/16/18	
Cadmium	6020A	**0.026**	mg/Kg	0.020	0.003	5	03/26/18 14:37	03/16/18	
Iron	6020A	**43.4**	mg/Kg	0.99	0.09	5	03/26/18 14:37	03/16/18	
Lead	6020A	**0.026**	mg/Kg	0.020	0.003	5	03/26/18 14:37	03/16/18	
Magnesium	6010C	**1150**	mg/Kg	0.99	0.50	1	03/26/18 14:21	03/16/18	
Mercury	7471B	**0.126**	mg/Kg	0.019	0.004	2	03/28/18 11:51	03/27/18	
Selenium	6020A	**2.58**	mg/Kg	0.99	0.03	5	03/26/18 14:37	03/16/18	
Zinc	6020A	**63.8**	mg/Kg	0.50	0.08	5	03/26/18 14:37	03/16/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FF-001(FHC)-LHL1-171011		
Lab Code:	K1712476-021		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.05 J**	mg/Kg	0.50	0.02	5	03/26/18 14:40	03/16/18	
Boron	6020A	**0.42 J**	mg/Kg	0.50	0.20	5	03/26/18 14:40	03/16/18	
Cadmium	6020A	**0.007 J**	mg/Kg	0.020	0.003	5	03/26/18 14:40	03/16/18	
Iron	6020A	**15.8**	mg/Kg	0.99	0.09	5	03/26/18 14:40	03/16/18	
Lead	6020A	ND U	mg/Kg	0.020	0.003	5	03/26/18 14:40	03/16/18	
Magnesium	6010C	**1010**	mg/Kg	0.99	0.50	1	03/26/18 14:24	03/16/18	
Mercury	7471B	**0.510**	mg/Kg	0.019	0.004	2	03/28/18 11:54	03/27/18	
Selenium	6020A	**4.33**	mg/Kg	0.99	0.03	5	03/26/18 14:40	03/16/18	
Zinc	6020A	**23.8**	mg/Kg	0.50	0.08	5	03/26/18 14:40	03/16/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FWB-001(FHC)-LHL1-171011		
Lab Code:	K1712476-022		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.09 J**	mg/Kg	0.50	0.02	5	03/26/18 14:42	03/16/18	
Boron	6020A	**1.51**	mg/Kg	0.50	0.20	5	03/26/18 14:42	03/16/18	
Cadmium	6020A	**0.044**	mg/Kg	0.020	0.003	5	03/26/18 14:42	03/16/18	
Iron	6020A	**72.2**	mg/Kg	1.00	0.09	5	03/26/18 14:42	03/16/18	
Lead	6020A	**0.058**	mg/Kg	0.020	0.003	5	03/26/18 14:42	03/16/18	
Magnesium	6010C	**1460**	mg/Kg	1.00	0.5	1	03/26/18 14:26	03/16/18	
Mercury	7471B	**0.173**	mg/Kg	0.019	0.004	2	03/28/18 11:57	03/27/18	
Selenium	6020A	**2.41**	mg/Kg	1.00	0.03	5	03/26/18 14:42	03/16/18	
Zinc	6020A	**90.5**	mg/Kg	0.50	0.08	5	03/26/18 14:42	03/16/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FF-001(LMB)-LHL6-171011		
Lab Code:	K1712476-024		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.81**	mg/Kg	0.50	0.02	5	03/26/18 14:45	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/26/18 14:45	03/16/18	
Cadmium	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/26/18 14:45	03/16/18	
Iron	6020A	**8.08**	mg/Kg	1.00	0.09	5	03/26/18 14:45	03/16/18	
Lead	6020A	**0.005 J**	mg/Kg	0.020	0.003	5	03/26/18 14:45	03/16/18	
Magnesium	6010C	**1040**	mg/Kg	1.00	0.5	1	03/26/18 13:18	03/16/18	
Mercury	7471B	**0.706** J 8	mg/Kg	0.019	0.004	2	03/28/18 12:01	03/27/18	
Selenium	6020A	**5.66**	mg/Kg	1.00	0.03	5	03/26/18 14:45	03/16/18	
Zinc	6020A	**29.5**	mg/Kg	0.50	0.08	5	03/26/18 14:45	03/16/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FWB-001(LMB)-LHL6-171011		
Lab Code:	K1712476-025		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.87**	mg/Kg	0.50	0.02	5	03/26/18 14:59	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 18:19	03/16/18	
Cadmium	6020A	**0.025**	mg/Kg	0.020	0.003	5	03/26/18 14:59	03/16/18	
Iron	6020A	**36.5**	mg/Kg	1.0	0.09	5	03/26/18 14:59	03/16/18	
Lead	6020A	**0.037**	mg/Kg	0.020	0.003	5	03/26/18 14:59	03/16/18	
Magnesium	6010C	**1690**	mg/Kg	1.0	0.5	1	03/26/18 13:30	03/16/18	
Mercury	7471B	**0.243**	mg/Kg	0.019	0.004	2	03/28/18 12:13	03/27/18	
Selenium	6020A	**3.3**	mg/Kg	1.0	0.03	5	03/26/18 14:59	03/16/18	
Zinc	6020A	**51.3**	mg/Kg	0.50	0.08	5	03/26/18 14:59	03/16/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FF-001(BT)-DR-171016		
Lab Code:	K1712476-028		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.11**	mg/Kg	0.50	0.02	5	02/19/18 18:30	02/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	02/19/18 18:30	02/16/18	
Cadmium	6020A	**0.013 J**	mg/Kg	0.020	0.003	5	02/19/18 18:30	02/16/18	
Iron	6020A	**26.2**	mg/Kg	1.0	0.09	5	02/19/18 18:30	02/16/18	
Lead	6020A	**0.008 J**	mg/Kg	0.020	0.003	5	02/19/18 18:30	02/16/18	
Magnesium	6010C	**985**	mg/Kg	1.0	0.5	1	02/22/18 10:56	02/16/18	
Mercury	7471B	**0.083**	mg/Kg	0.020	0.004	2	02/23/18 10:43	02/22/18	
Selenium	6020A	**2.1**	mg/Kg	1.0	0.03	5	02/19/18 18:30	02/16/18	
Zinc	6020A	**68.1**	mg/Kg	0.50	0.08	5	02/19/18 18:30	02/16/18	

Printed 4/4/2018 5:20:54 PM

Superset Reference:

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FWB-001(BT)-DR-171016		
Lab Code:	K1712476-029		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.80**	mg/Kg	0.50	0.02	5	02/19/18 18:33	02/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	02/19/18 18:33	02/16/18	
Cadmium	6020A	**0.012 J**	mg/Kg	0.020	0.003	5	02/19/18 18:33	02/16/18	
Iron	6020A	**65.5**	mg/Kg	1.00	0.09	5	02/19/18 18:33	02/16/18	
Lead	6020A	**0.104**	mg/Kg	0.020	0.003	5	02/19/18 18:33	02/16/18	
Magnesium	6010C	**1420**	mg/Kg	1.00	0.5	1	02/22/18 10:59	02/16/18	
Mercury	7471B	**0.048**	mg/Kg	0.019	0.004	2	02/23/18 10:46	02/22/18	
Selenium	6020A	**2.30**	mg/Kg	1.00	0.03	5	02/19/18 18:33	02/16/18	
Zinc	6020A	**187**	mg/Kg	0.50	0.08	5	02/19/18 18:33	02/16/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FF-002(LMB)-CI-171004-FD		
Lab Code:	K1712476-032		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.82**	mg/Kg	0.50	0.02	5	03/26/18 15:27	03/16/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 18:26	03/16/18	
Cadmium	6020A	**0.015 J**	mg/Kg	0.020	0.003	5	03/26/18 15:27	03/16/18	
Iron	6020A	**7.56**	mg/Kg	0.99	0.09	5	03/26/18 15:27	03/16/18	
Lead	6020A	**0.008 J**	mg/Kg	0.020	0.003	5	03/26/18 15:27	03/16/18	
Magnesium	6010C	**1160**	mg/Kg	0.99	0.50	1	03/26/18 14:29	03/16/18	
Mercury	7471B	**0.425**	mg/Kg	0.020	0.004	2	03/28/18 12:23	03/27/18	
Selenium	6020A	**5.33**	mg/Kg	0.99	0.03	5	03/26/18 15:27	03/16/18	
Zinc	6020A	**50.4**	mg/Kg	0.50	0.08	5	03/26/18 15:27	03/16/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FWB-002(LMB)-CI-171004-FD		
Lab Code:	K1712476-033		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.78**	mg/Kg	0.50	0.02	5	03/26/18 15:30	03/16/18	
Boron	6020A	**0.53**	mg/Kg	0.50	0.20	5	03/27/18 18:28	03/16/18	
Cadmium	6020A	**0.262**	mg/Kg	0.020	0.003	5	03/26/18 15:30	03/16/18	
Iron	6020A	**221**	mg/Kg	1.00	0.09	5	03/26/18 15:30	03/16/18	
Lead	6020A	**0.059**	mg/Kg	0.020	0.003	5	03/26/18 15:30	03/16/18	
Magnesium	6010C	**2060**	mg/Kg	1.00	0.5	1	03/26/18 14:31	03/16/18	
Mercury	7471B	**0.138**	mg/Kg	0.019	0.004	2	03/28/18 12:30	03/27/18	
Selenium	6020A	**2.52**	mg/Kg	1.00	0.03	5	03/26/18 15:30	03/16/18	
Zinc	6020A	**75.3**	mg/Kg	0.50	0.08	5	03/26/18 15:30	03/16/18	

Lvl 4 on any data

VALIDATION WORKSHEET

Method: 6020 Se only

SDG: K1712474

Date Reviewed: 4.11.18

Reviewer: C Jensen

Sample Collection Dates: 10.3-10.16.17

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FO-001 (LCS)-LHK3-171007	2 FO-001 (MB)-LHK4-171003	3 FO-001 (LCS)-LHK4-171003	4 FO-001 (LCS)-LHL2-171005	5 FO-001 (MB)-LHL0-171011	6 FO-001 (DST)-1012-171010	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Completeness of Analyses	A	→	→	→	→	→														
Holding Times	A	→	→	→	→	→														
Initial Calibration	A	→	→	→	→	→														
Continuing Calibration	A	→	→	→	→	→														
Method Blanks	A	→	→	→	→	→														
LCS	A	→	→	→	→	→														
Surrogate %R or duplicate RPD	A	→	→	→	→	→														
MS/MSD:	A	→	→	→	→	→														
Reporting Limits	A	→	→	→	→	→														
Completeness of Analyte List	A	→	→	→	→	→														
Field Duplicate Pair :	See	note.																		
Equip /Field Blank																				

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

SVL 10.3-10.16.17 frozen

PVP 12.20.18

PVM 12.29.17

no flags

Serial Dorm-4 3.96/3.56 = 111

SDG: K1712476 ovaries · wk 4.

Project: Hen. Lake

MB - ok
ICB - ok
CCB - ok

Date: 4.11.18

Method: Se 6020A

ICV %R — CCV. 25.4/25 = 1.01 — lab reported 101

ICV 25.6/25 = 1.02

CCV %R — lab reported 102

LCS 18.4/16.7 = 1.1 16.7/16.7 = 1. — lab reported 110 100

ICS %R 24.7/25 = .98 — lab reported 99

MS %R 25.8 − 6.29/16.6 = 1.17 23.9 − 5.66/16.6 = 1.09 — lab reported 118 110

MS/MSD %RPD — lab reported

Duplicate %D $\frac{6.3-6.1}{6.3+6.1/2} = \frac{.2}{6.2} = .03$ $\frac{5.6-5.7}{5.6+5.7/2} = \frac{.1}{5.75} = .07$ — lab reported 3 1

High Std Check — lab reported

Low Cal Check 2.2/2 = 110 — lab reported 112

Serial D % $\frac{13-12}{13} = 7.6$ — lab reported 10

Sample Recalculation — lab reported

other (moisture) — lab reported

spm. 3.96/3.56 = 1.11 — 111

4.1/3.56 = 1.15 — 115

post spk. 69 − 13/50 = 1.12 — 112

61 − 6/50 = 1.1 — 109

SDG K1712474	Analyte Se	
Project: Hen. Lake		
Date: 4.11.18 fish ovaries only.		
1134		311
Sample ID FO-001(LCS)-LHG3-17788	Lab reported 6.08	mg/Kg mg/L .786
12.109 x 5 x 30 /.3 = 605 /1000 = 6.05		ug/L .3
Calulation		30 ml
Sample ID FO-001(LMB)-LHG4-17788	Lab reported 6.3	mg/Kg mg/L
12.80 x 5 x 30 /.3 = 6.100 /1000 = 6.3		ug/L
Calulation		
Sample ID FO-001(LCS)-LHG4-17788	Lab reported 6.4	mg/Kg mg/L
	6.37	ug/L
Calulation 12.745 x 5 x 30/.3/1000 = 6.37		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		
Sample ID	Lab reported	mg/Kg mg/L
		ug/L
Calulation		

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 13:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(KB)-LHL3-171003	**Basis:**	Dry
Lab Code:	K1712476-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**6.08**	mg/Kg	0.99	0.03	5	12/29/17 15:48	12/28/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 14:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FO-001(LMB)-LHL4-171003		
Lab Code:	K1712476-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**6.3**	mg/Kg	1.0	0.03	5	12/29/17 15:50	12/28/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(KB)-LHL4-171003	**Basis:**	Dry
Lab Code:	K1712476-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**6.4**	mg/Kg	1.0	0.03	5	12/29/17 15:52	12/28/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 16:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
		Basis:	Dry
Sample Name:	FO-001(KB)-LHL2-171005		
Lab Code:	K1712476-019		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**6.89**	mg/Kg	1.00	0.03	5	12/29/17 15:54	12/28/17	

Printed 4/4/2018 5:20:57 PM

Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/11/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(LMB)-LHL6-171011	**Basis:**	Dry
Lab Code:	K1712476-026		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**7.56**	mg/Kg	0.99	0.03	5	12/29/17 15:56	12/28/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/16/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(BT)-DR-171016	**Basis:**	Dry
Lab Code:	K1712476-030		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**6.95**	mg/Kg	0.99	0.03	5	12/29/17 15:58	12/28/17	

ALS SOP

LVL 2 [only varies LVL 4 - Se.]

VALIDATION WORKSHEET

Method: Methyl Mercury

Date Reviewed: 4.11.19

Sample Collection Dates: 10.3.17 - 10.16.17

SDG: K1712476

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(MB)-LVL3-171003	2 FF-002(LMB)-CI-171004	3 FF-003(BT)-DE-171016	4 FWB-004(BT)-DE-171014	5 FWB-001(MB)-LVL3-171003	6 FWB-002(LMB)-CI-171004	7 FF-001(LMB)-LVL4-171003	8 FWB-003(LMB)-LVL4-171003	9 FF-001(MB)-LVL4-171003	10 FWB-001(MB)-LVL4-171003	11 FF-001(MB)-LVL2-171005	12 FWB-001(MB)-LVL2-171005	13 FF-001(FHE)-LVL4-171017	14 FWB-001(FHE)-LVL4-171017	15 FF-001(LMB)-LVL6-171011	16 FWB-001(LMB)-LVL6-171011	17 FF-002(LMB)-CI-171004-FD	18 FWB-002(LMB)-CI-171004	19	20
Sample results	A																	→		
Holding Times	A																	→		
Completion	A																	→		
Method Blanks	A																	→		
LCS QCS	A																	→		
duplicate RPD																		→		
MS/MSD: Batch 1, 24, 25	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

frozen -22.1 to 2.2.

SPL 10.3.17 - 10.16.17

prep 2.20.18 2.26.18 3.26.18

run 2.21.18 2.27.18 3.27.18

OPR. ok

QCS - NRCC TORT 3

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712476
Date Collected: 10/03-16/17
Date Received: 11/16/17-01/17/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(KB)-LHL3-171003	K1712476-002	10.0	4.0	1	02/20/18	02/21/18	515	
FF-002(LMB)-CI-171004	K1712476-014	10.0	4.0	1	02/20/18	02/21/18	527	
FF-001(BT)-DR-171016	K1712476-028	9.9	4.0	1	02/20/18	02/21/18	108	
FWB-001(BT)-DR-171016	K1712476-029	9.8	3.9	1	02/20/18	02/21/18	89.8	
Method Blank 1	K1712476-MB1	10.0	4.0	1	02/20/18	02/21/18	ND	
Method Blank 2	K1712476-MB2	10.0	4.0	1	02/20/18	02/21/18	ND	
Method Blank 3	K1712476-MB3	10.0	4.0	1	02/20/18	02/21/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation
Project:	KU-Herrington Lake/0242643A
Sample Matrix:	Tissue

Service Request:	K1712476
Date Collected:	10/03-16/17
Date Received:	11/16/17-01/17/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FWB-001(KB)-LHL3-171003	K1712476-003	9.8	3.9	1	02/26/18	02/27/18	214	
FWB-002(LMB)-CI-171004	K1712476-015	10.0	4.0	1	02/26/18	02/27/18	186	
Method Blank 1	K1712476-MB1	10.0	4.0	1	02/26/18	02/27/18	ND	
Method Blank 2	K1712476-MB2	10.0	4.0	1	02/26/18	02/27/18	ND	
Method Blank 3	K1712476-MB3	10.0	4.0	1	02/26/18	02/27/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712476
Date Collected: 10/03-16/17
Date Received: 11/16/17-01/17/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-LHL4-171003	K1712476-006	9.7	3.9	1	03/26/18	03/27/18	302	
FWB-001(LMB)-LHL4-171003	K1712476-007	9.7	3.9	1	03/26/18	03/27/18	67.8	
FF-001(KB)-LHL4-171003	K1712476-010	9.7	3.9	1	03/26/18	03/27/18	731	
FWB-001(KB)-LHL4-171003	K1712476-011	9.9	4.0	1	03/26/18	03/27/18	170	
FF-001(KB)-LHL2-171005	K1712476-017	9.9	4.0	1	03/26/18	03/27/18	433	
FWB-001(KB)-LHL2-171005	K1712476-018	9.8	3.9	1	03/26/18	03/27/18	134	
FF-001(FHC)-LHL1-171011	K1712476-021	9.7	3.9	1	03/26/18	03/27/18	578	
FWB-001(FHC)-LHL1-171011	K1712476-022	9.8	3.9	1	03/26/18	03/27/18	158	
FF-001(LMB)-LHL6-171011	K1712476-024	10.0	4.0	1	03/26/18	03/27/18	758	
FWB-001(LMB)-LHL6-171011	K1712476-025	10.0	4.0	1	03/26/18	03/27/18	288	
FF-002(LMB)-CI-171004-FD	K1712476-032	9.7	3.9	1	03/26/18	03/27/18	568	
FWB-002(LMB)-CI-171004-FD	K1712476-033	9.7	3.9	1	03/26/18	03/27/18	142	
Method Blank 1	K1712476-MB1	10.0	4.0	1	03/26/18	03/27/18	ND	
Method Blank 2	K1712476-MB2	10.0	4.0	1	03/26/18	03/27/18	ND	
Method Blank 3	K1712476-MB3	10.0	4.0	1	03/26/18	03/27/18	ND	

1632A

LVL 2, varies LVL 4

VALIDATION WORKSHEET

Method: Arsenic III

SDG: K1712476

Date Reviewed: 4.11.18

Reviewer: C Jensen

Sample Collection Dates: 10.3.17 - 10.16.17

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(LVB)-LH13-171003	2 FF-002(LMW)-CI-171004	3 FF-003(BT)-DE-171016	4 FWB-004(BT)-DE-171016	5 FWB-001(LVB)-LH13-171003	6 FWB-002(LMW)-CI-171004	7 FF-001(LMW)-LH14-171003	8 FWB-003(LMW)-LH14-171003	9 FF-001(LVB)-LH14-171003	10 FWB-001(LVB)-LH14-171003	11 FF-004(LVB)-LH12-171005	12 FWB-004(LVB)-LH12-171005	13 FF-004(FHC)-LH11-171011	14 FWB-004(FHC)-LH14-171011	15 FF-004(LMW)-LH16-171011	16 FWB-004(LMW)-LH16-171011	17 FF-002(LMW)-CI-171004-FD	18 FWB-002(LMW)-CI-171004-FD	19	20
Sample results	A																	→		
Holding Times	A																	→		
Completion	A																	→		
Method Blanks	A																	→		
LCS																				
duplicate RPD																				
MS/MSD: batch 24125	A																	→		

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

frozen

SPL 10.3.17 - 10.16.17

prep 2.26.18 3.26.18

run 2.27.18 2.28.18 3.27.18

OMRs.

Cal Ver.

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712476
Date Collected: 10/03/18
Date Received: 11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(KB)-LHL3-171003	K1712476-002	0.078	0.039	1	02/26/18	02/27/18	ND	
FWB-001(KB)-LHL3-171003	K1712476-003	0.078	0.039	1	02/26/18	02/27/18	ND	
Method Blank 1	K1712476-MB1	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 2	K1712476-MB2	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 3	K1712476-MB3	0.080	0.040	1	02/26/18	02/27/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04-16/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(LMB)-CI-171004	K1712476-014	0.079	0.039	1	02/26/18	02/28/18	ND	
FWB-002(LMB)-CI-171004	K1712476-015	0.078	0.039	1	02/26/18	02/28/18	ND	
FF-001(BT)-DR-171016	K1712476-028	0.080	0.040	1	02/26/18	02/28/18	ND	
FWB-001(BT)-DR-171016	K1712476-029	0.078	0.039	1	02/26/18	02/28/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712476
Date Collected: 10/03-11/17
Date Received: 11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-LHL4-171003	K1712476-006	0.079	0.040	1	03/26/18	03/27/18	ND	
FWB-001(LMB)-LHL4-171003	K1712476-007	0.079	0.040	1	03/26/18	03/27/18	ND	
FF-001(KB)-LHL4-171003	K1712476-010	0.079	0.040	1	03/26/18	03/27/18	ND	
FWB-001(KB)-LHL4-171003	K1712476-011	0.080	0.040	1	03/26/18	03/27/18	ND	
FF-001(KB)-LHL2-171005	K1712476-017	0.080	0.040	1	03/26/18	03/27/18	ND	
FWB-001(KB)-LHL2-171005	K1712476-018	0.080	0.040	1	03/26/18	03/27/18	ND	
FF-001(FHC)-LHL1-171011	K1712476-021	0.080	0.040	1	03/26/18	03/27/18	ND	
FWB-001(FHC)-LHL1-171011	K1712476-022	0.080	0.040	1	03/26/18	03/27/18	ND	
FF-001(LMB)-LHL6-171011	K1712476-024	0.079	0.040	1	03/26/18	03/27/18	ND	
FWB-001(LMB)-LHL6-171011	K1712476-025	0.080	0.040	1	03/26/18	03/27/18	ND	
FF-002(LMB)-CI-171004-FD	K1712476-032	0.079	0.040	1	03/26/18	03/27/18	ND	
FWB-002(LMB)-CI-171004-FD	K1712476-033	0.08	0.040	1	03/26/18	03/27/18	ND	
Method Blank 1	K1712476-MB1	0.080	0.040	1	03/26/18	03/27/18	ND	
Method Blank 2	K1712476-MB2	0.080	0.040	1	03/26/18	03/27/18	ND	
Method Blank 3	K1712476-MB3	0.080	0.040	1	03/26/18	03/27/18	ND	

16632A

LVL 2, ovaries LVL 4

VALIDATION WORKSHEET

Method: Total Inorganic Arsenic
Date Reviewed: 4.11.18
Sample Collection Dates: 10.3.17 - 10.16.17

SDG: K1712476
Reviewer: C Jensen

The following data validation areas were reviewed:

Validation Criteria	1 FF.001(KB).LHL3.171003	2 FF.002(LMB).CI.171004	3 FF.003(BT).DL.171016	4 FWB.001(BT).DL.171016	5 FWB.001(KB).LHL3.171003	6 FWB.002(LMB).CI.171004	7 FF.001(LMB).LHL4.171003	8 FWB.003(LMB).LHL4.171003	9 FF.001(KB).LHL4.171003	10 FWB.001(KB).LHL4.171005	11 FF.001(KB).LHL2.171005	12 FWB.001(KB).LHL2.171005	13 FF.001(FHC).LHL1.171011	14 FWB.001(FHC).LHL1.171011	15 FF.001(LMB).LHL6.171011	16 FWB.001(LMB).LHL6.171011	17 FF.002(LMB).CI.171004.FD	18 FWB.002(LMB).CI.171004.FD	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A											X	A					X		
LCS																				
duplicate RPD																				
MS/MSD: ①	A														X	A				

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

frozen

Spl 10.3.17 - 10.16.17
prep 2.26.18 3.26.18
run 3.1.18 3.28.18

• MB1 extr. date 3.26.17) Total As., LCS FWB.001(KB).LHL2.171005
FWB.002(LMB)CI.171004FD

24168-18 MSL MSDL 9,9 - no flag, batch acc, lab rep
2nd one in control

OPR1. ok

Cal ver. ok

① 24176.024 MSL, MSDL (30,25) extr. 3.26. 2nd MS in, ∴ only
parent spl. qual J/UJ 8. FF.001(LMB).LHL6.171011

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03-11/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-LHL4-171003	K1712476-006	0.040	0.014	1	03/26/18	03/28/18	ND	
FWB-001(LMB)-LHL4-171003	K1712476-007	0.040	0.014	1	03/26/18	03/28/18	ND	
FF-001(KB)-LHL4-171003	K1712476-010	0.040	0.014	1	03/26/18	03/28/18	ND	
FWB-001(KB)-LHL4-171003	K1712476-011	0.040	0.014	1	03/26/18	03/28/18	ND	
FF-001(KB)-LHL2-171005	K1712476-017	0.040	0.014	1	03/26/18	03/28/18	ND	
FWB-001(KB)-LHL2-171005	K1712476-018	0.040	0.014	1	03/26/18	03/28/18	0.018	J U6
FF-001(FHC)-LHL1-171011	K1712476-021	0.040	0.014	1	03/26/18	03/28/18	ND	
FWB-001(FHC)-LHL1-171011	K1712476-022	0.040	0.014	1	03/26/18	03/28/18	ND	
FF-001(LMB)-LHL6-171011	K1712476-024	0.040	0.014	1	03/26/18	03/28/18	ND	U3 8
FWB-001(LMB)-LHL6-171011	K1712476-025	0.040	0.014	1	03/26/18	03/28/18	ND	
FF-002(LMB)-CI-171004-FD	K1712476-032	0.040	0.014	1	03/26/18	03/28/18	ND	
FWB-002(LMB)-CI-171004-FD	K1712476-033	0.040	0.014	1	03/26/18	03/28/18	0.034	J U6
Method Blank 1	K1712476-MB1	0.040	0.014	1	03/26/18	03/28/18	0.017	J
Method Blank 2	K1712476-MB2	0.040	0.014	1	03/26/18	03/28/18	ND	
Method Blank 3	K1712476-MB3	0.040	0.014	1	03/26/18	03/28/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712476
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/03-16/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(KB)-LHL3-171003	K1712476-002	0.039	0.014	1	02/26/18	03/01/18	ND	
FWB-001(KB)-LHL3-171003	K1712476-003	0.039	0.014	1	02/26/18	03/01/18	ND	
FF-002(LMB)-CI-171004	K1712476-014	0.039	0.014	1	02/26/18	03/01/18	ND	
FWB-002(LMB)-CI-171004	K1712476-015	0.039	0.014	1	02/26/18	03/01/18	0.025	J
FF-001(BT)-DR-171016	K1712476-028	0.040	0.014	1	02/26/18	03/01/18	ND	
FWB-001(BT)-DR-171016	K1712476-029	0.039	0.014	1	02/26/18	03/01/18	0.014	J
Method Blank 1	K1712476-MB1	0.040	0.014	1	02/26/18	03/01/18	ND	
Method Blank 2	K1712476-MB2	0.040	0.014	1	02/26/18	03/01/18	ND	
Method Blank 3	K1712476-MB3	0.040	0.014	1	02/26/18	03/01/18	ND	

C4

SR# 1712476

COC Set 1 of 2

COC# BIOTA #9

Page 1 of 1

ALS

CHAIN OF CUSTODY

83679

004

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
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Project Name	KV-HERRINGTON LAKE
Project Number	0242643A
Project Manager	MARY SORENSEN
Company	RAMBOLL ENVIRON
Address	1600 PARKWOOD CIR, SUITE 310, ATL, GA
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email	msorensen@ramboll.com
Sampler Signature	Katrina Leigh
Sampler Printed Name	KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D 300.0 / SO4	28D 7471B / Hg	180D 1630 Modified Methyl Hg	180D 6010C / Metals T	180D 6020A / Metals T	1 1632 / As INOR	2 1632 / As 3	3 1632 / As 5	4 ASTM D2974 / WATER CONT	5 LIPIDS	Remarks
1. FUN-001(KB)-LH13	171003	10-3-17	1300	T	3		X	X	X	X	X	X	X	X	X	
2. FUN-001(LMB)-LH14	171003	10-3-17	1430		2		X	X	X	X	X	X	X	X	X	
3. FD-001(LMB)-LH14	171003	10-3-17	1430		1				X	X	X	X	X	X	X	*Se ONLY
4. FUN-001(KB)-LH14	171003	10-3-17	1500		2		X	X	X	X	X	X	X	X	X	
5. FD-001(KB)-LH14	171003	10-3-17	1500		1				X	X	X	X	X	X	X	*Se ONLY
6. FUN-002(LMB)-CI	171004	10-4-17	0930		3		X	X	X	X	X	X	X	X	X	*INCLUDES DUPLICATE
7. FUN-001(KB)-LH12	171005	10-5-17	1630		4		X	X	X	X	X	X	X	X	X	
8. FD-001(KB)-LH12	171005	10-5-17	1630		1				X	X	X	X	X	X	X	*Se ONLY
9. FUN-001(FHC)-LH14	171011	10-11-17	0930		1		X	X	X	X	X	X	X	X	X	
10. FUN-001(LMB)-LH16	171011	10-11-17	1400	↓	2		X	X	X	X	X	X	X	X	X	* MB/MSD

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.# _____

Bill To: _____

Turnaround Requirements

- ___ 24 hr. ___ 48 hr.
- ___ 5 Day
- X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other____(Circle One)

*FISH TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP

** EACH FISH TO BE SPLIT INTO FILLET (FFF) + REMAINS (FWB) AND COMPOSITED ACCORDING TO EMAIL INSTRUCTIONS

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Katrina Leigh	Signature: JANICE S. PEMPSON	Signature	Signature	Signature	Signature
Printed Name: KATRINA LEIGH	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: RAMBOLL	Firm: 11-16-17 0938	Firm	Firm	Firm	Firm
Date/Time: 11/14/17 1800	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

CHAIN OF CUSTODY
83679

004

SR# K1712476

COC Set 2 of 2

COC# BIOTA #10

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: KU-HERRINGTON LAKE	Project Number: 05426443A
Project Manager: MARY SORENSEN	
Company: RAMBOLL ENVIRON	
Address: 1600 PARKWOOD CIR, SUITE 310, ATL, GA	
Phone #: 770.528.1799	email: msorensen@ramboll.com
Sampler Signature: Katrina Leigh	Sampler Printed Name: KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D 300.0 / SO4	28D 7471B / Hg	180D 1630 Modified / Methyl Hg	180D 6010C / Metals T	180D 6020A / Metals T	1 1632 / As INOR	2 1632 / As 3	3 1632 / As 5	4 PSTMB2016 / LIBERDUST	5 LIPIDS	Remarks
1. FO-001(LMB)-LH46-171011		10-11-17	1400	T	1				X	X				X	X	*Se ONLY
2. FWN-001(BT)-DR-171016		10-16-17	1100		1		X	X	X	X	X	X	X	X	X	
3. FO-001(BT)-DR-171016		10-16-17	1100	↓	1				X	X				X	X	*Se ONLY
4.																
5.																
6.																
7.																
8.																
9.																
10.																

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- ___ II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- X IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.#_____

Bill To:_____

Turnaround Requirements

___ 24 hr. ___ 48 hr.

X 5 Day Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

* FISH TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP

** EACH FISH TO BE SPLIT INTO FILLET (FF) + REMAINS (FWB) AND COMPOSITED ACCORDING TO EMAIL INSTRUCTIONS

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Katrina Leigh	Signature: DAVID S. PEARSON	Signature	Signature	Signature	Signature
Printed Name: KATRINA LEIGH	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: RAMBOLL	Firm: 11-16-17 0930	Firm	Firm	Firm	Firm
Date/Time: 11/14/17 1800	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

ALS

PC MH

Cooler Receipt and Preservation Form

ient RAMBOLL ENVIRON Service Request *K17* 12476

ceived: 11-16-17 Opened: 11-16-17 By: ASP Unloaded: 11-16-17 By: ASP/CG

Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*

Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*

Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

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
-11.2	-11.3	NA	NA	-0.1	356	83679	7884 7816 1592	
2.2	2.2	NA	NA	0.0	391	83679	7884 7816 1629	
-13.0	-12.9	NA	NA	+0.1	376	83679	7884 7816 1618	
-19.0	-19.0	NA	NA	0.0	379	83679	7884 7816 1607	
-12.0	-12.0	NA	NA	0.0	373	83679	7884 7816 1630	

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) CG 11/16

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: Received Sample not on COC. "FO-001(KB)LHL3-171003" (Bottle #9 - corresponds w/ FUW-001(KB)-LHL3-171003.

7/25/16

Page 1 of 2

ALS

PC MH

Cooler Receipt and Preservation Form

ient Rambell Service Request K17 12476

eceived: 11/16/17 Opened: 11/16/17 By: CG Unloaded: 11/16/17 By: CG/CP

Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*

Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*

Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

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
-21.0	-21.1	/	/	-0.1	349	83679	7884 7816 1640	
-22.0	-22.1	/	/	-0.1	328		1651	
-10.4	-10.4	/	/	0.0	325		1581	

4. Packing material: *Inserts* *Baggies* (*Bubble Wrap*) *Gel Packs* *Wet Ice* (*Dry Ice*) *Sleeves* _____

5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N

6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N
   If applicable, tissue samples were received: (*Frozen*) *Partially Thawed* *Thawed*

7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N

8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y (N)

9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N

10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N

11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N

12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: See Pg. 1.

6010/6020 7471B Hg LL2

VALIDATION WORKSHEET

Method: Total Metals, Mercury
Date Reviewed: 4.12.18
Sample Collection Dates: 10.5-10.14.17

SDG: KL71247
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001 (LMB)-LHL1-171005	2 FWB-001(LMB)-LHL1-171005	3 FF-002(LMB)-LHL1-171005	4 FWB-002(LMB)-LHL1-171005	5 FF-002(LCC)-LHL5-171007	6 FWB-002(LCC)-LHL5-171007	7 FF-001(LMB)-MHL3-171004	8 FWB-001(LMB)-MHL3-171004	9 FF-002(LMB)-MHL3-171004	10 FWB-002(LMB)-MHL3-171004	11 FD-001(LMB)-LHL1-171005	12 FD-001(LMB)-MHL3-171004	13	14	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS	A																			
duplicate RPD (1)	A																			
MS/MSD: Batch	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Frozen ICV ok
SPL 10.5 - 10.14.17 CCV ok
prep 3.19.18 3.26.18 12.28.18 low level ok
run 3.26.18 3.27.18 12.29.18 post spk.
IT ICS
serial D
MB FA, LJ wgtg ICB/CCB - ok

Lab dup: Pb and, barium, second dup run ok. no flags

Semi Dorm. 4
TOA-3

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712477
Date Collected: 10/05/17 15:00
Date Received: 11/16/17 09:30

Sample Name: FF-001(LMB)-LHL1-171005
Lab Code: K1712477-002

Basis: Dry

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.43**	mg/Kg	0.50	0.02	5	03/26/18 15:52	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 18:41	03/19/18	
Cadmium	6020A	**0.008 J**	mg/Kg	0.020	0.003	5	03/26/18 15:52	03/19/18	
Iron	6020A	**7.50**	mg/Kg	1.00	0.09	5	03/26/18 15:52	03/19/18	
Lead	6020A	**0.006 J**	mg/Kg	0.020	0.003	5	03/26/18 15:52	03/19/18	
Magnesium	6010C	**1250**	mg/Kg	5.0	2.5	5	03/26/18 16:52	03/19/18	
Mercury	7471B	**0.450**	mg/Kg	0.019	0.004	2	03/27/18 10:46	03/26/18	
Selenium	6020A	**4.19**	mg/Kg	1.00	0.03	5	03/26/18 15:52	03/19/18	
Zinc	6020A	**32.8**	mg/Kg	0.50	0.08	5	03/26/18 15:52	03/19/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(LMB)-LHL1-171005	**Basis:**	Dry
Lab Code:	K1712477-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.68**	mg/Kg	0.50	0.02	5	03/26/18 15:55	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 18:42	03/19/18	
Cadmium	6020A	**0.040**	mg/Kg	0.020	0.003	5	03/26/18 15:55	03/19/18	
Iron	6020A	**48.3**	mg/Kg	0.99	0.09	5	03/26/18 15:55	03/19/18	
Lead	6020A	**0.043**	mg/Kg	0.020	0.003	5	03/26/18 15:55	03/19/18	
Magnesium	6010C	**1580**	mg/Kg	5.0	2.5	5	03/26/18 16:54	03/19/18	
Mercury	7471B	**0.120**	mg/Kg	0.019	0.004	2	03/27/18 10:49	03/26/18	
Selenium	6020A	**2.50**	mg/Kg	0.99	0.03	5	03/26/18 15:55	03/19/18	
Zinc	6020A	**56.2**	mg/Kg	0.50	0.08	5	03/26/18 15:55	03/19/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(LMB)-LHL1-171005	**Basis:**	Dry
Lab Code:	K1712477-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**4.8**	mg/Kg	1.0	0.03	5	12/29/17 16:06	12/28/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 15:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-002(LMB)-LHL1-171005	**Basis:**	Dry
Lab Code:	K1712477-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.50**	mg/Kg	0.50	0.02	5	03/26/18 15:58	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 18:44	03/19/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/26/18 15:58	03/19/18	
Iron	6020A	**10.9**	mg/Kg	1.0	0.09	5	03/26/18 15:58	03/19/18	
Lead	6020A	ND U	mg/Kg	0.020	0.003	5	03/26/18 15:58	03/19/18	
Magnesium	6010C	**1260**	mg/Kg	5.0	2.5	5	03/26/18 16:57	03/19/18	
Mercury	7471B	**0.435**	mg/Kg	0.018	0.004	2	03/27/18 10:52	03/26/18	
Selenium	6020A	**4.2**	mg/Kg	1.0	0.03	5	03/26/18 15:58	03/19/18	
Zinc	6020A	**31.1**	mg/Kg	0.50	0.08	5	03/26/18 15:58	03/19/18	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 15:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-002(LMB)-LHL1-171005	**Basis:**	Dry
Lab Code:	K1712477-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.72**	mg/Kg	0.50	0.02	5	03/26/18 16:00	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 18:45	03/19/18	
Cadmium	6020A	**0.031**	mg/Kg	0.020	0.003	5	03/26/18 16:00	03/19/18	
Iron	6020A	**44.8**	mg/Kg	1.00	0.09	5	03/26/18 16:00	03/19/18	
Lead	6020A	**0.018 J**	mg/Kg	0.020	0.003	5	03/26/18 16:00	03/19/18	
Magnesium	6010C	**1230**	mg/Kg	5.0	2.5	5	03/26/18 17:02	03/19/18	
Mercury	7471B	**0.146**	mg/Kg	0.019	0.004	2	03/27/18 10:59	03/26/18	
Selenium	6020A	**2.63**	mg/Kg	1.00	0.03	5	03/26/18 16:00	03/19/18	
Zinc	6020A	**49.1**	mg/Kg	0.50	0.08	5	03/26/18 16:00	03/19/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-002(CC)-LHL5-171007	**Basis:**	Dry
Lab Code:	K1712477-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.11 J**	mg/Kg	0.50	0.02	5	03/26/18 16:03	03/19/18	
Boron	6020A	**0.23 J**	mg/Kg	0.50	0.20	5	03/27/18 18:47	03/19/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/26/18 16:03	03/19/18	
Iron	6020A	**11.5**	mg/Kg	0.99	0.09	5	03/26/18 16:03	03/19/18	
Lead	6020A	**0.005 J**	mg/Kg	0.020	0.003	5	03/26/18 16:03	03/19/18	
Magnesium	6010C	**909**	mg/Kg	5.0	2.5	5	03/26/18 17:04	03/19/18	
Mercury	7471B	**0.188**	mg/Kg	0.020	0.004	2	03/27/18 11:02	03/26/18	
Selenium	6020A	**1.69**	mg/Kg	0.99	0.03	5	03/26/18 16:03	03/19/18	
Zinc	6020A	**32.7**	mg/Kg	0.50	0.08	5	03/26/18 16:03	03/19/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-002(CC)-LHL5-171007	**Basis:**	Dry
Lab Code:	K1712477-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.12 J**	mg/Kg	0.50	0.02	5	03/26/18 16:06	03/19/18	
Boron	6020A	**1.03**	mg/Kg	0.50	0.20	5	03/27/18 18:48	03/19/18	
Cadmium	6020A	**0.020 J**	mg/Kg	0.020	0.003	5	03/26/18 16:06	03/19/18	
Iron	6020A	**56.3**	mg/Kg	1.0	0.09	5	03/26/18 16:06	03/19/18	
Lead	6020A	**0.060**	mg/Kg	0.020	0.003	5	03/26/18 16:06	03/19/18	
Magnesium	6010C	**1600**	mg/Kg	5.0	2.5	5	03/26/18 17:15	03/19/18	
Mercury	7471B	**0.060**	mg/Kg	0.020	0.004	2	03/27/18 11:05	03/26/18	
Selenium	6020A	**1.2**	mg/Kg	1.0	0.03	5	03/26/18 16:06	03/19/18	
Zinc	6020A	**61.6**	mg/Kg	0.50	0.08	5	03/26/18 16:06	03/19/18	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 13:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(LMB)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712477-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.36**	mg/Kg	0.50	0.02	5	03/26/18 16:14	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 18:53	03/19/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/26/18 16:14	03/19/18	
Iron	6020A	**7.85**	mg/Kg	1.00	0.09	5	03/26/18 16:14	03/19/18	
Lead	6020A	**0.003 J**	mg/Kg	0.020	0.003	5	03/26/18 16:14	03/19/18	
Magnesium	6010C	**1310**	mg/Kg	5.0	2.5	5	03/26/18 17:18	03/19/18	
Mercury	7471B	**0.847**	mg/Kg	0.019	0.004	2	03/27/18 11:08	03/26/18	
Selenium	6020A	**1.53**	mg/Kg	1.00	0.03	5	03/26/18 16:14	03/19/18	
Zinc	6020A	**34.1**	mg/Kg	0.50	0.08	5	03/26/18 16:14	03/19/18	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 13:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(LMB)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712477-013		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.69**	mg/Kg	0.50	0.02	5	03/26/18 16:17	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 18:55	03/19/18	
Cadmium	6020A	**0.023**	mg/Kg	0.020	0.003	5	03/26/18 16:17	03/19/18	
Iron	6020A	**65.4**	mg/Kg	1.00	0.09	5	03/26/18 16:17	03/19/18	
Lead	6020A	**0.064**	mg/Kg	0.020	0.003	5	03/26/18 16:17	03/19/18	
Magnesium	6010C	**1550**	mg/Kg	5.0	2.5	5	03/26/18 17:20	03/19/18	
Mercury	7471B	**0.221**	mg/Kg	0.019	0.004	2	03/27/18 11:12	03/26/18	
Selenium	6020A	**1.14**	mg/Kg	1.00	0.03	5	03/26/18 16:17	03/19/18	
Zinc	6020A	**53.9**	mg/Kg	0.50	0.08	5	03/26/18 16:17	03/19/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 13:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(LMB)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712477-014		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**3.95**	mg/Kg	0.99	0.03	5	12/29/17 16:08	12/28/17	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-002(LMB)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712477-016		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.28**	mg/Kg	0.50	0.02	5	03/26/18 16:20	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 18:56	03/19/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/26/18 16:20	03/19/18	
Iron	6020A	**11.0**	mg/Kg	1.00	0.09	5	03/26/18 16:20	03/19/18	
Lead	6020A	ND U	mg/Kg	0.020	0.003	5	03/26/18 16:20	03/19/18	
Magnesium	6010C	**1350**	mg/Kg	5.0	2.5	5	03/26/18 16:09	03/19/18	
Mercury	7471B	**0.342**	mg/Kg	0.019	0.004	2	03/27/18 11:18	03/26/18	
Selenium	6020A	**1.36**	mg/Kg	1.00	0.03	5	03/26/18 16:20	03/19/18	
Zinc	6020A	**34.7**	mg/Kg	0.50	0.08	5	03/26/18 16:20	03/19/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/14/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-002(LMB)-MHL3-171014	**Basis:**	Dry
Lab Code:	K1712477-017		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.38**	mg/Kg	0.50	0.02	5	03/26/18 16:23	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 18:58	03/19/18	
Cadmium	6020A	**0.010 J**	mg/Kg	0.020	0.003	5	03/26/18 16:23	03/19/18	
Iron	6020A	**40.4**	mg/Kg	1.00	0.09	5	03/26/18 16:23	03/19/18	
Lead	6020A	**0.023**	mg/Kg	0.020	0.003	5	03/26/18 16:23	03/19/18	
Magnesium	6010C	**1700**	mg/Kg	5.0	2.5	5	03/26/18 16:11	03/19/18	
Mercury	7471B	**0.116**	mg/Kg	0.019	0.004	2	03/27/18 11:21	03/26/18	
Selenium	6020A	**1.01**	mg/Kg	1.00	0.03	5	03/26/18 16:23	03/19/18	
Zinc	6020A	**50.4**	mg/Kg	0.50	0.08	5	03/26/18 16:23	03/19/18	

Tissue ILL2

HALS SOP

VALIDATION WORKSHEET

Method: Methyl Mercury

Date Reviewed: 4.12.18

Sample Collection Dates: 10.5-10.14.17

SDG: IL171247

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001 (LMB)-LML-171005	2 FWB-001(LMB)-LML-171005	3 FF-002 (LMB)-LML-171005	4 FWB-002(LMB)-LML-171005	5 FF-002(EC)-LML5-171007	6 FWB-002(EC)-LML5-171007	7 FF-001(LMB)-MHL3-171014	8 FWB-001(LMB)-MHL3-171014	9 FF-002(LMB)-MHL3-171014	10 FWB-002(LMB)-MHL3-171014	11	12	13	14	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS /QCS	A																			
duplicate RPD																				
MS/MSD: baker	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Frozen

SPL 10.5 - 10.14.17

PREP 3.21.18

RUN 3.22.18

OPR - OK

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05-14/17
Sample Matrix:	Tissue	**Date Received:**	11/16-12/19/17

Methyl Mercury

Prep Method:	ALS SOP	Units:	ng/g
Analysis Method:	ALS SOP	Basis:	Dry
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-LHL1-171005	K1712477-002	9.6	3.8	1	03/21/18	03/22/18	493	
FWB-001(LMB)-LHL1-171005	K1712477-003	9.7	3.9	1	03/21/18	03/22/18	124	
FF-002(LMB)-LHL1-171005	K1712477-006	9.9	4.0	1	03/21/18	03/22/18	494	
FWB-002(LMB)-LHL1-171005	K1712477-007	10.0	4.0	1	03/21/18	03/22/18	160	
FF-002(CC)-LHL5-171007	K1712477-009	9.7	3.9	1	03/21/18	03/22/18	162	
FWB-002(CC)-LHL5-171007	K1712477-010	9.7	3.9	1	03/21/18	03/22/18	75.6	
FF-001(LMB)-MHL3-171014	K1712477-012	9.7	3.9	1	03/21/18	03/22/18	766	
FWB-001(LMB)-MHL3-171014	K1712477-013	9.7	3.9	1	03/21/18	03/22/18	225	
FF-002(LMB)-MHL3-171014	K1712477-016	9.9	4.0	1	03/21/18	03/22/18	373	
FWB-002(LMB)-MHL3-171014	K1712477-017	9.9	4.0	1	03/21/18	03/22/18	133	
Method Blank 1	K1712477-MB1	10.0	4.0	1	03/21/18	03/22/18	ND	
Method Blank 2	K1712477-MB2	10.0	4.0	1	03/21/18	03/22/18	ND	
Method Blank 3	K1712477-MB3	10.0	4.0	1	03/21/18	03/22/18	ND	

1632A Tissue LVL 2

VALIDATION WORKSHEET

Method: Arsenic III

Date Reviewed: 4.12.18

Sample Collection Dates: 10.5-10.14.17

SDG: KL1712477

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001 (LMB)-LML-171005	2 FWB-001(LMB)-LML-171005	3 FF-002 (LMB)-LML-171005	4 FWB-002(LMB)-LML-171005	5 FF-002 (EC)-LML5-171007	6 FWB-002(EC)-LML5-171007	7 FF-001(LMB)-MLL3-171014	8 FWB-001(LMB)-MLL3-171014	9 FF-002(LMB)-MLL3-171014	10 FWB-002(LMB)-MLL3-171014	11	12	13	14	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS																				
duplicate RPD																				
MS/MSD: batch	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Frozen

SPL 10.5 - 10.14.17

Prep 3.22.18

Run 3.23.18

OPRs. OK

Cal ver. ok

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712477
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05-14/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Arsenic (III)

Prep Method:	Method	Units:	ug/g
Analysis Method:	1632A	Basis:	Dry
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-LHL1-171005	K1712477-002	0.080	0.040	1	03/22/18	03/23/18	ND	
FWB-001(LMB)-LHL1-171005	K1712477-003	0.078	0.039	1	03/22/18	03/23/18	ND	
FF-002(LMB)-LHL1-171005	K1712477-006	0.079	0.040	1	03/22/18	03/23/18	ND	
FWB-002(LMB)-LHL1-171005	K1712477-007	0.080	0.040	1	03/22/18	03/23/18	ND	
FF-002(CC)-LHL5-171007	K1712477-009	0.079	0.040	1	03/22/18	03/23/18	ND	
FWB-002(CC)-LHL5-171007	K1712477-010	0.079	0.039	1	03/22/18	03/23/18	ND	
FF-001(LMB)-MHL3-171014	K1712477-012	0.080	0.040	1	03/22/18	03/23/18	ND	
FWB-001(LMB)-MHL3-171014	K1712477-013	0.078	0.039	1	03/22/18	03/23/18	ND	
FF-002(LMB)-MHL3-171014	K1712477-016	0.080	0.040	1	03/22/18	03/23/18	ND	
FWB-002(LMB)-MHL3-171014	K1712477-017	0.080	0.040	1	03/22/18	03/23/18	ND	
Method Blank 1	K1712477-MB1	0.080	0.040	1	03/22/18	03/23/18	ND	
Method Blank 2	K1712477-MB2	0.080	0.040	1	03/22/18	03/23/18	ND	
Method Blank 3	K1712477-MB3	0.080	0.040	1	03/22/18	03/23/18	ND	

1632A Tissue LVL2

VALIDATION WORKSHEET

Method: Total Inorganic Arsenic
Date Reviewed: 4.12.18
Sample Collection Dates: 10.5-10.14.17

SDG: 1171247
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001(LMB)-LVL-171005	2 FWB-001(LMB)-LVL-171005	3 FF-002(LMB)-LVL-171005	4 FWB-002(LMB)-LVL-171005	5 FF-002(CC)-LVL5-171007	6 FWB-002(CC)-LVL5-171007	7 FF-001(LMB)-MVL3-171014	8 FWB-001(LMB)-MVL3-171014	9 FF-002(LMB)-MVL3-171014	10 FWB-002(LMB)-MVL3-171014	11	12	13	14	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A				X	A														
LCS																				
duplicate RPD																				
MS/MSD: batch	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

frozen

SPL 10.5 - 10.14.17
prep 3.22.18
run 3.26.18

MB1 .016) - U, 6 FF-002(CC)-LVL5-171007

OPRs. - ok.
calver. ok

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712477
Date Collected: 10/05-14/17
Date Received: 11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-LHL1-171005	K1712477-002	0.040	0.014	1	03/22/18	03/26/18	ND	
FWB-001(LMB)-LHL1-171005	K1712477-003	0.039	0.014	1	03/22/18	03/26/18	ND	
FF-002(LMB)-LHL1-171005	K1712477-006	0.040	0.014	1	03/22/18	03/26/18	ND	
FWB-002(LMB)-LHL1-171005	K1712477-007	0.040	0.014	1	03/22/18	03/26/18	ND	
FF-002(CC)-LHL5-171007	K1712477-009	0.040	0.014	1	03/22/18	03/26/18	ND	
FWB-002(CC)-LHL5-171007	K1712477-010	0.039	0.014	1	03/22/18	03/26/18	0.017	J U4
FF-001(LMB)-MHL3-171014	K1712477-012	0.040	0.014	1	03/22/18	03/26/18	ND	
FWB-001(LMB)-MHL3-171014	K1712477-013	0.039	0.014	1	03/22/18	03/26/18	ND	
FF-002(LMB)-MHL3-171014	K1712477-016	0.040	0.014	1	03/22/18	03/26/18	ND	
FWB-002(LMB)-MHL3-171014	K1712477-017	0.040	0.014	1	03/22/18	03/26/18	ND	
Method Blank 1	K1712477-MB1	0.040	0.014	1	03/22/18	03/26/18	0.016	J
Method Blank 2	K1712477-MB2	0.040	0.014	1	03/22/18	03/26/18	ND	
Method Blank 3	K1712477-MB3	0.040	0.014	1	03/22/18	03/26/18	ND	

CS

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1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

004

SR# K1712477
COC Set 1 of 1
COC# BIOTA #12

Project Name: KU-HERRINGTON LAKE
Project Number: 0342643A
Project Manager: MARY SORENSEN
Company: RAMBOLL ENVIRON
Address: 1600 PARKWOOD CIR, SUITE 310, ATL, GA
Phone # 770.548.1799
email: msorensen@ramboll.com
Sampler Signature: [signature]
Sampler Printed Name: KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D 300.0 / SO4	28D 7471B / Hg	180D 1630 Modified / Methyl Hg	180D 6010C / Metals T	180D 6020A / Metals T	1 1632/As INOR	2 1632/As 3	3 1632/As 5	4 ASTM D2216/ WATER CONT	5 LIPIDS	Remarks
1. FUN-001(LMB)-LHLH	171005	10-5-17	1500	T	2		X	X	X	X	X	X	X	X	X	
2. FD-001(LMB)-LHLH	171005	10-5-17	1500		1				X	X				X	X	*Se ONLY
3. FUN-002(LMB)-LHLH	171005	10-5-17	1530		2		X	X	X	X	X	X	X	X	X	
4. FUN-002(CC)-LHLS	171007	10-7-17	0930		3		X	X	X	X	X	X	X	X	X	
5. FUN-001(LMB)-MHL3	171014	10-14-17	1300		2		X	X	X	X	X	X	X	X	X	
6. FD-001(LMB)-MHL3	171014	10-14-17	1300		1				X	X				X	X	*Se ONLY
7. FUN-002(LMB)-MHL3	171014	10-14-17	1400	↓	3		X	X	X	X	X	X	X	X	X	
8.																
9.																
10.																

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.# ______
Bill To: ______

Turnaround Requirements

___ 24 hr. ___ 48 hr.
X 5 Day Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other___ (Circle One)

*FISH TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP

**EACH FISH TO BE SPLIT INTO FILLET (FF) + REMAINS (FWB) AND COMPOSITED ACCORDING TO EMAIL INSTRUCTIONS

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: [signature]	Signature: [signature]	Signature	Signature	Signature	Signature
Printed Name: KATRINA LEIGH	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: RAMBOLL	Firm: 11-16-17 0930	Firm	Firm	Firm	Firm
Date/Time: 11/14/17 1800	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

ALS

PC MH

Cooler Receipt and Preservation Form

ient RAMBOLL ENVIRON Service Request KI7 12477

eceived: 11-16-17 Opened: 11-16-17 By: ASP Unloaded: 11-16-17 By: ASP/CG

Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*

Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*

1. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

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
-11.2	-11.3	N/A	N/A	-0.1	356	83679	7884 7816 1592	
2.2	2.2	N/A	N/A	0.0	391	83679	7884 7816 1679	
-13.0	-12.9	N/A	N/A	+0.1	376	83679	7884 7816 16 18	
-19.0	-19.0	N/A	N/A	0.0	379	83679	7884 7816 1607	
-12.0	-12.0	N/A	N/A	0.0	373	83679	7884 7816 1630	

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) CG 11/16

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: Received sample not on COC - "FO-001(KB)LHL3-171003" (Bota#9 - corresponds w/ FUW-001(KB)-LHL3-171003.

7/25/16

Page 1 of 2

PC MH

Cooler Receipt and Preservation Form

Client Rainbell Service Request K1712477

Received: 11/16/17 Opened: 11/16/17 By: CG Unloaded: 11/16/17 By: CG/DP

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? _____

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
-21.0	-21.1	/	/	-0.1	349	83679	7884 7816 1640	
-22.0	-22.1	/	/	-0.1	328		1651	
-10.4	-10.4	/	/	0.0	325		1581	

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

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: See Pg. 1.

Page 2 *of* 2

7/25/16

LVL 2 Biota (Plants/Inverts)

6010
6020
7471B

VALIDATION WORKSHEET

Method: Total Metals- Dry Only
Date Reviewed: 2.16.18
Sample Collection Dates: 10.4 - 10.12.17

SDG: K1712478
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 AV-001-CI1-171004	2 AE-001-CI1-171004	3 AV-001-CI2-171005	4 AV-001-CI3-171005	5 AV-001-CI4-171005	6 AV-001-CI4-171005-FD	7 AE-001-CI2-171005	8 AE-001-CI3-171005	9 AE-001-CI3-171005-FD	10 AE-001-CI4-171005	11 AE-001-HQ-171004	12 AV-001-D2-171007	13 AE-001-D2-171007	14 AE-001-LHL1-171012	15 AE-001-LHL1-171012-FD	16 AV-001-LHL1-171012	17 AV-001-LHL2-171012	18 AE-001-LHL2-171012	19 AV-001-LHL3-171012	20 AE-001-LHL3-171012
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks ①	-																			
LCS	A																			
duplicate RPD ②	X																			
MS/MSD:	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments: FDs on spreadsheet in report.

MB Fe .5J) no flags.
1/31 Mg 1.0J)
1177

1178 B .22J) no flags.
Mg 1

NRCC
SRM Dorm-4
ICV) ok TORT-3
CCV)
ICB ok
CCBs
low level ok
ICS ok
post spike - ok
Serial D. ok

interval 20RD - ok

PM reviewed 3.16.18
no flags

① Hg .004J U, 6 AE-001-LHL3-171012
1482 AV-001-LHL4-171012
AV-001-LHL5-171012

② dup RPD 720 Cd
1177 acct J, 9 spls -001-020 in batch 30742
1178 - ok.

LVL 2

2 of 2

VALIDATION WORKSHEET

Method: Total Metals Dry Only
Date Reviewed: 2-16-18
Sample Collection Dates:

SDG: KI712478
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 AV-001-LVL4-171012	2 AV-001-LVLS-171012	3 AI-001-LVL4-171012	4 AI-001-LVLS-171012	5 AV-001-LVLa-171012	6 AI-001-LVLa-171012	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A →																			
Holding Times	A →																			
Completion	A →																			
Method Blanks	X	X	A →																	
LCS	A →																			
duplicate RPD	A →																			
MS/MSD:	A →																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 10:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-CI1-171004	**Basis:**	Dry
Lab Code:	K1712478-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**8.33**	mg/Kg	0.50	0.02	5	02/05/18 16:56	01/31/18	
Boron	6020A	**274**	mg/Kg	10.0	4	100	02/05/18 14:23	01/31/18	
Cadmium	6020A	**1.67** J9	mg/Kg	0.020	0.003	5	02/05/18 16:56	01/31/18	
Iron	6020A	**5870**	mg/Kg	1.00	0.09	5	02/05/18 16:56	01/31/18	
Lead	6020A	**3.28**	mg/Kg	0.020	0.003	5	02/19/18 19:01	01/31/18	
Magnesium	6010C	**3110**	mg/Kg	1.00	0.6	1	02/05/18 10:09	01/31/18	
Mercury	7471B	**0.019 J**	mg/Kg	0.020	0.004	2	02/08/18 12:31	02/08/18	
Selenium	6020A	**1.96**	mg/Kg	1.00	0.03	5	02/05/18 16:56	01/31/18	
Zinc	6020A	**38.9**	mg/Kg	0.50	0.08	5	02/05/18 16:56	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 13:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-CI1-171004	**Basis:**	Dry
Lab Code:	K1712478-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.68**	mg/Kg	0.50	0.02	5	02/05/18 14:47	01/31/18	
Boron	6020A	**9.00**	mg/Kg	0.50	0.20	5	02/05/18 14:47	01/31/18	
Cadmium	6020A	**0.518** J9	mg/Kg	0.020	0.003	5	02/05/18 14:47	01/31/18	
Iron	6020A	**227**	mg/Kg	1.00	0.09	5	02/05/18 14:47	01/31/18	
Lead	6020A	**0.159**	mg/Kg	0.020	0.003	5	02/19/18 19:16	01/31/18	
Magnesium	6010C	**3510**	mg/Kg	1.00	0.6	1	02/05/18 10:18	01/31/18	
Mercury	7471B	**0.025**	mg/Kg	0.020	0.004	2	02/08/18 12:44	02/08/18	
Selenium	6020A	**1.54**	mg/Kg	1.00	0.03	5	02/05/18 14:47	01/31/18	
Zinc	6020A	**62.1**	mg/Kg	0.50	0.08	5	02/05/18 14:47	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 09:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-CI2-171005	**Basis:**	Dry
Lab Code:	K1712478-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**8.60**	mg/Kg	0.50	0.02	5	02/05/18 17:08	01/31/18	
Boron	6020A	**129**	mg/Kg	2.0	0.8	20	02/05/18 14:50	01/31/18	
Cadmium	6020A	**0.786** J9	mg/Kg	0.020	0.003	5	02/05/18 17:08	01/31/18	
Iron	6020A	**6010**	mg/Kg	1.00	0.09	5	02/05/18 17:08	01/31/18	
Lead	6020A	**8.13**	mg/Kg	0.020	0.003	5	02/19/18 19:38	01/31/18	
Magnesium	6010C	**3550**	mg/Kg	1.00	0.6	1	02/05/18 10:20	01/31/18	
Mercury	7471B	**0.036**	mg/Kg	0.020	0.004	2	02/08/18 12:48	02/08/18	
Selenium	6020A	**2.64**	mg/Kg	1.00	0.03	5	02/05/18 17:08	01/31/18	
Zinc	6020A	**56.6**	mg/Kg	0.50	0.08	5	02/05/18 17:08	01/31/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-CI3-171005	**Basis:**	Dry
Lab Code:	K1712478-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**4.41**	mg/Kg	0.50	0.02	5	02/05/18 17:10	01/31/18	
Boron	6020A	**119**	mg/Kg	2.0	0.8	20	02/05/18 14:52	01/31/18	
Cadmium	6020A	**2.77** J9	mg/Kg	0.020	0.003	5	02/05/18 17:10	01/31/18	
Iron	6020A	**2900**	mg/Kg	1.0	0.09	5	02/05/18 17:10	01/31/18	
Lead	6020A	**10.2**	mg/Kg	0.020	0.003	5	02/19/18 19:41	01/31/18	
Magnesium	6010C	**3640**	mg/Kg	1.0	0.6	1	02/05/18 10:33	01/31/18	
Mercury	7471B	**0.024**	mg/Kg	0.020	0.004	2	02/08/18 12:51	02/08/18	
Selenium	6020A	**2.4**	mg/Kg	1.0	0.03	5	02/05/18 17:10	01/31/18	
Zinc	6020A	**44.6**	mg/Kg	0.50	0.08	5	02/05/18 17:10	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-CI4-171005	**Basis:**	Dry
Lab Code:	K1712478-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**3.98**	mg/Kg	0.50	0.02	5	02/05/18 17:13	01/31/18	
Boron	6020A	**98.9**	mg/Kg	2.0	0.8	20	02/05/18 14:54	01/31/18	
Cadmium	6020A	**1.15** J9	mg/Kg	0.020	0.003	5	02/05/18 17:13	01/31/18	
Iron	6020A	**2820**	mg/Kg	1.0	0.09	5	02/05/18 17:13	01/31/18	
Lead	6020A	**4.83**	mg/Kg	0.020	0.003	5	02/19/18 19:44	01/31/18	
Magnesium	6010C	**4910**	mg/Kg	1.0	0.6	1	02/05/18 10:35	01/31/18	
Mercury	7471B	**0.025**	mg/Kg	0.020	0.004	2	02/08/18 12:54	02/08/18	
Selenium	6020A	**1.7**	mg/Kg	1.0	0.03	5	02/05/18 17:13	01/31/18	
Zinc	6020A	**45.1**	mg/Kg	0.50	0.08	5	02/05/18 17:13	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-CI4-171005-FD	**Basis:**	Dry
Lab Code:	K1712478-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**4.07**	mg/Kg	0.50	0.02	5	02/05/18 17:15	01/31/18	
Boron	6020A	**90.5**	mg/Kg	2.0	0.8	20	02/05/18 14:56	01/31/18	
Cadmium	6020A	**1.05** J 9	mg/Kg	0.020	0.003	5	02/05/18 17:15	01/31/18	
Iron	6020A	**2690**	mg/Kg	0.99	0.09	5	02/05/18 17:15	01/31/18	
Lead	6020A	**6.20**	mg/Kg	0.020	0.003	5	02/19/18 19:47	01/31/18	
Magnesium	6010C	**4810**	mg/Kg	0.99	0.60	1	02/05/18 10:38	01/31/18	
Mercury	7471B	**0.023**	mg/Kg	0.020	0.004	2	02/08/18 12:57	02/08/18	
Selenium	6020A	**1.67**	mg/Kg	0.99	0.03	5	02/05/18 17:15	01/31/18	
Zinc	6020A	**42.5**	mg/Kg	0.50	0.08	5	02/05/18 17:15	01/31/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-CI2-171005	**Basis:**	Dry
Lab Code:	K1712478-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.07**	mg/Kg	0.50	0.02	5	02/05/18 14:59	01/31/18	
Boron	6020A	**13.5**	mg/Kg	0.50	0.20	5	02/05/18 14:59	01/31/18	
Cadmium	6020A	**0.414** J 9	mg/Kg	0.020	0.003	5	02/05/18 14:59	01/31/18	
Iron	6020A	**121**	mg/Kg	1.00	0.09	5	02/05/18 14:59	01/31/18	
Lead	6020A	**0.081**	mg/Kg	0.020	0.003	5	02/19/18 19:50	01/31/18	
Magnesium	6010C	**2840**	mg/Kg	1.00	0.6	1	02/05/18 10:40	01/31/18	
Mercury	7471B	**0.025**	mg/Kg	0.020	0.004	2	02/08/18 13:04	02/08/18	
Selenium	6020A	**2.18**	mg/Kg	1.00	0.03	5	02/05/18 14:59	01/31/18	
Zinc	6020A	**61.6**	mg/Kg	0.50	0.08	5	02/05/18 14:59	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-CI3-171005	**Basis:**	Dry
Lab Code:	K1712478-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.20**	mg/Kg	0.50	0.02	5	02/05/18 15:01	01/31/18	
Boron	6020A	**8.03**	mg/Kg	0.50	0.20	5	02/05/18 15:01	01/31/18	
Cadmium	6020A	**1.06** J 9	mg/Kg	0.020	0.003	5	02/05/18 15:01	01/31/18	
Iron	6020A	**125**	mg/Kg	1.0	0.09	5	02/05/18 15:01	01/31/18	
Lead	6020A	**0.149**	mg/Kg	0.020	0.003	5	02/19/18 19:53	01/31/18	
Magnesium	6010C	**3060**	mg/Kg	1.0	0.6	1	02/05/18 10:43	01/31/18	
Mercury	7471B	**0.033**	mg/Kg	0.019	0.004	2	02/08/18 13:07	02/08/18	
Selenium	6020A	**2.3**	mg/Kg	1.0	0.03	5	02/05/18 15:01	01/31/18	
Zinc	6020A	**61.8**	mg/Kg	0.50	0.08	5	02/05/18 15:01	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-CI3-171005-FD	**Basis:**	Dry
Lab Code:	K1712478-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.12**	mg/Kg	0.50	0.02	5	02/05/18 15:03	01/31/18	
Boron	6020A	**8.07**	mg/Kg	0.50	0.20	5	02/05/18 15:03	01/31/18	
Cadmium	6020A	**0.876** J9	mg/Kg	0.020	0.003	5	02/05/18 15:03	01/31/18	
Iron	6020A	**130**	mg/Kg	1.00	0.09	5	02/05/18 15:03	01/31/18	
Lead	6020A	**0.139**	mg/Kg	0.020	0.003	5	02/19/18 19:56	01/31/18	
Magnesium	6010C	**3310**	mg/Kg	1.00	0.6	1	02/05/18 10:45	01/31/18	
Mercury	7471B	**0.022**	mg/Kg	0.020	0.004	2	02/08/18 13:10	02/08/18	
Selenium	6020A	**1.87**	mg/Kg	1.00	0.03	5	02/05/18 15:03	01/31/18	
Zinc	6020A	**62.9**	mg/Kg	0.50	0.08	5	02/05/18 15:03	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 16:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-CI4-171005	**Basis:**	Dry
Lab Code:	K1712478-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.99**	mg/Kg	0.50	0.02	5	02/05/18 15:06	01/31/18	
Boron	6020A	**8.41**	mg/Kg	0.50	0.20	5	02/05/18 15:06	01/31/18	
Cadmium	6020A	**0.891** J	mg/Kg	0.020	0.003	5	02/05/18 15:06	01/31/18	
Iron	6020A	**99.3**	mg/Kg	1.00	0.09	5	02/05/18 15:06	01/31/18	
Lead	6020A	**0.111**	mg/Kg	0.020	0.003	5	02/19/18 19:59	01/31/18	
Magnesium	6010C	**3810**	mg/Kg	1.00	0.6	1	02/05/18 10:48	01/31/18	
Mercury	7471B	**0.033**	mg/Kg	0.020	0.004	2	02/08/18 13:13	02/08/18	
Selenium	6020A	**1.71**	mg/Kg	1.00	0.03	5	02/05/18 15:06	01/31/18	
Zinc	6020A	**71.2**	mg/Kg	0.50	0.08	5	02/05/18 15:06	01/31/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-HQ-171006	**Basis:**	Dry
Lab Code:	K1712478-011		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**7.30**	mg/Kg	0.50	0.02	5	02/05/18 17:17	01/31/18	
Boron	6020A	**160**	mg/Kg	2.0	0.8	20	02/05/18 15:26	01/31/18	
Cadmium	6020A	**0.604** J 9	mg/Kg	0.020	0.003	5	02/05/18 17:17	01/31/18	
Iron	6020A	**5190**	mg/Kg	0.99	0.09	5	02/05/18 17:17	01/31/18	
Lead	6020A	**20.1**	mg/Kg	0.020	0.003	5	02/19/18 20:02	01/31/18	
Magnesium	6010C	**3670**	mg/Kg	0.99	0.60	1	02/05/18 10:50	01/31/18	
Mercury	7471B	**0.027**	mg/Kg	0.022	0.004	2	02/08/18 13:17	02/08/18	
Selenium	6020A	**1.53**	mg/Kg	0.99	0.03	5	02/05/18 17:17	01/31/18	
Zinc	6020A	**41.4**	mg/Kg	0.50	0.08	5	02/05/18 17:17	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/06/17 15:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-HQ-171006	**Basis:**	Dry
Lab Code:	K1712478-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.44**	mg/Kg	0.50	0.02	5	02/05/18 16:04	01/31/18	
Boron	6020A	**5.60**	mg/Kg	0.50	0.20	5	02/05/18 16:04	01/31/18	
Cadmium	6020A	**0.337** J 9	mg/Kg	0.020	0.003	5	02/05/18 16:04	01/31/18	
Iron	6020A	**273**	mg/Kg	1.0	0.09	5	02/05/18 16:04	01/31/18	
Lead	6020A	**0.171**	mg/Kg	0.020	0.003	5	02/19/18 20:05	01/31/18	
Magnesium	6010C	**2250**	mg/Kg	1.0	0.6	1	02/05/18 10:53	01/31/18	
Mercury	7471B	**0.024**	mg/Kg	0.019	0.004	2	02/08/18 13:23	02/08/18	
Selenium	6020A	**1.9**	mg/Kg	1.0	0.03	5	02/05/18 16:04	01/31/18	
Zinc	6020A	**46.8**	mg/Kg	0.50	0.08	5	02/05/18 16:04	01/31/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 14:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-DR-171007	**Basis:**	Dry
Lab Code:	K1712478-013		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**14.9**	mg/Kg	0.50	0.02	5	02/05/18 15:31	01/31/18	
Boron	6020A	**40.6**	mg/Kg	0.50	0.20	5	02/05/18 15:31	01/31/18	
Cadmium	6020A	**0.868** J9	mg/Kg	0.020	0.003	5	02/05/18 15:31	01/31/18	
Iron	6020A	**14300**	mg/Kg	1.00	0.09	5	02/05/18 15:31	01/31/18	
Lead	6020A	**11.3**	mg/Kg	0.020	0.003	5	02/19/18 20:15	01/31/18	
Magnesium	6010C	**6820**	mg/Kg	1.00	0.6	1	02/05/18 10:55	01/31/18	
Mercury	7471B	**0.052**	mg/Kg	0.020	0.004	2	02/08/18 13:26	02/08/18	
Selenium	6020A	**2.44**	mg/Kg	1.00	0.03	5	02/05/18 15:31	01/31/18	
Zinc	6020A	**53.5**	mg/Kg	0.50	0.08	5	02/05/18 15:31	01/31/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-DR-171007	**Basis:**	Dry
Lab Code:	K1712478-014		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**2.08**	mg/Kg	0.50	0.02	5	02/05/18 15:33	01/31/18	
Boron	6020A	**4.92**	mg/Kg	0.50	0.20	5	02/05/18 15:33	01/31/18	
Cadmium	6020A	**0.499** J 9	mg/Kg	0.020	0.003	5	02/05/18 15:33	01/31/18	
Iron	6020A	**357**	mg/Kg	1.00	0.09	5	02/05/18 15:33	01/31/18	
Lead	6020A	**0.301**	mg/Kg	0.020	0.003	5	02/19/18 20:18	01/31/18	
Magnesium	6010C	**2380**	mg/Kg	1.00	0.6	1	02/05/18 11:08	01/31/18	
Mercury	7471B	**0.016 J**	mg/Kg	0.019	0.004	2	02/08/18 13:30	02/08/18	
Selenium	6020A	**2.21**	mg/Kg	1.00	0.03	5	02/05/18 15:33	01/31/18	
Zinc	6020A	**65.4**	mg/Kg	0.50	0.08	5	02/05/18 15:33	01/31/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 12:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-LHL1-171012	**Basis:**	Dry
Lab Code:	K1712478-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.77**	mg/Kg	0.50	0.02	5	02/05/18 15:36	01/31/18	
Boron	6020A	**9.12**	mg/Kg	0.50	0.20	5	02/05/18 15:36	01/31/18	
Cadmium	6020A	**0.282** J9	mg/Kg	0.020	0.003	5	02/05/18 15:36	01/31/18	
Iron	6020A	**264**	mg/Kg	1.00	0.09	5	02/05/18 15:36	01/31/18	
Lead	6020A	**0.259**	mg/Kg	0.020	0.003	5	02/19/18 20:21	01/31/18	
Magnesium	6010C	**3870**	mg/Kg	1.00	0.6	1	02/05/18 11:10	01/31/18	
Mercury	7471B	**0.037**	mg/Kg	0.020	0.004	2	02/08/18 13:33	02/08/18	
Selenium	6020A	**2.35**	mg/Kg	1.00	0.03	5	02/05/18 15:36	01/31/18	
Zinc	6020A	**83.1**	mg/Kg	0.50	0.08	5	02/05/18 15:36	01/31/18	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 12:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-LHL1-171012-FD	**Basis:**	Dry
Lab Code:	K1712478-016		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.41**	mg/Kg	0.50	0.02	5	02/05/18 15:38	01/31/18	
Boron	6020A	**9.31**	mg/Kg	0.50	0.20	5	02/05/18 15:38	01/31/18	
Cadmium	6020A	**0.204** J9	mg/Kg	0.020	0.003	5	02/05/18 15:38	01/31/18	
Iron	6020A	**154**	mg/Kg	0.99	0.09	5	02/05/18 15:38	01/31/18	
Lead	6020A	**0.160**	mg/Kg	0.020	0.003	5	02/19/18 20:24	01/31/18	
Magnesium	6010C	**3480**	mg/Kg	0.99	0.60	1	02/05/18 11:12	01/31/18	
Mercury	7471B	**0.029**	mg/Kg	0.019	0.004	2	02/08/18 13:36	02/08/18	
Selenium	6020A	**2.08**	mg/Kg	0.99	0.03	5	02/05/18 15:38	01/31/18	
Zinc	6020A	**74.8**	mg/Kg	0.50	0.08	5	02/05/18 15:38	01/31/18	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 13:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-LHL1-171012	**Basis:**	Dry
Lab Code:	K1712478-017		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**4.91**	mg/Kg	0.50	0.02	5	02/05/18 15:40	01/31/18	
Boron	6020A	**44.9**	mg/Kg	0.50	0.20	5	02/05/18 15:40	01/31/18	
Cadmium	6020A	**0.147** J9	mg/Kg	0.020	0.003	5	02/05/18 15:40	01/31/18	
Iron	6020A	**5290**	mg/Kg	1.0	0.09	5	02/05/18 15:40	01/31/18	
Lead	6020A	**3.71**	mg/Kg	0.020	0.003	5	02/19/18 20:27	01/31/18	
Magnesium	6010C	**23800**	mg/Kg	1.0	0.6	1	02/05/18 11:15	01/31/18	
Mercury	7471B	**0.023**	mg/Kg	0.019	0.004	2	02/08/18 13:43	02/08/18	
Selenium	6020A	**1.8**	mg/Kg	1.0	0.03	5	02/05/18 15:40	01/31/18	
Zinc	6020A	**16.1**	mg/Kg	0.50	0.08	5	02/05/18 15:40	01/31/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 13:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-LHL2-171012	**Basis:**	Dry
Lab Code:	K1712478-018		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**9.59**	mg/Kg	0.50	0.02	5	02/05/18 15:43	01/31/18	
Boron	6020A	**47.1**	mg/Kg	0.50	0.20	5	02/05/18 15:43	01/31/18	
Cadmium	6020A	**0.165** J9	mg/Kg	0.020	0.003	5	02/05/18 15:43	01/31/18	
Iron	6020A	**9200**	mg/Kg	1.0	0.09	5	02/05/18 15:43	01/31/18	
Lead	6020A	**5.09**	mg/Kg	0.020	0.003	5	02/19/18 20:30	01/31/18	
Magnesium	6010C	**6100**	mg/Kg	1.0	0.6	1	02/05/18 11:17	01/31/18	
Mercury	7471B	**0.024**	mg/Kg	0.020	0.004	2	02/08/18 13:46	02/08/18	
Selenium	6020A	**2.3**	mg/Kg	1.0	0.03	5	02/05/18 15:43	01/31/18	
Zinc	6020A	**22.5**	mg/Kg	0.50	0.08	5	02/05/18 15:43	01/31/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 14:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-LHL2-171012	**Basis:**	Dry
Lab Code:	K1712478-019		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.52**	mg/Kg	0.50	0.02	5	02/05/18 15:45	01/31/18	
Boron	6020A	**9.41**	mg/Kg	0.50	0.20	5	02/05/18 15:45	01/31/18	
Cadmium	6020A	**0.316** J 9	mg/Kg	0.020	0.003	5	02/05/18 15:45	01/31/18	
Iron	6020A	**80.9**	mg/Kg	1.0	0.09	5	02/05/18 15:45	01/31/18	
Lead	6020A	**0.098**	mg/Kg	0.020	0.003	5	02/19/18 20:33	01/31/18	
Magnesium	6010C	**3280**	mg/Kg	1.0	0.6	1	02/05/18 11:20	01/31/18	
Mercury	7471B	**0.063**	mg/Kg	0.031	0.006	2	02/08/18 13:49	02/08/18	
Selenium	6020A	**2.4**	mg/Kg	1.0	0.03	5	02/05/18 15:45	01/31/18	
Zinc	6020A	**65.9**	mg/Kg	0.50	0.08	5	02/05/18 15:45	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 14:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-LHL3-171012	**Basis:**	Dry
Lab Code:	K1712478-020		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**3.61**	mg/Kg	0.50	0.02	5	02/05/18 16:01	01/31/18	
Boron	6020A	**40.0**	mg/Kg	0.50	0.20	5	02/05/18 16:01	01/31/18	
Cadmium	6020A	**0.091** J 9	mg/Kg	0.020	0.003	5	02/05/18 16:01	01/31/18	
Iron	6020A	**3850**	mg/Kg	1.00	0.09	5	02/05/18 16:01	01/31/18	
Lead	6020A	**2.19**	mg/Kg	0.020	0.003	5	02/19/18 20:36	01/31/18	
Magnesium	6010C	**8800**	mg/Kg	1.00	0.6	1	02/05/18 11:22	01/31/18	
Mercury	7471B	**0.008** J	mg/Kg	0.019	0.004	2	02/08/18 13:52	02/08/18	
Selenium	6020A	**1.13**	mg/Kg	1.00	0.03	5	02/05/18 16:01	01/31/18	
Zinc	6020A	**8.49**	mg/Kg	0.50	0.08	5	02/05/18 16:01	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 15:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-LHL3-171012	**Basis:**	Dry
Lab Code:	K1712478-021		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.36**	mg/Kg	0.50	0.02	5	02/05/18 16:15	01/31/18	
Boron	6020A	**10.3**	mg/Kg	0.50	0.20	5	02/05/18 16:15	01/31/18	
Cadmium	6020A	**0.190**	mg/Kg	0.020	0.003	5	02/05/18 16:15	01/31/18	
Iron	6020A	**177**	mg/Kg	1.0	0.09	5	02/05/18 16:15	01/31/18	
Lead	6020A	**0.456**	mg/Kg	0.020	0.003	5	02/19/18 21:07	01/31/18	
Magnesium	6010C	**3440**	mg/Kg	1.0	0.6	1	02/05/18 11:51	01/31/18	
Mercury	7471B	**0.019** J U L	mg/Kg	0.019	0.004	2	02/08/18 14:05	02/08/18	
Selenium	6020A	**2.2**	mg/Kg	1.0	0.03	5	02/05/18 16:15	01/31/18	
Zinc	6020A	**94.8**	mg/Kg	0.50	0.08	5	02/05/18 16:15	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 15:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-LHL4-171012	**Basis:**	Dry
Lab Code:	K1712478-022		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**3.82**	mg/Kg	0.50	0.02	5	02/05/18 16:18	01/31/18	
Boron	6020A	**41.2**	mg/Kg	0.50	0.20	5	02/05/18 16:18	01/31/18	
Cadmium	6020A	**0.096**	mg/Kg	0.020	0.003	5	02/05/18 16:18	01/31/18	
Iron	6020A	**1670**	mg/Kg	1.0	0.09	5	02/05/18 16:18	01/31/18	
Lead	6020A	**1.57**	mg/Kg	0.020	0.003	5	02/19/18 21:10	01/31/18	
Magnesium	6010C	**5080**	mg/Kg	1.0	0.6	1	02/05/18 11:53	01/31/18	
Mercury	7471B	**0.008**	mg/Kg	0.020	0.004	2	02/08/18 14:08	02/08/18	
Selenium	6020A	**2.5**	mg/Kg	1.0	0.03	5	02/05/18 16:18	01/31/18	
Zinc	6020A	**6.71**	mg/Kg	0.50	0.08	5	02/05/18 16:18	01/31/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 16:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-LHL5-171012	**Basis:**	Dry
Lab Code:	K1712478-023		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**4.97**	mg/Kg	0.50	0.02	5	02/05/18 16:20	01/31/18	
Boron	6020A	**37.9**	mg/Kg	0.50	0.20	5	02/05/18 16:20	01/31/18	
Cadmium	6020A	**0.128**	mg/Kg	0.020	0.003	5	02/05/18 16:20	01/31/18	
Iron	6020A	**800**	mg/Kg	1.00	0.09	5	02/05/18 16:20	01/31/18	
Lead	6020A	**0.763**	mg/Kg	0.020	0.003	5	02/19/18 21:13	01/31/18	
Magnesium	6010C	**4450**	mg/Kg	1.00	0.6	1	02/05/18 11:56	01/31/18	
Mercury	7471B	**0.011**	mg/Kg	0.020	0.004	2	02/08/18 14:12	02/08/18	
Selenium	6020A	**3.43**	mg/Kg	1.00	0.03	5	02/05/18 16:20	01/31/18	
Zinc	6020A	**12.8**	mg/Kg	0.50	0.08	5	02/05/18 16:20	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 16:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-LHL4-171012	**Basis:**	Dry
Lab Code:	K1712478-024		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.88**	mg/Kg	0.50	0.02	5	02/05/18 16:22	01/31/18	
Boron	6020A	**8.25**	mg/Kg	0.50	0.20	5	02/05/18 16:22	01/31/18	
Cadmium	6020A	**0.155**	mg/Kg	0.020	0.003	5	02/05/18 16:22	01/31/18	
Iron	6020A	**105**	mg/Kg	1.0	0.09	5	02/05/18 16:22	01/31/18	
Lead	6020A	**0.116**	mg/Kg	0.020	0.003	5	02/19/18 21:17	01/31/18	
Magnesium	6010C	**4370**	mg/Kg	1.0	0.6	1	02/05/18 11:41	01/31/18	
Mercury	7471B	**0.047**	mg/Kg	0.020	0.004	2	02/08/18 14:15	02/08/18	
Selenium	6020A	**1.3**	mg/Kg	1.0	0.03	5	02/05/18 16:22	01/31/18	
Zinc	6020A	**53.7**	mg/Kg	0.50	0.08	5	02/05/18 16:22	01/31/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 16:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-LHL5-171012	**Basis:**	Dry
Lab Code:	K1712478-025		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.76**	mg/Kg	0.50	0.02	5	02/05/18 16:42	01/31/18	
Boron	6020A	**8.39**	mg/Kg	0.50	0.20	5	02/05/18 16:42	01/31/18	
Cadmium	6020A	**0.244**	mg/Kg	0.020	0.003	5	02/05/18 16:42	01/31/18	
Iron	6020A	**115**	mg/Kg	1.00	0.09	5	02/05/18 16:42	01/31/18	
Lead	6020A	**0.172**	mg/Kg	0.020	0.003	5	02/19/18 21:38	01/31/18	
Magnesium	6010C	**2850**	mg/Kg	1.00	0.6	1	02/05/18 11:58	01/31/18	
Mercury	7471B	**0.036**	mg/Kg	0.022	0.004	2	02/08/18 14:28	02/08/18	
Selenium	6020A	**2.68**	mg/Kg	1.00	0.03	5	02/05/18 16:42	01/31/18	
Zinc	6020A	**89.8**	mg/Kg	0.50	0.08	5	02/05/18 16:42	01/31/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 16:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AV-001-LHL6-171012	**Basis:**	Dry
Lab Code:	K1712478-026		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**3.73**	mg/Kg	0.50	0.02	5	02/05/18 16:44	01/31/18	
Boron	6020A	**35.7**	mg/Kg	0.50	0.20	5	02/05/18 16:44	01/31/18	
Cadmium	6020A	**0.332**	mg/Kg	0.020	0.003	5	02/05/18 16:44	01/31/18	
Iron	6020A	**3310**	mg/Kg	0.99	0.09	5	02/05/18 16:44	01/31/18	
Lead	6020A	**3.67**	mg/Kg	0.020	0.003	5	02/19/18 21:41	01/31/18	
Magnesium	6010C	**4010**	mg/Kg	0.99	0.60	1	02/05/18 12:01	01/31/18	
Mercury	7471B	**0.023**	mg/Kg	0.019	0.004	2	02/08/18 14:31	02/08/18	
Selenium	6020A	**3.63**	mg/Kg	0.99	0.03	5	02/05/18 16:44	01/31/18	
Zinc	6020A	**20.4**	mg/Kg	0.50	0.08	5	02/05/18 16:44	01/31/18	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/12/17 17:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	AI-001-LHL6-171012	**Basis:**	Dry
Lab Code:	K1712478-027		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.05**	mg/Kg	0.50	0.02	5	02/05/18 16:46	01/31/18	
Boron	6020A	**6.11**	mg/Kg	0.50	0.20	5	02/05/18 16:46	01/31/18	
Cadmium	6020A	**0.138**	mg/Kg	0.020	0.003	5	02/05/18 16:46	01/31/18	
Iron	6020A	**219**	mg/Kg	1.00	0.09	5	02/05/18 16:46	01/31/18	
Lead	6020A	**0.178**	mg/Kg	0.020	0.003	5	02/19/18 21:45	01/31/18	
Magnesium	6010C	**2280**	mg/Kg	1.00	0.6	1	02/06/18 10:00	01/31/18	
Mercury	7471B	**0.043**	mg/Kg	0.019	0.004	2	02/08/18 14:34	02/08/18	
Selenium	6020A	**1.86**	mg/Kg	1.00	0.03	5	02/05/18 16:46	01/31/18	
Zinc	6020A	**76.8**	mg/Kg	0.50	0.08	5	02/05/18 16:46	01/31/18	

ALS SOP

Biota LWL2

p. 1 of 2

VALIDATION WORKSHEET

Method: Methyl Mercury
Date Reviewed: 2.15.18
Sample Collection Dates: 10.4–10.12.17
The following data validation areas were reviewed:

SDG: K1712478
Reviewer: C Jensen

Sample Identification / Validation Criteria	1 AV.001.CI1.171004	2 AI.001.CI1.171004	3 AV.001.CI2.171005	4 AV.001.CI3.171005	5 AV.001.CI4.171005	6 AV.001.CI4.171005-FD	7 AI.001.CI2.171005	8 AI.001.CI3.171005	9 AI.001.CI3.171005-FD	10 AI.001.CI4.171005	11 AI.001.HQ.171006	12 AV.001.DR.171007	13 AI.001.DR.171007	14 AI.001.LH1.171012	15 AI.001.LH1.171012-FD	16 AV.001.LH1.171012	17 AV.001.LH2.171012	18 AI.001.LH2.171012	19 AV.001.LH3.171012	20 AI.001.LH3.171012
Sample results	A																			→
Holding Times	A																			→
Completion (1)	A																			→
Method Blanks	A																			→
LCS OCS duplicate RPD	A																			→
MS/MSD: 001, 024	A																			→

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

2.2 – – 22.1 (frozen)

Smpld 10.4 – 10.12.17
prep 1.30.18 1.31.18
anlz 1.31.18 2.1.18

(1) lab notes "rec'd spl not on COC" FO-001(KB)LH3.171003
Biota #9 – corresponds with FUN.001(KB)LH3.171003

OPR. ok

Biota LVL2 p 2 of 2

VALIDATION WORKSHEET

Method: Methyl Mercury
Date Reviewed:
Sample Collection Dates:

SDG: 1C1712478
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 AV-001-LVL4-171012	2 AV-001-LVL5-171012	3 AI-001-LVL4-171012	4 AI-001-LVL5-171012	5 AV-001-LVLD-171012	6 AI-001-LVLD-171012	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS QC	A																			
duplicate RPD																				
MS/MSD:	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04-12/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17-01/18/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
AV-001-CI1-171004	K1712478-001	9.9	4.0	1	01/30/18	01/31/18	8.42	J
AI-001-CI1-171004	K1712478-002	9.8	3.9	1	01/30/18	01/31/18	15.5	
AV-001-CI2-171005	K1712478-003	9.8	3.9	1	01/30/18	01/31/18	ND	
AV-001-CI3-171005	K1712478-004	10.0	4.0	1	01/30/18	01/31/18	ND	
AV-001-CI4-171005	K1712478-005	10.0	4.0	1	01/30/18	01/31/18	ND	
AV-001-CI4-171005-FD	K1712478-006	10.0	4.0	1	01/30/18	01/31/18	ND	
AI-001-CI2-171005	K1712478-007	9.8	3.9	1	01/30/18	01/31/18	23.2	
AI-001-CI3-171005	K1712478-008	9.9	4.0	1	01/30/18	01/31/18	29.7	
AI-001-CI3-171005-FD	K1712478-009	9.8	3.9	1	01/30/18	01/31/18	25.0	
AI-001-CI4-171005	K1712478-010	9.9	4.0	1	01/30/18	01/31/18	37.4	
AI-001-HQ-171006	K1712478-012	10.0	4.0	1	01/30/18	01/31/18	24.0	
AV-001-DR-171007	K1712478-013	9.9	4.0	1	01/30/18	01/31/18	4.12	J
AI-001-DR-171007	K1712478-014	10.0	4.0	1	01/30/18	01/31/18	14.5	
AI-001-LHL1-171012	K1712478-015	9.8	3.9	1	01/30/18	01/31/18	45.1	
AI-001-LHL1-171012-FD	K1712478-016	9.9	4.0	1	01/30/18	01/31/18	43.3	
AV-001-LHL1-171012	K1712478-017	9.8	3.9	1	01/30/18	01/31/18	ND	
AV-001-LHL2-171012	K1712478-018	9.8	3.9	1	01/30/18	01/31/18	ND	
AI-001-LHL2-171012	K1712478-019	10.0	4.0	1	01/30/18	01/31/18	54.7	
AV-001-LHL3-171012	K1712478-020	10.0	4.0	1	01/30/18	01/31/18	ND	
Method Blank 1	K1712478-MB1	10.0	4.0	1	01/30/18	01/31/18	ND	
Method Blank 2	K1712478-MB2	10.0	4.0	1	01/30/18	01/31/18	ND	
Method Blank 3	K1712478-MB3	10.0	4.0	1	01/30/18	01/31/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712478
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04-12/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17-01/18/18

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
AI-001-LHL3-171012	K1712478-021	9.9	4.0	1	01/31/18	02/01/18	48.1	
AV-001-LHL4-171012	K1712478-022	9.9	4.0	1	01/31/18	02/01/18	ND	
AV-001-LHL5-171012	K1712478-023	9.9	4.0	1	01/31/18	02/01/18	ND	
AI-001-LHL4-171012	K1712478-024	9.9	4.0	1	01/31/18	02/01/18	38.5	
AI-001-LHL5-171012	K1712478-025	10.0	4.0	1	01/31/18	02/01/18	45.1	
AV-001-LHL6-171012	K1712478-026	9.9	4.0	1	01/31/18	02/01/18	ND	
AI-001-LHL6-171012	K1712478-027	9.9	4.0	1	01/31/18	02/01/18	46.6	
Method Blank 1	K1712478-MB1	10.0	4.0	1	01/31/18	02/01/18	ND	
Method Blank 2	K1712478-MB2	10.0	4.0	1	01/31/18	02/01/18	ND	
Method Blank 3	K1712478-MB3	10.0	4.0	1	01/31/18	02/01/18	ND	

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CHAIN OF CUSTODY

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004

SR# K1712478
COC Set 1 of 3
COC# BIOTA #4
Page 1 of 1

Project Name: KD-HERRINGTON LAKE | Project Number: 02421443A
Project Manager: MARY SORENSEN
Company: RAMBOLL ENVIRON
Address: 1600 PARKWOOD CIR, SUITE 310, ATL, GA
Phone #: 770.548.1799 | email: msorensen@ramboll.com
Sampler Signature: [signature] | Sampler Printed Name: KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D: 300.0 / SO4	28D: 7471B / Hg	180D: 1630 ~~Modified~~ / Methyl Hg	180D: 6010C / Metals T	180D: 6020A / Metals T	1 ASH DRY/ WATER CONT	2 LIPIDS	3	4	5	Remarks
1. AV-001-CI1-171004	1	10-4-17	1000	T	1		X	X	X	X	X					
2. AI-001-CI1-171004	2	10-4-17	1330		1		X	X	X	X	X	X				
3. AV-001-CI2-171005	3	10-5-17	0930		1		X	X	X	X	X					
4. AV-001-CI3-171005	4	10-5-17	1030		1		X	X	X	X	X					
5. AV-001-CI4-171005	5, 6	10-5-17	1130		1		X	X	X	X	X					*INCLUDES DUPLICATE
6. AI-001-CI2-171005	7	10-5-17	1400		1		X	X	X	X	X	X				
7. AI-001-CI3-171005	8, 9	10-5-17	1500		1		X	X	X	X	X	X				*INCLUDES DUPLICATE
8. AI-001-CI4-171005	10	10-5-17	1600		1		X	X	X	X	X	X				
9. AV-001-HQ-171006	11	10-6-17	1400		1		X	X	X	X	X					
10. AI-001-HQ-171006	12	10-6-17	1530	↓	1		X	X	X	X	X	X				

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required
X II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
___ IV. Data Validation Report
___ V. EDD

Invoice Information

P.O.#___
Bill To:___

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other___ (Circle One)

Special Instructions/Comments:
* PLANTS + INVERTS TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP
** EACH SAMPLE TO BE COMPOSITED

	Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	[signature]	CODY GRAVES				
Printed Name	KATRINA LEIGH	ALS				
Firm	RAMBOLL	11/16/17 0930				
Date/Time	11/13/17 1300					

CHAIN OF CUSTODY
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SR# K1712478

COC Set 2 of 3

COC# BIOTA #5

Page 1 of 1

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Project Name: RV-HERRINGTON LAKE	Project Number: 02421443A
Project Manager: MARY SORENSEN	
Company: RAMBOLL ENVIRON	
Address: 1600 PARKWOOD CIR; SUITE 310, ATL, GA	
Phone #: 770.548.1799	email: msorensen@ramboll.com
Sampler Signature: Katrina Leigh	Sampler Printed Name: KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D 300.0 / SO4	28D 7471B / Hg	180D 1630 Modified / Methyl Hg	180D 6010C / Metals T	180D 6020A / Metals T	1 ASTM DOC316 / WATER CONT	2 LIPIDS	3	4	5	Remarks
1. AV-001-DR-171007	13	10-7-17	1430	T	1		X	X	X	X	X					
2. AI-001-DR-171007	14	10-7-17	1500		1		X	X	X	X	X	X				
3. AI-001-LHL1-171012	15, 16	10-12-17	1230		1		X	X	X	X	X	X				*INCLUDES DUPLICATE
4. AV-001-LHL1-171012	17	10-12-17	1300		1		X	X	X	X	X					
5. AV-001-LHL2-171012	18	10-12-17	1330		1		X	X	X	X	X					
6. AI-001-LHL2-171012	19	10-12-17	1400		1		X	X	X	X	X	X				
7. AV-001-LHL3-171012	20	10-12-17	1430		1		X	X	X	X	X					
8. AI-001-LHL3-171012	21	10-12-17	1500		1		X	X	X	X	X	X				
9. AV-001-LHL4-171012	22	10-12-17	1530		1		X	X	X	X	X					
10. AV-001-LHL5-171012	23	10-12-17	1600	↓	1		X	X	X	X	X					

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.#_____

Bill To:_____

Turnaround Requirements

___ 24 hr. ___ 48 hr.

X 5 Day Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

* PLANTS AND INVERTS TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP

** EACH SAMPLE TO BE COMPOSITED

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Katrina Leigh	Signature: JODY GRAVES	Signature	Signature	Signature	Signature
Printed Name: KATRINA LEIGH	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: RAMBOLL	Firm: 11/16/17 0930	Firm	Firm	Firm	Firm
Date/Time: 11/13/17 1300	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

CHAIN OF CUSTODY
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SR# K1712478

COC Set 3 of 3

COC# BIOTA #le

Page 1 of 1

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Project Name	KU-HERRINGTON LAKE
Project Number	02421643A
Project Manager	MARY SORENSEN
Company	RAMBOLL ENVIRON
Address	1600 PARKWOOD CIR; SUITE 310, ATL, GA
Phone #	770.548.1799
email	msorensen@ramboll.com
Sampler Signature	Katrinleigh
Sampler Printed Name	KATRINA LEIGH

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	28D 300.0 / SO4	28D 7471B / Hg	180D 1630 Methyl Hg	180D 8010C / Metals T	180D 6020A / Metals T	ASTM D2216 / WATER CONT	LIPIDS	3	4	5	Remarks
1. AI-001-LHL4-171012	24	10-12-17	1600	T	1		X	X	X	X	X	X				* MS/MSD
2. AI-001-LHL5-171012	25	10-12-17	1600		1		X	X	X	X	X	X				
3. AV-001-LHL6-171012	26	10-12-17	1630		1		X	X	X	X	X					
4. AI-001-LHL6-171012	27	10-12-17	1700	↓	1		X	X	X	X	X	X				
5.																
6.																
7.																
8.																
9.																
10.																

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- ___ II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- X IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.#_____

Bill To:_____

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

* PLANTS AND INVERTS TO BE PROCESSED ACCORDING TO HERRINGTON LAKE SOP
** EACH SAMPLE TO BE COMPOSITED

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Katrinleigh	Signature: CODY GRAVES	Signature	Signature	Signature	Signature
Printed Name: KATRINA LEIGH	Printed Name: ACS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: RAMBOLL	Firm:	Firm	Firm	Firm	Firm
Date/Time: 11/13/17 1300	Date/Time: 11/16/17 0930	Date/Time	Date/Time	Date/Time	Date/Time

ALS

PC MH

Cooler Receipt and Preservation Form

ient RAMBOLL ENVIRON Service Request K17 12478

eceived: 11-16-17 Opened: 11-16-17 By: ASP Unloaded: 11-16-17 By: ASP/CG

Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*

Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*

1. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

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
-11.2	-11.3	N/A	N/A	-0.1	356	83679	7884 7816 1592	
2.2	2.2	N/A	N/A	0.0	391	83679	7884 7816 1629	
-13.0	-12.9	N/A	N/A	+0.1	376	83679	7884 7816 1618	
-19.0	-19.0	N/A	N/A	0.0	379	83679	7884 7816 1607	
-12.0	-12.0	N/A	N/A	0.0	373	83679	7884 7816 1630	

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) CG 11/16

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: Received sample not on COC - "FO-001(KB)LHL3-171003" (Bota#9 - corresponds w/ FUW-001(KB)-LHL3-171003.

7/25/16

ALS

PC MH

Cooler Receipt and Preservation Form

lient Rambol | Service Request K17 12478

eceived: 11/16/17 Opened: 11/16/17 By: CG Unloaded: 11/16/17 By: CG/DP

. Samples were received via? *USPS* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*

. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other* _____ *NA*

. Were custody seals on coolers? NA Y (N) If yes, how many and where? _____

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
-21.0	-21.1	/	/	-0.1	349	836794	7884 7816 1640	
-22.0	-22.1	/	/	-0.1	328		1651	
-10.4	-10.4	/	/	0.0	325		1581	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) *Gel Packs* *Wet Ice* (*Dry Ice*) *Sleeves* _____

5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N

6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA (Y) N

If applicable, tissue samples were received: (*Frozen*) *Partially Thawed* *Thawed*

7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N

8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y (N)

9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N

10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N

11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N

12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: See Pg. 1.

7/25/16

Page 2 *of* 2

Tissue IVL2

60010/60020 74718 **VALIDATION WORKSHEET**

Method: Metals, Mercury

Date Reviewed: 4.12.19

Sample Collection Dates: 10.4-10.7.17

SDG: K1712479

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF-001 (LWB)-CI-171004	2 FWB-001 (LWB)-CI-171004	3 FF-001 (CC)-LHL3-171005	4 FWB-001 (CC)-LHL3-171005	5 FF-002 (CC)-LHL6-171007	6 FWB-002 (CC)-LHL6-171007	7 FF-001 (CC)-LHL3-171005-FD	8 FWB-001 (CC)-LHL3-171005-FD	9 FF-015 (LWB)-LHL5-171007	10 FWB-001 (LWB)-LHL5-171007	11 FF-002 (LWB)-LHL5-171007	12 FWB-002 (LWB)-LHL5-171007	13 FF-001 (KB)-LHL6-171007	14 FWB-001 (KB)-LHL6-171007	15 FD-001 (LWB)-CI-171004	16 FD-001 (LWB)-LHL5-171007	17 FD-001 (KB)-LHL6-171007	18	19	20
Sample results	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→			
Holding Times	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→			
Completion	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→			
Method Blanks	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→			
LCS	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→			
duplicate RPD	A	A	A	A	X	X	X	X	X	X	X	X	X	X	A	A	A			
MS/MSD: baker	A	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→	→			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

frozen -22-22..

Spl 10.4-10.7.17 Hg 3/27/18 Se 3/27/18

Mg 2/23/18 2/27/18 12.28.18

Mn 2/26/18 2/28/18 12/29/18

3/26/18

ICV CCV ok ok

CCB CCB

post spk

ICS

low level

MB Fe .9) .1) — no flags

Mg .7)

Hg .004)

Lab dup 31160-07 PD RPD out (limit 20) 22.6 J/UJ 9 -009

10

12

13

15

16

19

20

22

23

Spike ok

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 12:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(LMB)-CI-171004	**Basis:**	Dry
Lab Code:	K1712479-002		

Total Metals

Analyte Name	Analysis Method	Result	Q	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.13**		mg/Kg	0.50	0.02	5	02/26/18 18:12	02/23/18	
Boron	6020A	ND	U	mg/Kg	0.50	0.20	5	02/26/18 18:12	02/23/18	
Cadmium	6020A	**0.003**	**J**	mg/Kg	0.020	0.003	5	02/26/18 18:12	02/23/18	
Iron	6020A	**6.18**		mg/Kg	1.00	0.09	5	02/26/18 18:12	02/23/18	
Lead	6020A	**0.004**	**J**	mg/Kg	0.020	0.003	5	02/26/18 18:12	02/23/18	
Magnesium	6010C	**1250**		mg/Kg	1.00	0.6	1	02/26/18 13:46	02/23/18	
Mercury	7471B	**0.419**		mg/Kg	0.020	0.004	2	02/28/18 14:29	02/27/18	
Selenium	6020A	**7.08**		mg/Kg	1.00	0.03	5	02/26/18 18:12	02/23/18	
Zinc	6020A	**34.9**		mg/Kg	0.50	0.08	5	02/26/18 18:12	02/23/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 12:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(LMB)-CI-171004	**Basis:**	Dry
Lab Code:	K1712479-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.07**	mg/Kg	0.50	0.02	5	02/26/18 18:15	02/23/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	02/26/18 18:15	02/23/18	
Cadmium	6020A	**0.031**	mg/Kg	0.020	0.003	5	02/26/18 18:15	02/23/18	
Iron	6020A	**36.9**	mg/Kg	1.00	0.09	5	02/26/18 18:15	02/23/18	
Lead	6020A	**0.031**	mg/Kg	0.020	0.003	5	02/26/18 18:15	02/23/18	
Magnesium	6010C	**1810**	mg/Kg	1.00	0.6	1	02/26/18 13:48	02/23/18	
Mercury	7471B	**0.153**	mg/Kg	0.019	0.004	2	02/28/18 14:36	02/27/18	
Selenium	6020A	**4.29**	mg/Kg	1.00	0.03	5	02/26/18 18:15	02/23/18	
Zinc	6020A	**59.3**	mg/Kg	0.50	0.08	5	02/26/18 18:15	02/23/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04/17 12:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(LMB)-CI-171004	**Basis:**	Dry
Lab Code:	K1712479-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**8.93**	mg/Kg	1.00	0.03	5	12/29/17 16:10	12/28/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 17:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(CC)-LHL3-171005	**Basis:**	Dry
Lab Code:	K1712479-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.11 J**	mg/Kg	0.50	0.02	5	02/26/18 18:18	02/23/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	02/26/18 18:18	02/23/18	
Cadmium	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	02/26/18 18:18	02/23/18	
Iron	6020A	**28.2**	mg/Kg	1.00	0.09	5	02/26/18 18:18	02/23/18	
Lead	6020A	**0.017 J**	mg/Kg	0.020	0.003	5	02/26/18 18:18	02/23/18	
Magnesium	6010C	**922**	mg/Kg	1.00	0.6	1	02/26/18 13:50	02/23/18	
Mercury	7471B	**0.203**	mg/Kg	0.020	0.004	2	02/28/18 14:39	02/27/18	
Selenium	6020A	**2.70**	mg/Kg	1.00	0.03	5	02/26/18 18:18	02/23/18	
Zinc	6020A	**41.9**	mg/Kg	0.50	0.08	5	02/26/18 18:18	02/23/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 17:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(CC)-LHL3-171005	**Basis:**	Dry
Lab Code:	K1712479-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.14** J	mg/Kg	0.50	0.02	5	02/26/18 18:21	02/23/18	
Boron	6020A	**0.68**	mg/Kg	0.50	0.20	5	02/26/18 18:21	02/23/18	
Cadmium	6020A	**0.087**	mg/Kg	0.020	0.003	5	02/26/18 18:21	02/23/18	
Iron	6020A	**511**	mg/Kg	1.00	0.09	5	02/26/18 18:21	02/23/18	
Lead	6020A	**0.109**	mg/Kg	0.020	0.003	5	02/26/18 18:21	02/23/18	
Magnesium	6010C	**1540**	mg/Kg	1.00	0.6	1	02/26/18 13:53	02/23/18	
Mercury	7471B	**0.128**	mg/Kg	0.020	0.004	2	02/28/18 14:42	02/27/18	
Selenium	6020A	**2.57**	mg/Kg	1.00	0.03	5	02/26/18 18:21	02/23/18	
Zinc	6020A	**81.7**	mg/Kg	0.50	0.08	5	02/26/18 18:21	02/23/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 17:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(CC)-LHL3-171005-FD	**Basis:**	Dry
Lab Code:	K1712479-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.11 J**	mg/Kg	0.50	0.02	5	03/26/18 16:25	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 18:59	03/19/18	
Cadmium	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/26/18 16:25	03/19/18	
Iron	6020A	**24.5**	mg/Kg	1.0	0.09	5	03/26/18 16:25	03/19/18	
Lead	6020A	**0.013 J** J9	mg/Kg	0.020	0.003	5	03/26/18 16:25	03/19/18	
Magnesium	6010C	**962**	mg/Kg	5.0	2.5	5	03/26/18 16:13	03/19/18	
Mercury	7471B	**0.213**	mg/Kg	0.019	0.004	2	03/27/18 11:25	03/26/18	
Selenium	6020A	**2.6**	mg/Kg	1.0	0.03	5	03/26/18 16:25	03/19/18	
Zinc	6020A	**39.4**	mg/Kg	0.50	0.08	5	03/26/18 16:25	03/19/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05/17 17:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(CC)-LHL3-171005-FD	**Basis:**	Dry
Lab Code:	K1712479-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.14 J**	mg/Kg	0.50	0.02	5	03/26/18 16:28	03/19/18	
Boron	6020A	**0.81**	mg/Kg	0.50	0.20	5	03/27/18 19:01	03/19/18	
Cadmium	6020A	**0.050**	mg/Kg	0.020	0.003	5	03/26/18 16:28	03/19/18	
Iron	6020A	**410**	mg/Kg	1.00	0.09	5	03/26/18 16:28	03/19/18	
Lead	6020A	**0.071**) 9	mg/Kg	0.020	0.003	5	03/26/18 16:28	03/19/18	
Magnesium	6010C	**1280**	mg/Kg	5.0	2.5	5	03/26/18 16:16	03/19/18	
Mercury	7471B	**0.078**	mg/Kg	0.018	0.004	2	03/27/18 11:28	03/26/18	
Selenium	6020A	**2.32**	mg/Kg	1.00	0.03	5	03/26/18 16:28	03/19/18	
Zinc	6020A	**80.5**	mg/Kg	0.50	0.08	5	03/26/18 16:28	03/19/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-002(CC)-LHL6-171007	**Basis:**	Dry
Lab Code:	K1712479-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.23 J**	mg/Kg	0.50	0.02	5	03/26/18 16:31	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 19:02	03/19/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/26/18 16:31	03/19/18	
Iron	6020A	**18.2**	mg/Kg	1.0	0.09	5	03/26/18 16:31	03/19/18	
Lead	6020A	**0.006 J** J9	mg/Kg	0.020	0.003	5	03/26/18 16:31	03/19/18	
Magnesium	6010C	**772**	mg/Kg	1.0	0.5	1	03/26/18 14:57	03/19/18	
Mercury	7471B	**0.166**	mg/Kg	0.019	0.004	2	03/27/18 11:31	03/26/18	
Selenium	6020A	**1.1**	mg/Kg	1.0	0.03	5	03/26/18 16:31	03/19/18	
Zinc	6020A	**27.3**	mg/Kg	0.50	0.08	5	03/26/18 16:31	03/19/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 10:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-002(CC)-LHL6-171007	**Basis:**	Dry
Lab Code:	K1712479-013		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**0.26 J**	mg/Kg	0.50	0.02	5	03/26/18 16:53	03/19/18	
Boron	6020A	**0.32 J**	mg/Kg	0.50	0.20	5	03/27/18 19:15	03/19/18	
Cadmium	6020A	**0.033**	mg/Kg	0.020	0.003	5	03/26/18 16:53	03/19/18	
Iron	6020A	**54.8**	mg/Kg	1.0	0.09	5	03/26/18 16:53	03/19/18	
Lead	6020A	**0.101** J9	mg/Kg	0.020	0.003	5	03/26/18 16:53	03/19/18	
Magnesium	6010C	**1060**	mg/Kg	5.0	2.5	5	03/26/18 16:42	03/19/18	
Mercury	7471B	**0.061**	mg/Kg	0.020	0.004	2	03/27/18 11:44	03/26/18	
Selenium	6020A	**1.3**	mg/Kg	1.0	0.03	5	03/26/18 16:53	03/19/18	
Zinc	6020A	**56.9**	mg/Kg	0.50	0.08	5	03/26/18 16:53	03/19/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(LMB)-LHL5-171007	**Basis:**	Dry
Lab Code:	K1712479-015		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.57**	mg/Kg	0.50	0.02	5	03/26/18 17:07	03/19/18	
Boron	6020A	**0.34 J**	mg/Kg	0.50	0.20	5	03/27/18 19:23	03/19/18	
Cadmium	6020A	**0.004 J**	mg/Kg	0.020	0.003	5	03/26/18 17:07	03/19/18	
Iron	6020A	**10.7**	mg/Kg	1.00	0.09	5	03/26/18 17:07	03/19/18	
Lead	6020A	**0.008 J** J9	mg/Kg	0.020	0.003	5	03/26/18 17:07	03/19/18	
Magnesium	6010C	**1150**	mg/Kg	5.0	2.5	5	03/26/18 16:19	03/19/18	
Mercury	7471B	**0.241**	mg/Kg	0.019	0.004	2	03/27/18 11:57	03/26/18	
Selenium	6020A	**4.47**	mg/Kg	1.00	0.03	5	03/26/18 17:07	03/19/18	
Zinc	6020A	**33.9**	mg/Kg	0.50	0.08	5	03/26/18 17:07	03/19/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(LMB)-LHL5-171007	**Basis:**	Dry
Lab Code:	K1712479-016		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.45**	mg/Kg	0.50	0.02	5	03/26/18 17:10	03/19/18	
Boron	6020A	**0.38** J	mg/Kg	0.50	0.20	5	03/27/18 19:24	03/19/18	
Cadmium	6020A	**0.027**	mg/Kg	0.020	0.003	5	03/26/18 17:10	03/19/18	
Iron	6020A	**35.1**	mg/Kg	1.0	0.09	5	03/26/18 17:10	03/19/18	
Lead	6020A	**0.029** J9	mg/Kg	0.020	0.003	5	03/26/18 17:10	03/19/18	
Magnesium	6010C	**1570**	mg/Kg	5.0	2.5	5	03/26/18 16:21	03/19/18	
Mercury	7471B	**0.101**	mg/Kg	0.019	0.004	2	03/27/18 12:00	03/26/18	
Selenium	6020A	**2.4**	mg/Kg	1.0	0.03	5	03/26/18 17:10	03/19/18	
Zinc	6020A	**50.8**	mg/Kg	0.50	0.08	5	03/26/18 17:10	03/19/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 11:00
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(LMB)-LHL5-171007	**Basis:**	Dry
Lab Code:	K1712479-017		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**4.2**	mg/Kg	1.0	0.03	5	12/29/17 16:12	12/28/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-002(LMB)-LHL5-171007	**Basis:**	Dry
Lab Code:	K1712479-019		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.58**	mg/Kg	0.50	0.02	5	03/26/18 17:13	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 19:26	03/19/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/26/18 17:13	03/19/18	
Iron	6020A	**11.1**	mg/Kg	1.0	0.09	5	03/26/18 17:13	03/19/18	
Lead	6020A	**0.005 J** J9	mg/Kg	0.020	0.003	5	03/26/18 17:13	03/19/18	
Magnesium	6010C	**1280**	mg/Kg	5.0	2.5	5	03/26/18 16:24	03/19/18	
Mercury	7471B	**0.286**	mg/Kg	0.019	0.004	2	03/27/18 12:03	03/26/18	
Selenium	6020A	**3.7**	mg/Kg	1.0	0.03	5	03/26/18 17:13	03/19/18	
Zinc	6020A	**30.8**	mg/Kg	0.50	0.08	5	03/26/18 17:13	03/19/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 11:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-002(LMB)-LHL5-171007	**Basis:**	Dry
Lab Code:	K1712479-020		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.58**		mg/Kg	0.50	0.02	5	03/26/18 17:16	03/19/18	
Boron	6020A	ND	U	mg/Kg	0.50	0.20	5	03/27/18 19:27	03/19/18	
Cadmium	6020A	**0.025**		mg/Kg	0.020	0.003	5	03/26/18 17:16	03/19/18	
Iron	6020A	**34.0**		mg/Kg	1.00	0.09	5	03/26/18 17:16	03/19/18	
Lead	6020A	**0.047**	J9	mg/Kg	0.020	0.003	5	03/26/18 17:16	03/19/18	
Magnesium	6010C	**1450**		mg/Kg	5.0	2.5	5	03/26/18 16:26	03/19/18	
Mercury	7471B	**0.084**		mg/Kg	0.019	0.004	2	03/27/18 12:07	03/26/18	
Selenium	6020A	**1.95**		mg/Kg	1.00	0.03	5	03/26/18 17:16	03/19/18	
Zinc	6020A	**48.2**		mg/Kg	0.50	0.08	5	03/26/18 17:16	03/19/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 13:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FF-001(KB)-LHL6-171007	**Basis:**	Dry
Lab Code:	K1712479-022		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.18**	mg/Kg	0.50	0.02	5	03/26/18 17:24	03/19/18	
Boron	6020A	ND U	mg/Kg	0.50	0.20	5	03/27/18 19:34	03/19/18	
Cadmium	6020A	ND U	mg/Kg	0.020	0.003	5	03/26/18 17:24	03/19/18	
Iron	6020A	**9.25**	mg/Kg	0.99	0.09	5	03/26/18 17:24	03/19/18	
Lead	6020A	**0.004 J** J9	mg/Kg	0.020	0.003	5	03/26/18 17:24	03/19/18	
Magnesium	6010C	**1220**	mg/Kg	5.0	2.5	5	03/26/18 16:29	03/19/18	
Mercury	7471B	**0.611**	mg/Kg	0.020	0.004	2	03/27/18 12:10	03/26/18	
Selenium	6020A	**3.97**	mg/Kg	0.99	0.03	5	03/26/18 17:24	03/19/18	
Zinc	6020A	**31.4**	mg/Kg	0.50	0.08	5	03/26/18 17:24	03/19/18	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 13:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FWB-001(KB)-LHL6-171007	**Basis:**	Dry
Lab Code:	K1712479-023		

Total Metals

Analyte Name	Analysis Method	Result		Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.26**		mg/Kg	0.50	0.02	5	03/26/18 17:27	03/19/18	
Boron	6020A	ND	U	mg/Kg	0.50	0.20	5	03/27/18 19:35	03/19/18	
Cadmium	6020A	**0.021**		mg/Kg	0.020	0.003	5	03/26/18 17:27	03/19/18	
Iron	6020A	**43.4**		mg/Kg	1.00	0.09	5	03/26/18 17:27	03/19/18	
Lead	6020A	**0.020**	J9	mg/Kg	0.020	0.003	5	03/26/18 17:27	03/19/18	
Magnesium	6010C	**1850**		mg/Kg	5.0	2.5	5	03/26/18 16:31	03/19/18	
Mercury	7471B	**0.166**		mg/Kg	0.019	0.004	2	03/27/18 12:16	03/26/18	
Selenium	6020A	**2.40**		mg/Kg	1.00	0.03	5	03/26/18 17:27	03/19/18	
Zinc	6020A	**72.5**		mg/Kg	0.50	0.08	5	03/26/18 17:27	03/19/18	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17 13:30
Sample Matrix:	Tissue	**Date Received:**	11/16/17 09:30
Sample Name:	FO-001(KB)-LHL6-171007	**Basis:**	Dry
Lab Code:	K1712479-024		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Selenium	6020A	**6.7**	mg/Kg	1.0	0.03	5	12/29/17 16:29	12/28/17	

ALS SOP

Tissue IVL2

VALIDATION WORKSHEET

Method: Methyl Mercury
Date Reviewed: 11.17.17
Sample Collection Dates: 10.4-10.7.17.

SDG: K1712479
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF.001 (LMB).CI.171004	2 FMB.001 (LMB).CI.171004	3 FF.001 (CC).LHL3.171005	4 FMB.001 (CC).LHL3.171005	5 FF.002 (CC).LHL6.171007	6 FMB.002 (CC).LHL6.171007	7 FF.001 (CC).LHL3.171005-FD	8 FMB.001 (CC).LHL3.171005-FD	9 FF.001 (LMB).LHL5.171007	10 FMB.001 (LMB).LHL5.171007	11 FF.002 (LMB).LHL5.171007	12 FMB.002 (LMB).LHL5.171007	13 FF.001 (LB).LHL6.171007	14 FMB.001 (LB).LHL6.171007	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS/QCS	A																			
duplicate RPD																				
MS/MSD: 3, 12, 13, 24	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

frozen -22-22.2.2°C

Spl 10.4-10.7.17

MB 22418 32818 3.26.18

LCS 22718 32918 3.27.18

OPRs ok

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04-07/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Methyl Mercury

Prep Method:	ALS SOP	Units:	ng/g
Analysis Method:	ALS SOP	Basis:	Dry
Test Notes:			

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-CI-171004	K1712479-002	9.8	3.9	1	02/26/18	02/27/18	392	
FWB-001(LMB)-CI-171004	K1712479-003	9.8	3.9	1	02/26/18	02/27/18	149	
FF-001(CC)-LHL3-171005	K1712479-006	9.7	3.9	1	02/26/18	02/27/18	220	
FWB-001(CC)-LHL3-171005	K1712479-007	9.9	4.0	1	02/26/18	02/27/18	44.0	
Method Blank 1	K1712479-MB1	10.0	4.0	1	02/26/18	02/27/18	ND	
Method Blank 2	K1712479-MB2	10.0	4.0	1	02/26/18	02/27/18	ND	
Method Blank 3	K1712479-MB3	10.0	4.0	1	02/26/18	02/27/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04-07/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(CC)-LHL6-171007	K1712479-012	9.9	4.0	1	03/28/18	03/29/18	207	
FWB-002(CC)-LHL6-171007	K1712479-013	10.0	4.0	1	03/28/18	03/29/18	68.8	
Method Blank 1	K1712479-MB1	10.0	4.0	1	03/28/18	03/29/18	ND	
Method Blank 2	K1712479-MB2	10.0	4.0	1	03/28/18	03/29/18	ND	
Method Blank 3	K1712479-MB3	10.0	4.0	1	03/28/18	03/29/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04-07/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Methyl Mercury

Prep Method: ALS SOP
Analysis Method: ALS SOP
Test Notes:

Units: ng/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL3-171005-FD	K1712479-009	9.9	4.0	1	03/26/18	03/27/18	280	
FWB-001(CC)-LHL3-171005-FD	K1712479-010	9.7	3.9	1	03/26/18	03/27/18	86.5	
FF-001(LMB)-LHL5-171007	K1712479-015	9.8	3.9	1	03/26/18	03/27/18	437	
FWB-001(LMB)-LHL5-171007	K1712479-016	9.8	3.9	1	03/26/18	03/27/18	129	
FF-002(LMB)-LHL5-171007	K1712479-019	10.0	4.0	1	03/26/18	03/27/18	495	
FWB-002(LMB)-LHL5-171007	K1712479-020	9.6	3.9	1	03/26/18	03/27/18	95.4	
FF-001(KB)-LHL6-171007	K1712479-022	9.6	3.8	1	03/26/18	03/27/18	771	
FWB-001(KB)-LHL6-171007	K1712479-023	10.0	4.0	1	03/26/18	03/27/18	197	
Method Blank 1	K1712479-MB1	10.0	4.0	1	03/26/18	03/27/18	ND	
Method Blank 2	K1712479-MB2	10.0	4.0	1	03/26/18	03/27/18	ND	
Method Blank 3	K1712479-MB3	10.0	4.0	1	03/26/18	03/27/18	ND	

Tissue 1VL2

1632A

VALIDATION WORKSHEET

Method: A8111

Date Reviewed: 4.17.18

Sample Collection Dates: ______

SDG: K1712479

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF.001(LWB).CI.171004	2 FWB.001(LWB).CI.171004	3 FF.001(CC).LHL3.171005	4 FWB.001(CC).LHL3.171005	5 FF.002(CC).LHL6.171007	6 FWB.002(CC).LHL6.171007	7 FF.001(CC).LHL3.171005.FD	8 FWB.001(CC).LHL3.171005.FD	9 FF.001(LWB).LHL5.171007	10 FWB.001(LWB).LHL5.171007	11 FF.002(LWB).LHL5.171007	12 FWB.002(LWB).LHL5.171007	13 FF.001(KB).LHL6.171007	14 FWB.001(KB).LHL6.171007	15	16	17	18	19	20
Sample results	A													→						
Holding Times	A													→						
Completion	A													→						
Method Blanks	A													→						
LCS																				
duplicate RPD																				
MS/MSD: batch 12	A													→						

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

frozen -22- -22..

Spl 10.4 - 10.7.17

prep 2 26 18 3 28 18 3.26.18

run 2 28 18 3 29 18 3.27 18

OPRs - ok

Cal ver. ok

3.28.18 extr. ASH MSH. - OK ~~present qual 5/1/18~~, ND in spl. Hg MS, lab ran second ms in limits. no flag.

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/04-05/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-CI-171004	K1712479-002	0.078	0.039	1	02/26/18	02/28/18	ND	
FWB-001(LMB)-CI-171004	K1712479-003	0.078	0.039	1	02/26/18	02/28/18	ND	
FF-001(CC)-LHL3-171005	K1712479-006	0.080	0.040	1	02/26/18	02/28/18	ND	
FWB-001(CC)-LHL3-171005	K1712479-007	0.078	0.039	1	02/26/18	02/28/18	ND	
Method Blank 1	K1712479-MB1	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 2	K1712479-MB2	0.080	0.040	1	02/26/18	02/27/18	ND	
Method Blank 3	K1712479-MB3	0.080	0.040	1	02/26/18	02/27/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(CC)-LHL6-171007	K1712479-012	0.080	0.040	1	03/28/18	03/29/18	ND	UJ 8C
FWB-002(CC)-LHL6-171007	K1712479-013	0.080	0.040	1	03/28/18	03/29/18	ND	
Method Blank 1	K1712479-MB1	0.080	0.040	1	03/28/18	03/29/18	ND	
Method Blank 2	K1712479-MB2	0.080	0.040	1	03/28/18	03/29/18	ND	
Method Blank 3	K1712479-MB3	0.080	0.040	1	03/28/18	03/29/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/05-07/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Arsenic (III)

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL3-171005-FD	K1712479-009	0.080	0.040	1	03/26/18	03/27/18	ND	
FWB-001(CC)-LHL3-171005-FD	K1712479-010	0.079	0.040	1	03/26/18	03/27/18	ND	
FF-001(LMB)-LHL5-171007	K1712479-015	0.079	0.040	1	03/26/18	03/27/18	ND	
FWB-001(LMB)-LHL5-171007	K1712479-016	0.080	0.040	1	03/26/18	03/27/18	ND	
FF-002(LMB)-LHL5-171007	K1712479-019	0.080	0.040	1	03/26/18	03/27/18	ND	
FWB-002(LMB)-LHL5-171007	K1712479-020	0.080	0.040	1	03/26/18	03/27/18	ND	
FF-001(KB)-LHL6-171007	K1712479-022	0.080	0.040	1	03/26/18	03/27/18	ND	
FWB-001(KB)-LHL6-171007	K1712479-023	0.079	0.040	1	03/26/18	03/27/18	ND	
Method Blank 1	K1712479-MB1	0.080	0.040	1	03/26/18	03/27/18	ND	
Method Blank 2	K1712479-MB2	0.080	0.040	1	03/26/18	03/27/18	ND	
Method Blank 3	K1712479-MB3	0.080	0.040	1	03/26/18	03/27/18	ND	

Tissue IVL2

16324

VALIDATION WORKSHEET

Method: Total Inorganic Arsenic

Date Reviewed: 4.12.18

Sample Collection Dates: 10.4-10.7.17

SDG: K1712479

Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 FF.001 (LMB) · CI · 171004	2 FWB.001 (LMB) · CI · 171004	3 FF.001 (CC) · LHL3 · 171005	4 FWB.001 (CC) · LHL3 · 171005	5 FF.002 (CC) · LHL6 · 171007	6 FWB.002 (CC) · LHL6 · 171007	7 FF.001 (CC) · LHL3 · 171005 · FD	8 FWB.001 (CC) · LHL3 (171005 · FD	9 FF.001 (LMB) · LHL5 · 171007	10 FWB.001 (LMB) · LHL5 · 171007	11 FF.002 (LMB) · LHL5 · 171007	12 FWB.002 (LMB) · LHL5 · 171007	13 FF.001 (KB) · LHL6 · 171007	14 FWB.001 (KB) · LHL6 · 171007	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks ①	A							X	A											
LCS																				
duplicate RPD																				
MS/MSD: ② Batch	A				X	A														

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

frozen -22-22..

Spl 10.4 - 10.7.17

prep 2.26.18 3.28.18 3.26.18

run 3.1.18 3.29.18 3.28.18

① MB1 Total In. As .017J U, C for Spl. ~~FWB~~ FF.001(CC)-LHL3.171005-FD

② MSL, MSDL In. As 9, 9, batch QC., no flags, lab ran 2nd in limits

OPRs - ok

Calves. ok

② - R MSL MSDL 38, 48 parent J/UJ, & FF.002(CC).LHL6.171007 2nd ms in limits.

Batch MSL/MSDL, 2nd run to est. data 3.26. no flags.

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712479
Date Collected: 10/04-05/17
Date Received: 11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(LMB)-CI-171004	K1712479-002	0.039	0.014	1	02/26/18	03/01/18	ND	
FWB-001(LMB)-CI-171004	K1712479-003	0.039	0.014	1	02/26/18	03/01/18	0.016	J
FF-001(CC)-LHL3-171005	K1712479-006	0.400	0.014	1	02/26/18	03/01/18	ND	
FWB-001(CC)-LHL3-171005	K1712479-007	0.039	0.014	1	02/26/18	03/01/18	0.022	J
Method Blank 1	K1712479-MB1	0.040	0.014	1	02/26/18	03/01/18	ND	
Method Blank 2	K1712479-MB2	0.040	0.014	1	02/26/18	03/01/18	ND	
Method Blank 3	K1712479-MB3	0.040	0.014	1	02/26/18	03/01/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1712479
Project:	KU-Herrington Lake/0242643A	**Date Collected:**	10/07/17
Sample Matrix:	Tissue	**Date Received:**	11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-002(CC)-LHL6-171007	K1712479-012	0.040	0.014	1	03/28/18	03/30/18	ND	UJ 8
FWB-002(CC)-LHL6-171007	K1712479-013	0.040	0.014	1	03/28/18	03/30/18	0.026	J
Method Blank 1	K1712479-MB1	0.040	0.014	1	03/28/18	03/30/18	ND	
Method Blank 2	K1712479-MB2	0.040	0.014	1	03/28/18	03/30/18	ND	
Method Blank 3	K1712479-MB3	0.040	0.014	1	03/28/18	03/30/18	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client: Ramboll Environ US Corporation
Project: KU-Herrington Lake/0242643A
Sample Matrix: Tissue

Service Request: K1712479
Date Collected: 10/05-07/17
Date Received: 11/16/17

Total Inorganic Arsenic

Prep Method: Method
Analysis Method: 1632A
Test Notes:

Units: ug/g
Basis: Dry

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
FF-001(CC)-LHL3-171005-FD	K1712479-009	0.040	0.014	1	03/26/18	03/28/18	ND	
FWB-001(CC)-LHL3-171005-FD	K1712479-010	0.040	0.014	1	03/26/18	03/28/18	0.023	J UL
FF-001(LMB)-LHL5-171007	K1712479-015	0.040	0.014	1	03/26/18	03/28/18	ND	
FWB-001(LMB)-LHL5-171007	K1712479-016	0.040	0.014	1	03/26/18	03/28/18	ND	
FF-002(LMB)-LHL5-171007	K1712479-019	0.040	0.014	1	03/26/18	03/28/18	ND	
FWB-002(LMB)-LHL5-171007	K1712479-020	0.040	0.014	1	03/26/18	03/28/18	ND	
FF-001(KB)-LHL6-171007	K1712479-022	0.040	0.014	1	03/26/18	03/28/18	ND	
FWB-001(KB)-LHL6-171007	K1712479-023	0.040	0.014	1	03/26/18	03/28/18	ND	
Method Blank 1	K1712479-MB1	0.040	0.014	1	03/26/18	03/28/18	0.017	J
Method Blank 2	K1712479-MB2	0.040	0.014	1	03/26/18	03/28/18	ND	
Method Blank 3	K1712479-MB3	0.040	0.014	1	03/26/18	03/28/18	ND	

12

Diss Metals SW LVL 2

VALIDATION WORKSHEET

Method: Total Metals, Total Mercury

Date Reviewed: 1.17.18

Sample Collection Dates: 12.11, 12.12.17

SDG: K1713449

Reviewer: C Jensen

The following data validation areas were reviewed:

Pb val 3.16.18

Sample Identification / Validation Criteria	1 SW001(25)LHL2·171211	2 SW001(25)LHL1·171211	3 SW001(2)CI1·171211	4 SW001(4)CI2·171211	5 SW001(9)CI3·171211	6 SW001(9)HQ1·171211	7 SW001(3)HI1·171211	8 DUP·001·171212	9 SW001(25)CL4·171212	10 SW001(25)LHL3·171212	11 SW001(25)LHL4·171212	12 SW001(25)LHL5·171212	13 SW001(25)LHL6·171212	14 EQUIP Blank 001·171212	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks (EB 1)	X	X	A	X	X	X	X	A	A	X	X	X	X	X						
LCS	A																			
duplicate RPD	A																			
MS/MSD:	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

w/ EB Pb .029 (.145 MB .019) .005)

many spls U, Le for Pb due to EB contamination

Comments:

Metal - Hg

Spl 12.11 12.12.17 12.11 12.12.17

prep 12.27.17 1.2.18

run 12 28 17 1.2.18

- Lab has 2 total MBs. U, Le MB
- Fe (3 J, 4 J) diss SW001(9)HQ1·171211, SW001(25)LHL3·171212 Mg (1 J, 9 J)
- Zn 1.1 J 1.6 J diss SW001(25)LHL2·171211 SW001(4)CI2·171211 SW001(9)CI3·171211 SW001(9)HQ1·171211 SW001(25)LHL3·171212

EB Total Fe 1.9 J Mg 5 J

- Hg .02 J SW001(9)CI3·171211 SW001(25)LHL5·171212
- Zn 1.4 J U6 SW001(25)LHL2·171211 SW001(25)LHL1·171211 SW001(9)CI3·171211 SW001(9)HQ1·171211 SW001(3)HI1·171211 SW001(25)LHL4·171211 SW001(25)LHL5·171212 SW001(25)LHL6·171212

MB2 also have similar defects, will use to U, Le EQUIP Blank 001·171212

Fe, Mg, Hg Zn all U, Le in EB

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 10:45
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)LHL2-171211	**Basis:**	NA
Lab Code:	K1713449-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.21**	ug/L	0.50	0.08	1	12/28/17 15:42	12/27/17	
Boron	200.8	**207**	ug/L	20	2	10	12/28/17 18:13	12/27/17	
Cadmium	200.8	**0.024**	ug/L	0.020	0.005	1	12/28/17 15:42	12/27/17	
Iron	200.8	**33.9**	ug/L	2.0	0.3	1	12/28/17 15:42	12/27/17	
Lead	200.8	**0.056** U Y	ug/L	0.020	0.004	1	02/26/18 08:43	02/23/18	
Magnesium	200.8	**11000**	ug/L	10	0.7	1	12/28/17 15:42	12/27/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	01/02/18 11:52	01/02/18	
Selenium	200.8	**0.6 J**	ug/L	1.0	0.2	1	12/28/17 15:42	12/27/17	
Zinc	200.8	**1.7** J U Y	ug/L	2.0	0.3	1	12/28/17 15:42	12/27/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 11:30
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)LHL1-171211	**Basis:**	NA
Lab Code:	K1713449-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.33**	ug/L	0.50	0.08	1	12/28/17 15:44	12/27/17	
Boron	200.8	**202**	ug/L	20	2	10	12/28/17 18:14	12/27/17	
Cadmium	200.8	**0.016 J**	ug/L	0.020	0.005	1	12/28/17 15:44	12/27/17	
Iron	200.8	**35.3**	ug/L	2.0	0.3	1	12/28/17 15:44	12/27/17	
Lead	200.8	**0.056** U 6	ug/L	0.020	0.004	1	02/26/18 08:45	02/23/18	
Magnesium	200.8	**11200**	ug/L	10	0.7	1	12/28/17 15:44	12/27/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	01/02/18 11:54	01/02/18	
Selenium	200.8	**0.6 J**	ug/L	1.0	0.2	1	12/28/17 15:44	12/27/17	
Zinc	200.8	**1.0** ~~J~~ U 6	ug/L	2.0	0.3	1	12/28/17 15:44	12/27/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 12:30
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(2)CI1-171211	**Basis:**	NA
Lab Code:	K1713449-003		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**3.55**	ug/L	0.50	0.08	1	12/28/17 15:46	12/27/17	
Boron	200.8	**2520**	ug/L	200	20	100	12/28/17 18:15	12/27/17	
Cadmium	200.8	**0.343**	ug/L	0.020	0.005	1	12/28/17 15:46	12/27/17	
Iron	200.8	**295**	ug/L	2.0	0.3	1	12/28/17 15:46	12/27/17	
Lead	200.8	**0.264**	ug/L	0.020	0.004	1	02/26/18 08:47	02/23/18	
Magnesium	200.8	**27400**	ug/L	10	0.7	1	12/28/17 15:46	12/27/17	
Mercury	7470A	ND	U ug/L	0.20	0.02	1	01/02/18 11:55	01/02/18	
Selenium	200.8	**5.2**	ug/L	1.0	0.2	1	12/28/17 15:46	12/27/17	
Zinc	200.8	**3.6**	ug/L	2.0	0.3	1	12/28/17 15:46	12/27/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 13:00
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(4)CI2-171211	**Basis:**	NA
Lab Code:	K1713449-004		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**5.48**	ug/L	0.50	0.08	1	12/28/17 15:48	12/27/17	
Boron	200.8	**2290**	ug/L	200	20	100	12/28/17 18:16	12/27/17	
Cadmium	200.8	**0.377**	ug/L	0.020	0.005	1	12/28/17 15:48	12/27/17	
Iron	200.8	**614**	ug/L	2.0	0.3	1	12/28/17 15:48	12/27/17	
Lead	200.8	**0.631**	ug/L	0.020	0.004	1	02/26/18 08:49	02/23/18	
Magnesium	200.8	**25600**	ug/L	10	0.7	1	12/28/17 15:48	12/27/17	
Mercury	7470A	ND	U ug/L	0.20	0.02	1	01/02/18 11:57	01/02/18	
Selenium	200.8	**4.6**	ug/L	1.0	0.2	1	12/28/17 15:48	12/27/17	
Zinc	200.8	**5.3**	ug/L	2.0	0.3	1	12/28/17 15:48	12/27/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 10:45
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)LHL2-171211	**Basis:**	NA
Lab Code:	K1713449-001		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.16**	ug/L	0.50	0.08	1	12/28/17 16:23	12/27/17	
Boron	200.8	**200**	ug/L	20	2	10	12/28/17 18:37	12/27/17	
Cadmium	200.8	**0.011 J**	ug/L	0.020	0.005	1	12/28/17 16:23	12/27/17	
Iron	200.8	**2.7**	ug/L	2.0	0.3	1	12/28/17 16:23	12/27/17	
Lead	200.8	**0.013** J U 6	ug/L	0.020	0.004	1	02/26/18 09:12	02/23/18	
Magnesium	200.8	**10800**	ug/L	10	0.7	1	12/28/17 16:23	12/27/17	
Selenium	200.8	**0.6 J**	ug/L	1.0	0.2	1	12/28/17 16:23	12/27/17	
Zinc	200.8	**1.1** J U 6	ug/L	2.0	0.3	1	12/28/17 16:23	12/27/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 11:30
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)LHL1-171211	**Basis:**	NA
Lab Code:	K1713449-002		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.29**	ug/L	0.50	0.08	1	12/28/17 16:25	12/27/17	
Boron	200.8	**199**	ug/L	20	2	10	12/28/17 18:31	12/27/17	
Cadmium	200.8	**0.008 J**	ug/L	0.020	0.005	1	12/28/17 16:25	12/27/17	
Iron	200.8	**2.4**	ug/L	2.0	0.3	1	12/28/17 16:25	12/27/17	
Lead	200.8	**0.012** J U Q	ug/L	0.020	0.004	1	02/26/18 09:14	02/23/18	
Magnesium	200.8	**10600**	ug/L	10	0.7	1	12/28/17 16:25	12/27/17	
Selenium	200.8	**0.5 J**	ug/L	1.0	0.2	1	12/28/17 16:25	12/27/17	
Zinc	200.8	**2.3**	ug/L	2.0	0.3	1	12/28/17 16:25	12/27/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 12:30
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(2)CI1-171211	**Basis:**	NA
Lab Code:	K1713449-003		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**2.24**	ug/L	0.50	0.08	1	12/28/17 16:27	12/27/17	
Boron	200.8	**2560**	ug/L	200	20	100	12/28/17 18:32	12/27/17	
Cadmium	200.8	**0.211**	ug/L	0.020	0.005	1	12/28/17 16:27	12/27/17	
Iron	200.8	**6.5**	ug/L	2.0	0.3	1	12/28/17 16:27	12/27/17	
Lead	200.8	**0.013** J V Y	ug/L	0.020	0.004	1	02/26/18 09:16	02/23/18	
Magnesium	200.8	**27400**	ug/L	10	0.7	1	12/28/17 16:27	12/27/17	
Selenium	200.8	**4.9**	ug/L	1.0	0.2	1	12/28/17 16:27	12/27/17	
Zinc	200.8	**3.4**	ug/L	2.0	0.3	1	12/28/17 16:27	12/27/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 13:00
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(4)CI2-171211	**Basis:**	NA
Lab Code:	K1713449-004		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**2.65**	ug/L	0.50	0.08	1	12/28/17 16:29	12/27/17	
Boron	200.8	**2240**	ug/L	200	20	100	12/28/17 18:33	12/27/17	
Cadmium	200.8	**0.180**	ug/L	0.020	0.005	1	12/28/17 16:29	12/27/17	
Iron	200.8	**11.5**	ug/L	2.0	0.3	1	12/28/17 16:29	12/27/17	
Lead	200.8	**0.011** J U 6	ug/L	0.020	0.004	1	02/26/18 09:22	02/23/18	
Magnesium	200.8	**25600**	ug/L	10	0.7	1	12/28/17 16:29	12/27/17	
Selenium	200.8	**4.5**	ug/L	1.0	0.2	1	12/28/17 16:29	12/27/17	
Zinc	200.8	**1.5** J U 6	ug/L	2.0	0.3	1	12/28/17 16:29	12/27/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 13:30
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(9)CI3-171211	**Basis:**	NA
Lab Code:	K1713449-005		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**2.04**	ug/L	0.50	0.08	1	12/28/17 16:03	12/27/17	
Boron	200.8	**728**	ug/L	40	4	20	12/28/17 18:18	12/27/17	
Cadmium	200.8	**0.092**	ug/L	0.020	0.005	1	12/28/17 16:03	12/27/17	
Iron	200.8	**112**	ug/L	2.0	0.3	1	12/28/17 16:03	12/27/17	
Lead	200.8	**0.103** U Q	ug/L	0.020	0.004	1	02/26/18 08:52	02/23/18	
Magnesium	200.8	**14700**	ug/L	10	0.7	1	12/28/17 16:03	12/27/17	
Mercury	7470A	**0.02** U Q	ug/L	0.20	0.02	1	01/02/18 11:59	01/02/18	
Selenium	200.8	**1.2**	ug/L	1.0	0.2	1	12/28/17 16:03	12/27/17	
Zinc	200.8	**1.8** U Q	ug/L	2.0	0.3	1	12/28/17 16:03	12/27/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 13:30
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(9)CI3-171211	**Basis:**	NA
Lab Code:	K1713449-005		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.77**	ug/L	0.50	0.08	1	12/28/17 16:31	12/27/17	
Boron	200.8	**794**	ug/L	40	4	20	12/28/17 18:38	12/27/17	
Cadmium	200.8	**0.064**	ug/L	0.020	0.005	1	12/28/17 16:31	12/27/17	
Iron	200.8	**7.5**	ug/L	2.0	0.3	1	12/28/17 16:31	12/27/17	
Lead	200.8	**0.010** J U Q	ug/L	0.020	0.004	1	02/26/18 09:24	02/23/18	
Magnesium	200.8	**15000**	ug/L	10	0.7	1	12/28/17 16:31	12/27/17	
Selenium	200.8	**1.6**	ug/L	1.0	0.2	1	12/28/17 16:31	12/27/17	
Zinc	200.8	**0.9** J U Q	ug/L	2.0	0.3	1	12/28/17 16:31	12/27/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 14:00
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(9)HQ1-171211	**Basis:**	NA
Lab Code:	K1713449-006		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.38**	ug/L	0.50	0.08	1	12/28/17 16:05	12/27/17	
Boron	200.8	**230**	ug/L	20	2	10	12/28/17 18:19	12/27/17	
Cadmium	200.8	**0.023**	ug/L	0.020	0.005	1	12/28/17 16:05	12/27/17	
Iron	200.8	**40.1**	ug/L	2.0	0.3	1	12/28/17 16:05	12/27/17	
Lead	200.8	**0.053** U	ug/L	0.020	0.004	1	02/26/18 08:54	02/23/18	
Magnesium	200.8	**11100**	ug/L	10	0.7	1	12/28/17 16:05	12/27/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	01/02/18 12:00	01/02/18	
Selenium	200.8	**0.6 J**	ug/L	1.0	0.2	1	12/28/17 16:05	12/27/17	
Zinc	200.8	**1.5** U	ug/L	2.0	0.3	1	12/28/17 16:05	12/27/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 14:00
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(9)HQ1-171211	**Basis:**	NA
Lab Code:	K1713449-006		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.37**	ug/L	0.50	0.08	1	12/28/17 16:44	12/27/17	
Boron	200.8	**223**	ug/L	20	2	10	12/28/17 18:40	12/27/17	
Cadmium	200.8	**0.014 J**	ug/L	0.020	0.005	1	12/28/17 16:44	12/27/17	
Iron	200.8	**1.7** J U Q	ug/L	2.0	0.3	1	12/28/17 16:44	12/27/17	
Lead	200.8	**0.010** J U Q	ug/L	0.020	0.004	1	02/26/18 09:26	02/23/18	
Magnesium	200.8	**11000**	ug/L	10	0.7	1	12/28/17 16:44	12/27/17	
Selenium	200.8	**0.6 J**	ug/L	1.0	0.2	1	12/28/17 16:44	12/27/17	
Zinc	200.8	**1.0** J U Q	ug/L	2.0	0.3	1	12/28/17 16:44	12/27/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 14:35
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(3)HI1-171211	**Basis:**	NA
Lab Code:	K1713449-007		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.20**	ug/L	0.50	0.08	1	12/28/17 16:08	12/27/17	
Boron	200.8	**179**	ug/L	20	2	10	12/28/17 18:23	12/27/17	
Cadmium	200.8	**0.016 J**	ug/L	0.020	0.005	1	12/28/17 16:08	12/27/17	
Iron	200.8	**51.2**	ug/L	2.0	0.3	1	12/28/17 16:08	12/27/17	
Lead	200.8	**0.127** U Q	ug/L	0.020	0.004	1	02/26/18 09:00	02/23/18	
Magnesium	200.8	**10700**	ug/L	10	0.7	1	12/28/17 16:08	12/27/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	01/02/18 12:02	01/02/18	
Selenium	200.8	**0.5 J**	ug/L	1.0	0.2	1	12/28/17 16:08	12/27/17	
Zinc	200.8	**1.2** J U Q	ug/L	2.0	0.3	1	12/28/17 16:08	12/27/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 14:35
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(3)HI1-171211	**Basis:**	NA
Lab Code:	K1713449-007		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.17**	ug/L	0.50	0.08	1	12/28/17 16:46	12/27/17	
Boron	200.8	**190**	ug/L	20	2	10	12/28/17 18:41	12/27/17	
Cadmium	200.8	**0.010 J**	ug/L	0.020	0.005	1	12/28/17 16:46	12/27/17	
Iron	200.8	**2.8**	ug/L	2.0	0.3	1	12/28/17 16:46	12/27/17	
Lead	200.8	**0.009 J U**	ug/L	0.020	0.004	1	02/26/18 09:28	02/23/18	
Magnesium	200.8	**10500**	ug/L	10	0.7	1	12/28/17 16:46	12/27/17	
Selenium	200.8	**0.5 J**	ug/L	1.0	0.2	1	12/28/17 16:46	12/27/17	
Zinc	200.8	**7.1**	ug/L	2.0	0.3	1	12/28/17 16:46	12/27/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 08:00
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	DUP-001-171212	**Basis:**	NA
Lab Code:	K1713449-008		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.59**	ug/L	0.50	0.08	1	12/28/17 16:14	12/27/17	
Boron	200.8	**316**	ug/L	40	4	20	12/28/17 18:26	12/27/17	
Cadmium	200.8	**0.040**	ug/L	0.020	0.005	1	12/28/17 16:14	12/27/17	
Iron	200.8	**67.8**	ug/L	2.0	0.3	1	12/28/17 16:14	12/27/17	
Lead	200.8	**0.086** U U	ug/L	0.020	0.004	1	02/26/18 09:06	02/23/18	
Magnesium	200.8	**11400**	ug/L	10	0.7	1	12/28/17 16:14	12/27/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	01/02/18 12:12	01/02/18	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	12/28/17 16:14	12/27/17	
Zinc	200.8	**2.2**	ug/L	2.0	0.3	1	12/28/17 16:14	12/27/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 08:00
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	DUP-001-171212	**Basis:**	NA
Lab Code:	K1713449-008		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.38**	ug/L	0.50	0.08	1	12/28/17 16:52	12/27/17	
Boron	200.8	**324**	ug/L	40	4	20	12/29/17 11:20	12/27/17	
Cadmium	200.8	**0.029**	ug/L	0.020	0.005	1	12/28/17 16:52	12/27/17	
Iron	200.8	**3.8**	ug/L	2.0	0.3	1	12/28/17 16:52	12/27/17	
Lead	200.8	**0.016** J U L	ug/L	0.020	0.004	1	02/26/18 09:35	02/23/18	
Magnesium	200.8	**11300**	ug/L	10	0.7	1	12/28/17 16:52	12/27/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	12/28/17 16:52	12/27/17	
Zinc	200.8	**3.4**	ug/L	2.0	0.3	1	12/28/17 16:52	12/27/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 09:15
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)CI4-171212	**Basis:**	NA
Lab Code:	K1713449-009		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.49**	ug/L	0.50	0.08	1	12/28/17 16:16	12/27/17	
Boron	200.8	**317**	ug/L	40	4	20	12/28/17 18:27	12/27/17	
Cadmium	200.8	**0.037**	ug/L	0.020	0.005	1	12/28/17 16:16	12/27/17	
Iron	200.8	**63.9**	ug/L	2.0	0.3	1	12/28/17 16:16	12/27/17	
Lead	200.8	**0.080** U	ug/L	0.020	0.004	1	02/26/18 09:08	02/23/18	
Magnesium	200.8	**11400**	ug/L	10	0.7	1	12/28/17 16:16	12/27/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	01/02/18 12:13	01/02/18	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	12/28/17 16:16	12/27/17	
Zinc	200.8	**6.7**	ug/L	2.0	0.3	1	12/28/17 16:16	12/27/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 09:15
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)CI4-171212	**Basis:**	NA
Lab Code:	K1713449-009		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.39**	ug/L	0.50	0.08	1	12/28/17 16:54	12/27/17	
Boron	200.8	**302**	ug/L	40	4	20	12/28/17 18:46	12/27/17	
Cadmium	200.8	**0.023**	ug/L	0.020	0.005	1	12/28/17 16:54	12/27/17	
Iron	200.8	**3.9**	ug/L	2.0	0.3	1	12/28/17 16:54	12/27/17	
Lead	200.8	**0.015** J U 6	ug/L	0.020	0.004	1	02/26/18 09:37	02/23/18	
Magnesium	200.8	**11500**	ug/L	10	0.7	1	12/28/17 16:54	12/27/17	
Selenium	200.8	**0.8 J**	ug/L	1.0	0.2	1	12/28/17 16:54	12/27/17	
Zinc	200.8	**2.2**	ug/L	2.0	0.3	1	12/28/17 16:54	12/27/17	

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 09:45
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)LHL3-171212	**Basis:**	NA
Lab Code:	K1713449-010		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.19**	ug/L	0.50	0.08	1	12/28/17 16:58	12/27/17	
Boron	200.8	**207**	ug/L	20	2	10	12/28/17 18:29	12/27/17	
Cadmium	200.8	**0.015 J**	ug/L	0.020	0.005	1	12/28/17 16:58	12/27/17	
Iron	200.8	**38.1**	ug/L	2.0	0.3	1	12/28/17 16:58	12/27/17	
Lead	200.8	**0.062** U Q	ug/L	0.020	0.004	1	02/26/18 09:10	02/23/18	
Magnesium	200.8	**10600**	ug/L	10	0.7	1	12/28/17 16:58	12/27/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	01/02/18 12:15	01/02/18	
Selenium	200.8	**0.5 J**	ug/L	1.0	0.2	1	12/28/17 16:58	12/27/17	
Zinc	200.8	**2.5**	ug/L	2.0	0.3	1	12/28/17 16:58	12/27/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 09:45
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)LHL3-171212	**Basis:**	NA
Lab Code:	K1713449-010		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.16**	ug/L	0.50	0.08	1	12/28/17 16:56	12/27/17	
Boron	200.8	**200**	ug/L	20	2	10	12/28/17 18:47	12/27/17	
Cadmium	200.8	**0.011 J**	ug/L	0.020	0.005	1	12/28/17 16:56	12/27/17	
Iron	200.8	**1.5 J U L**	ug/L	2.0	0.3	1	12/28/17 16:56	12/27/17	
Lead	200.8	**0.010 J U L**	ug/L	0.020	0.004	1	02/26/18 09:39	02/23/18	
Magnesium	200.8	**10300**	ug/L	10	0.7	1	12/28/17 16:56	12/27/17	
Selenium	200.8	**0.5 J**	ug/L	1.0	0.2	1	12/28/17 16:56	12/27/17	
Zinc	200.8	**1.0 J U L**	ug/L	2.0	0.3	1	12/28/17 16:56	12/27/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 10:15
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)LHL4-171211	**Basis:**	NA
Lab Code:	K1713449-011		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.10**	ug/L	0.50	0.08	1	12/28/17 17:08	12/27/17	
Boron	200.8	**183**	ug/L	20	2	10	12/28/17 18:53	12/27/17	
Cadmium	200.8	**0.022**	ug/L	0.020	0.005	1	12/28/17 17:08	12/27/17	
Iron	200.8	**37.8**	ug/L	2.0	0.3	1	12/28/17 17:08	12/27/17	
Lead	200.8	**0.078** U Q	ug/L	0.020	0.004	1	02/26/18 09:49	02/23/18	
Magnesium	200.8	**10400**	ug/L	10	0.7	1	12/28/17 17:08	12/27/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	01/02/18 12:16	01/02/18	
Selenium	200.8	**0.5 J**	ug/L	1.0	0.2	1	12/28/17 17:08	12/27/17	
Zinc	200.8	**1.9** J U Q	ug/L	2.0	0.3	1	12/28/17 17:08	12/27/17	

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Superset Reference:

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 10:15
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)LHL4-171211	**Basis:**	NA
Lab Code:	K1713449-011		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.19**	ug/L	0.50	0.08	1	12/28/17 17:20	12/27/17	
Boron	200.8	**183**	ug/L	20	2	10	12/28/17 19:00	12/27/17	
Cadmium	200.8	**0.011 J**	ug/L	0.020	0.005	1	12/28/17 17:20	12/27/17	
Iron	200.8	**2.2**	ug/L	2.0	0.3	1	12/28/17 17:20	12/27/17	
Lead	200.8	**0.006** J U 6	ug/L	0.020	0.004	1	02/26/18 10:01	02/23/18	
Magnesium	200.8	**10400**	ug/L	10	0.7	1	12/28/17 17:20	12/27/17	
Selenium	200.8	**0.5 J**	ug/L	1.0	0.2	1	12/28/17 17:20	12/27/17	
Zinc	200.8	**2.0**	ug/L	2.0	0.3	1	12/28/17 17:20	12/27/17	

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Superset Reference:

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 10:45
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)LHL5-171212	**Basis:**	NA
Lab Code:	K1713449-012		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.10**	ug/L	0.50	0.08	1	12/28/17 17:14	12/27/17	
Boron	200.8	**171**	ug/L	20	2	10	12/28/17 18:56	12/27/17	
Cadmium	200.8	**0.011 J**	ug/L	0.020	0.005	1	12/28/17 17:14	12/27/17	
Iron	200.8	**36.5**	ug/L	2.0	0.3	1	12/28/17 17:14	12/27/17	
Lead	200.8	**0.043** U Q	ug/L	0.020	0.004	1	02/26/18 09:51	02/23/18	
Magnesium	200.8	**10500**	ug/L	10	0.7	1	12/28/17 17:14	12/27/17	
Mercury	7470A	**0.11** J U Q	ug/L	0.20	0.02	1	01/02/18 12:18	01/02/18	
Selenium	200.8	**0.5 J**	ug/L	1.0	0.2	1	12/28/17 17:14	12/27/17	
Zinc	200.8	**1.2** J U Q	ug/L	2.0	0.3	1	12/28/17 17:14	12/27/17	

Client: Ramboll Environ US Corporation
Project: KU Herrington Lake/0242643A
Sample Matrix: Surface Water

Sample Name: SW001(25)LHL5-171212
Lab Code: K1713449-012

Service Request: K1713449
Date Collected: 12/12/17 10:45
Date Received: 12/14/17 10:10

Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**1.12**	ug/L	0.50	0.08	1	12/28/17 17:22	12/27/17	
Boron	200.8	**164**	ug/L	20	2	10	12/28/17 19:01	12/27/17	
Cadmium	200.8	**0.007 J**	ug/L	0.020	0.005	1	12/28/17 17:22	12/27/17	
Iron	200.8	**2.3**	ug/L	2.0	0.3	1	12/28/17 17:22	12/27/17	
Lead	200.8	**0.016** J U 6	ug/L	0.020	0.004	1	02/26/18 10:03	02/23/18	
Magnesium	200.8	**10400**	ug/L	10	0.7	1	12/28/17 17:22	12/27/17	
Selenium	200.8	**0.4 J**	ug/L	1.0	0.2	1	12/28/17 17:22	12/27/17	
Zinc	200.8	**5.4**	ug/L	2.0	0.3	1	12/28/17 17:22	12/27/17	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 12:15
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)LHL6-171212	**Basis:**	NA
Lab Code:	K1713449-013		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**0.95**	ug/L	0.50	0.08	1	12/28/17 17:16	12/27/17	
Boron	200.8	**123**	ug/L	10	1	5	12/28/17 18:58	12/27/17	
Cadmium	200.8	**0.007 J**	ug/L	0.020	0.005	1	12/28/17 17:16	12/27/17	
Iron	200.8	**40.6**	ug/L	2.0	0.3	1	12/28/17 17:16	12/27/17	
Lead	200.8	**0.062** U J	ug/L	0.020	0.004	1	02/26/18 09:57	02/23/18	
Magnesium	200.8	**10100**	ug/L	10	0.7	1	12/28/17 17:16	12/27/17	
Mercury	7470A	ND U	ug/L	0.20	0.02	1	01/02/18 12:20	01/02/18	
Selenium	200.8	**0.4 J**	ug/L	1.0	0.2	1	12/28/17 17:16	12/27/17	
Zinc	200.8	**1.3** J U J	ug/L	2.0	0.3	1	12/28/17 17:16	12/27/17	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 12:15
Sample Matrix:	Surface Water	**Date Received:**	12/14/17 10:10
Sample Name:	SW001(25)LHL6-171212	**Basis:**	NA
Lab Code:	K1713449-013		

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	**0.92**	ug/L	0.50	0.08	1	12/28/17 17:28	12/27/17	
Boron	200.8	**124**	ug/L	10	1	5	12/28/17 19:05	12/27/17	
Cadmium	200.8	**0.005 J**	ug/L	0.020	0.005	1	12/28/17 17:28	12/27/17	
Iron	200.8	**3.9**	ug/L	2.0	0.3	1	12/28/17 17:28	12/27/17	
Lead	200.8	**0.012** J U G	ug/L	0.020	0.004	1	02/26/18 10:09	02/23/18	
Magnesium	200.8	**10200**	ug/L	10	0.7	1	12/28/17 17:28	12/27/17	
Selenium	200.8	**0.3 J**	ug/L	1.0	0.2	1	12/28/17 17:28	12/27/17	
Zinc	200.8	**2.1**	ug/L	2.0	0.3	1	12/28/17 17:28	12/27/17	

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Superset Reference:

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17 16:00
Sample Matrix:	Water	**Date Received:**	12/14/17 10:10
Sample Name:	EQUIP BLANK 001-171212	**Basis:**	NA
Lab Code:	K1713449-014		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	200.8	ND U	ug/L	0.50	0.08	1	12/28/17 17:18	12/27/17	
Boron	200.8	ND U	ug/L	2.0	0.2	1	12/28/17 18:59	12/27/17	
Cadmium	200.8	ND U	ug/L	0.020	0.005	1	12/28/17 17:18	12/27/17	
Iron	200.8	**1.9** J U B	ug/L	2.0	0.3	1	12/28/17 17:18	12/27/17	
Lead	200.8	**0.029** U B	ug/L	0.020	0.004	1	02/26/18 09:59	02/23/18	
Magnesium	200.8	**5** J U B	ug/L	10	0.7	1	12/28/17 17:18	12/27/17	
Mercury	7470A	**0.02** J U B	ug/L	0.20	0.02	1	01/02/18 12:21	01/02/18	
Selenium	200.8	ND U	ug/L	1.0	0.2	1	12/28/17 17:18	12/27/17	
Zinc	200.8	**1.4** J U B	ug/L	2.0	0.3	1	12/28/17 17:18	12/27/17	

SW IVL2

1631E

VALIDATION WORKSHEET

Method: Dissolved Hg
Date Reviewed: 1.17.18
Sample Collection Dates: 12.11, 12.12.17

SDG: KL1713449
Reviewer: C Jensen

The following data validation areas were reviewed:

Validation Criteria	1 SW001(25)UHL2·171211	2 SW001(25)LHL4·171211	3 SW001(2)CI4·171211	4 SW001(4)CI2·171211	5 SW001(9)CI3·171211	6 SW001(9)HG1·171211	7 SW001(3)HE1·171211	8 DVP·001·171212	9 SW001(25)CI4·171212	10 SW001(25)UHL3·171212	11 SW001(25)LHL4·171212	12 SW001(25)LHL5·171212	13 SW001(25)LHL6·171212	14	15	16	17	18	19	20
Sample results	A	→																		
Holding Times	A	→																		
Completion	A	→																		
Method Blanks (2)	X	A	→			X	X	X	X	A	X	X	X							
LCS /LCS duplicate RPD	A	→																		
MS/MSD:	A	→																		

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

(1) Lab notes "client has provided bottles for Hg. LL. total yet this analysis is not marked on COC." "(will log in at hold)"

SPL 12.11.17 12.12.17
prep 12.19.17
run 12.20.17
OPR
QCS

FD pair DVP·001·171212 / SW001(25)CI4·171212 on table in report.

(2) MMB A .28J .34J > assoc. smls 1, 6 SW001(25)UHL2·171211
SW001(3)HE1·171211
DVP·001·171212
SW001(25)CI4·171212
SW001(25)LHL4·171212
SW001(25)LHL5·171212
SW001(25)LHL6·171212

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11-12/17
Sample Matrix:	Surface water	**Date Received:**	12/14/17

Mercury, Dissolved

Prep Method: METHOD
Analysis Method: 1631E
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW001(25)LHL2-171211	K1713449-001	0.5	0.06	1	12/19/17	12/20/17	0.49	✗U G
SW001(25)LHL1-171211	K1713449-002	0.5	0.06	1	12/19/17	12/20/17	0.62	
SW001(2)CI1-171211	K1713449-003	0.5	0.06	1	12/19/17	12/20/17	1.03	
SW001(4)CI2-171211	K1713449-004	0.5	0.06	1	12/19/17	12/20/17	1.24	
SW001(9)CI3-171211	K1713449-005	0.5	0.06	1	12/19/17	12/20/17	0.68	
SW001(9)HQ1-171211	K1713449-006	0.5	0.06	1	12/19/17	12/20/17	0.68	
SW001(3)HI1-171211	K1713449-007	0.5	0.06	1	12/19/17	12/20/17	0.41	✗UJG
DUP-001-171212	K1713449-008	0.5	0.06	1	12/19/17	12/20/17	0.38	✗UJG
SW001(25)CI4-171212	K1713449-009	0.5	0.06	1	12/19/17	12/20/17	0.45	✗UJG
SW001(25)LHL3-171212	K1713449-010	0.5	0.06	1	12/19/17	12/20/17	0.64	
SW001(25)LHL4-171211	K1713449-011	0.5	0.06	1	12/19/17	12/20/17	0.43	✗UJG
SW001(25)LHL5-171212	K1713449-012	0.5	0.06	1	12/19/17	12/20/17	0.43	✗UJG
SW001(25)LHL6-171212	K1713449-013	0.5	0.06	1	12/19/17	12/20/17	0.39	✗UJG
Method Blank 1	K1713449-MB1	0.5	0.06	1	12/19/17	12/20/17	0.28	J
Method Blank 2	K1713449-MB2	0.5	0.06	1	12/19/17	12/20/17	ND	
Method Blank 3	K1713449-MB3	0.5	0.06	1	12/19/17	12/20/17	0.34	J

1430 SW LVL2 75

VALIDATION WORKSHEET

Method: Total & Diss Methyl Mercury
Date Reviewed: 1.17.18
Sample Collection Dates: 12.11 + 12.12.17

SDG: K1713449
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SW001(25)LHL2.171211	2 SW001(25)LHL1.171211	3 SW001(2)CI1.171211	4 SW001(4)CI2.171211	5 SW001(9)CI3.171211	6 SW001(9)HI1.171211	7 SW001(3)HI1.171211	8 DUP-001.171212	9 SW001(25)CI4.171212	10 SW001(25)LHL3.171212	11 SW001(25)LHL4.171212	12 SW001(25)LHL5.171212	13 SW001(25)LHL6.171212	14 Equip Blank001.171212	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS QCS	A																			
duplicate RPD																				
MS/MSD: D	A									X	X	X	X	X						

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

Spl 12.11, 12.12.17
Mep 1.2.18 12.28.17
mm 1.3.18 12.29.17

OPR
QCS

D MS low 43 extr. 12/28/17 J/UJ & Meth Total Meth only
- 011

SW001(25)LHL1.171211
SW001(25)LHL5.171212
SW001(25)LHL6.171212
Equip Blank 001.171212

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17
Sample Matrix:	Surface water	**Date Received:**	12/14/17

Methyl Mercury, Total

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW001(25)LHL4-171211	K1713449-011	0.1	0.03	1	12/28/17	12/29/17	0.05 J 8	J
SW001(25)LHL5-171212	K1713449-012	0.1	0.03	1	12/28/17	12/29/17	0.06 J 8	J
SW001(25)LHL6-171212	K1713449-013	0.1	0.03	1	12/28/17	12/29/17	0.05 J 8	J
EQUIP BLANK 001-171212	K1713449-014	0.1	0.03	1	12/28/17	12/29/17	ND UJ 8	
Method Blank 1	K1713449-MB1	0.1	0.03	1	12/28/17	12/29/17	ND	
Method Blank 2	K1713449-MB2	0.1	0.03	1	12/28/17	12/29/17	ND	
Method Blank 3	K1713449-MB3	0.1	0.03	1	12/28/17	12/29/17	ND	

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11-12/17
Sample Matrix:	Surface water	**Date Received:**	12/14/17

Methyl Mercury, Total

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW001(25)LHL2-171211	K1713449-001	0.1	0.03	1	01/02/18	01/03/18	0.06	J
SW001(25)LHL1-171211	K1713449-002	0.1	0.03	1	01/02/18	01/03/18	0.05	J
SW001(2)CI1-171211	K1713449-003	0.1	0.03	1	01/02/18	01/03/18	ND	
SW001(4)CI2-171211	K1713449-004	0.1	0.03	1	01/02/18	01/03/18	0.06	J
SW001(9)CI3-171211	K1713449-005	0.1	0.03	1	01/02/18	01/03/18	0.05	J
SW001(9)HQ1-171211	K1713449-006	0.1	0.03	1	01/02/18	01/03/18	0.04	J
SW001(3)HI1-171211	K1713449-007	0.1	0.03	1	01/02/18	01/03/18	0.03	J
DUP-001-171212	K1713449-008	0.1	0.03	1	01/02/18	01/03/18	0.05	J
SW001(25)CI4-171212	K1713449-009	0.1	0.03	1	01/02/18	01/03/18	0.04	J
SW001(25)LHL3-171212	K1713449-010	0.1	0.03	1	01/02/18	01/03/18	0.04	J
Method Blank 1	K1713449-MB1	0.1	0.03	1	01/02/18	01/03/18	ND	
Method Blank 2	K1713449-MB2	0.1	0.03	1	01/02/18	01/03/18	ND	
Method Blank 3	K1713449-MB3	0.1	0.03	1	01/02/18	01/03/18	ND	

ALS Group USA, Corp.
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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11-12/17
Sample Matrix:	Surface water	**Date Received:**	12/14/17

Methyl Mercury, Dissolved

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW001(25)LHL2-171211	K1713449-001	0.1	0.03	1	01/02/18	01/03/18	0.04	J
SW001(25)LHL1-171211	K1713449-002	0.1	0.03	1	01/02/18	01/03/18	0.04	J
SW001(2)CI1-171211	K1713449-003	0.1	0.03	1	01/02/18	01/03/18	ND	
SW001(4)CI2-171211	K1713449-004	0.1	0.03	1	01/02/18	01/03/18	ND	
SW001(9)CI3-171211	K1713449-005	0.1	0.03	1	01/02/18	01/03/18	0.03	J
SW001(9)HQ1-171211	K1713449-006	0.1	0.03	1	01/02/18	01/03/18	0.04	J
SW001(3)HI1-171211	K1713449-007	0.1	0.03	1	01/02/18	01/03/18	0.03	J
DUP-001-171212	K1713449-008	0.1	0.03	1	01/02/18	01/03/18	0.04	J
SW001(25)CI4-171212	K1713449-009	0.1	0.03	1	01/02/18	01/03/18	0.03	J
SW001(25)LHL3-171212	K1713449-010	0.1	0.03	1	01/02/18	01/03/18	0.03	J

ALS Group USA, Corp.
dba ALS Environmental
Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17
Sample Matrix:	Surface water	**Date Received:**	12/14/17

Methyl Mercury, Dissolved

Prep Method: Method
Analysis Method: 1630
Test Notes:

Units: ng/L
Basis: NA

Sample Name	Lab Code	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
SW001(25)LHL4-171211	K1713449-011	0.1	0.03	1	12/28/17	12/29/17	0.05	J
SW001(25)LHL5-171212	K1713449-012	0.1	0.03	1	12/28/17	12/29/17	0.05	J
SW001(25)LHL6-171212	K1713449-013	0.1	0.03	1	12/28/17	12/29/17	0.04	J

300.0 SW UL2

VALIDATION WORKSHEET

Method: Sulfate, Total + Diss
Date Reviewed: 1.17.18
Sample Collection Dates: 12.11.-12.12.17
SDG: K1713449
Reviewer: C Jensen

The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SW001 (25) UHL2-171211	2 SW001(25) UHL1-171211	3 SW001(2) CD1-171211	4 SW001(4)CD2-171211	5 SW001(9) CD3-171211	6 SW001(9) HQ1-171211	7 SW001(3) HD1-171211	8 DUP-001-171212	9 SW001(25) CD4-171212	10 SW001(25) UHL3-171212	11 SW001(25) UHL4-171212	12 SW001(25) UHL5-171212	13 SW001(25) UHL6-171212	14 EQUIP Blank-001-171212	15	16	17	18	19	20
Sample results	A																			
Holding Times	A																			
Completion	A																			
Method Blanks	A																			
LCS	A																			
duplicate RPD	A																			
MS/MSD: -014 batch	A																			

Note: X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

.9 - 2.2°C

DM 12.11.17 12.12.17

Prep

Run 1 8 18 1.5.18

Total SUL. ERS .16 no flags, spks too high.

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 - 12/12/17
Sample Matrix:	Surface Water	**Date Received:**	12/14/17
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Sulfate, Dissolved

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW001(25)LHL2-171211	K1713449-001	**27.4**	2.0	0.2	20	01/08/18 11:26	
SW001(25)LHL1-171211	K1713449-002	**27.6**	2.0	0.2	20	01/08/18 11:37	
SW001(2)CI1-171211	K1713449-003	**107**	2.0	0.2	20	01/08/18 11:48	
SW001(4)CI2-171211	K1713449-004	**99.8**	2.0	0.2	20	01/08/18 11:58	
SW001(9)CI3-171211	K1713449-005	**43.7**	2.0	0.2	20	01/08/18 12:09	
SW001(9)HQ1-171211	K1713449-006	**28.0**	2.0	0.2	20	01/08/18 12:19	
SW001(3)HI1-171211	K1713449-007	**25.8**	2.0	0.2	20	01/08/18 12:30	
DUP-001-171212	K1713449-008	**31.7**	2.0	0.2	20	01/08/18 13:33	
SW001(25)CI4-171212	K1713449-009	**31.8**	2.0	0.2	20	01/08/18 13:44	
SW001(25)LHL3-171212	K1713449-010	**27.6**	2.0	0.2	20	01/08/18 13:55	
SW001(25)LHL4-171211	K1713449-011	**26.1**	2.0	0.2	20	01/08/18 14:05	
SW001(25)LHL5-171212	K1713449-012	**26.0**	2.0	0.2	20	01/08/18 14:16	
SW001(25)LHL6-171212	K1713449-013	**22.5**	2.0	0.2	20	01/08/18 14:27	
Method Blank	K1713449-MB1	ND U	0.10	0.01	1	01/08/18 10:54	

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Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 - 12/12/17
Sample Matrix:	Surface Water	**Date Received:**	12/14/17
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Total **Sulfate**

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW001(25)LHL2-171211	K1713449-001	**29.0**	2.0	0.2	20	01/05/18 11:54	
SW001(25)LHL1-171211	K1713449-002	**27.3**	2.0	0.2	20	01/05/18 11:54	
SW001(2)CI1-171211	K1713449-003	**107**	2.0	0.2	20	01/05/18 11:54	
SW001(4)CI2-171211	K1713449-004	**100**	2.0	0.2	20	01/05/18 11:54	
SW001(9)CI3-171211	K1713449-005	**43.7**	2.0	0.2	20	01/05/18 11:54	
SW001(9)HQ1-171211	K1713449-006	**28.3**	2.0	0.2	20	01/05/18 11:54	
SW001(3)HI1-171211	K1713449-007	**25.1**	2.0	0.2	20	01/05/18 11:54	
DUP-001-171212	K1713449-008	**30.8**	2.0	0.2	20	01/05/18 11:54	
SW001(25)CI4-171212	K1713449-009	**31.2**	2.0	0.2	20	01/05/18 11:54	
SW001(25)LHL3-171212	K1713449-010	**27.4**	2.0	0.2	20	01/05/18 11:54	
SW001(25)LHL4-171211	K1713449-011	**26.6**	2.0	0.2	20	01/05/18 11:54	
SW001(25)LHL5-171212	K1713449-012	**25.5**	2.0	0.2	20	01/05/18 11:54	
SW001(25)LHL6-171212	K1713449-013	**22.8**	2.0	0.2	20	01/05/18 11:54	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17
Sample Matrix:	Water	**Date Received:**	12/14/17
Analysis Method:	300.0	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Total **Sulfate**

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
EQUIP BLANK 001-171212	K1713449-014	**0.16**	0.10	0.01	1	01/05/18 11:54	
Method Blank	K1713449-MB1	ND U	0.10	0.01	1	01/05/18 11:54	

SW IVL2

VALIDATION WORKSHEET

Method: Total + Diss Organic Carbon
Date Reviewed: 1.17.18
Sample Collection Dates: 12.11 + 12.12.17
SDG: K1713449
Reviewer: C Jensen
The following data validation areas were reviewed:

Sample Identification / Validation Criteria	1 SW001 (25) IVL2-171211	2 SW001(25)LHL-171211	3 SW001(2) CL1-171211	4 SW001(4)CL2-171211	5 SW001(9) CL3-171211	6 SW001(9)HQ1-171211	7 SW001(3)HL1-171211	8 DUP-001-171212	9 SW 001 (25) CL4-171212	10 SW001 (25) LHL3-171212	11 SW001 (25) LHL4-171212	12 SW 001 (25) LHLS-171212	13 SW001(25) LHL6-171212	14 EQUIP Blank 001-171212 Tot only	15	16	17	18	19	20
Sample results	A	→	→	→	→	→	→	→	→	→	→	→	→	→						
Holding Times	A	→	→	→	→	→	→	→	→	→	→	→	→	→						
Completion	A	→	→	→	→	→	→	→	→	→	→	→	→	→						
Method Blanks	A	→	→	→	→	→	→	→	→	→	→	→	→	→						
LCS	A	→	→	→	→	→	→	→	→	→	→	→	→	→						
duplicate RPD	A	→	→	→	→	→	→	→	→	→	→	→	→	→						
MS/MSD:	A	→	→	→	→	→	→	→	→	→	→	→	→	→						

Note:X = Criteria were evaluated and not met. A = Criteria were evaluated and met. N = Data was not available for review. NA = Not applicable.

Comments:

EB. ND (total only)

spl 12.11. + 12.12.17
prep
anl 12.23.17 12.24.17
12.24.17

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 - 12/12/17
Sample Matrix:	Surface Water	**Date Received:**	12/14/17
Analysis Method:	9060	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW001(25)LHL2-171211	K1713449-001	**3.29**	0.50	0.07	1	12/24/17 05:55	
SW001(25)LHL1-171211	K1713449-002	**3.58**	0.50	0.07	1	12/24/17 06:45	
SW001(2)CI1-171211	K1713449-003	**3.41**	0.50	0.07	1	12/24/17 07:41	
SW001(4)CI2-171211	K1713449-004	**3.39**	0.50	0.07	1	12/24/17 08:35	
SW001(9)CI3-171211	K1713449-005	**3.18**	0.50	0.07	1	12/24/17 09:30	
SW001(9)HQ1-171211	K1713449-006	**3.43**	0.50	0.07	1	12/24/17 10:54	
SW001(3)HI1-171211	K1713449-007	**2.99**	0.50	0.07	1	12/24/17 11:49	
DUP-001-171212	K1713449-008	**3.42**	0.50	0.07	1	12/24/17 12:59	
SW001(25)CI4-171212	K1713449-009	**3.33**	0.50	0.07	1	12/24/17 13:53	
SW001(25)LHL3-171212	K1713449-010	**5.53**	0.50	0.07	1	12/24/17 14:48	
SW001(25)LHL4-171211	K1713449-011	**3.41**	0.50	0.07	1	12/24/17 15:43	
SW001(25)LHL5-171212	K1713449-012	**5.10**	0.50	0.07	1	12/24/17 16:38	
SW001(25)LHL6-171212	K1713449-013	**5.30**	0.50	0.07	1	12/24/17 17:33	
Method Blank	K1713449-MB1	ND U	0.50	0.07	1	12/24/17 03:58	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/11/17 - 12/12/17
Sample Matrix:	Surface Water	**Date Received:**	12/14/17
Analysis Method:	9060	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
SW001(25)LHL2-171211	K1713449-001	**3.07**	0.50	0.07	1	12/23/17 08:35	
SW001(25)LHL1-171211	K1713449-002	**3.16**	0.50	0.07	1	12/23/17 09:30	
SW001(2)CI1-171211	K1713449-003	**3.14**	0.50	0.07	1	12/23/17 10:24	
SW001(4)CI2-171211	K1713449-004	**3.25**	0.50	0.07	1	12/23/17 11:19	
SW001(9)CI3-171211	K1713449-005	**3.25**	0.50	0.07	1	12/23/17 12:14	
SW001(9)HQ1-171211	K1713449-006	**3.21**	0.50	0.07	1	12/23/17 13:09	
SW001(3)HI1-171211	K1713449-007	**2.91**	0.50	0.07	1	12/23/17 14:04	
DUP-001-171212	K1713449-008	**3.20**	0.50	0.07	1	12/23/17 16:12	
SW001(25)CI4-171212	K1713449-009	**3.16**	0.50	0.07	1	12/23/17 17:06	
SW001(25)LHL3-171212	K1713449-010	**3.07**	0.50	0.07	1	12/23/17 18:01	
SW001(25)LHL4-171211	K1713449-011	**3.03**	0.50	0.07	1	12/23/17 19:24	
SW001(25)LHL5-171212	K1713449-012	**3.07**	0.50	0.07	1	12/23/17 20:19	
SW001(25)LHL6-171212	K1713449-013	**3.14**	0.50	0.07	1	12/23/17 21:13	

Analytical Report

Client:	Ramboll Environ US Corporation	**Service Request:**	K1713449
Project:	KU Herrington Lake/0242643A	**Date Collected:**	12/12/17
Sample Matrix:	Water	**Date Received:**	12/14/17
Analysis Method:	9060	**Units:**	mg/L
Prep Method:	None	**Basis:**	NA

Carbon, Total Organic

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
EQUIP BLANK 001-171212	K1713449-014	ND U	0.50	0.07	1	12/24/17 18:28	
Method Blank	K1713449-MB1	ND U	0.50	0.07	1	12/23/17 03:13	

PC MH

Cooler Receipt and Preservation Form

Client CAMBRIA ENVIRON Service Request K1713449

Received: 12-14-17 Opened: 12-14-17 By: JSP Unloaded: 12-14-17 By: JSP

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? _____

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
3.4	2.3	1.0	0.9	-0.1	356	83679	7889 1270 9333	
-0.2	-0.3	0.5	0.4	-0.1	365		7889 1270 9311	
0.0	-0.1	2.3	2.2	-0.1	371		7889 1270 9322	
-0.3	-0.3	2.0	2.0	0.0	384		7889 1270 9300	

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 Cl2/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: Client has provided bottles for Hg-LL-Total, yet this analysis is not marked on COC. (Will log in on hold).

7/25/16 Page ____ of ____

ALS nwr ai

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004

SR# KL1713449

COC Set ____ of ____

COC# 1

Project Name: Ice Harrington Lake	Project Number: 02426434
Project Manager: MARY SORENSEN	
Company: Ramboll Environ	
Address: 1600 Parkway Cir. Suite 310 ATL, GA.	
Phone #: 770 548 1799	email: msorensen@ramboll.com
Sampler Signature:	Sampler Printed Name: Alex Smith

CLIENT SAMPLE ID	LABID	SAMPLING Date	Time	Matrix	NUMBER OF CONTAINERS	300.0 SO4	7470A/HgT	9050 TOC D	9060 TOC T	1631E/Hg LLD	1630 Methods D	1630 MMHg T	SM2340C/HARDNESS	200.8 Metals	Remarks
1. SW001(25)CHL2-171211		171211	1045	SW	5	X	X		X			X	X	X	Non-filtered
2. SW001(25)CHL2-171211		171211	1045		4	X		X		X	X		X	X	Filtered *
3. SW001(25)CHL1-171211		171211	1130		5	X	X		X			X	X	X	Non-filtered
4. SW001(25)CHL1-171211		171211	1130		4	X		X		X	X		X	X	Filtered *
5. SW001(2)CI1-171211		171211	1230		5	X	X		X			X	X	X	Non Filtered
6. SW001(2)CI1-171211		171211	1230		4	X		X		X	X		X	X	Filtered *
7. SW001(4)CI2-171211		171211	1300		5	X	X		X			X	X	X	Non Filtered
8. SW001(4)CI2-171211		171211	1300	↓	4	X		X		X	X		X	X	Filtered *
9.															
10.															

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.#

Bill To:

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard

*Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other ____ (Circle One)

* Diss. 300.0 (SO4) AND SM 2340C (HARDNESS) If Suff. Volume
"171211" = Dec 11th, 2017

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature:	Signature: CODY GRAVES	Signature:	Signature:	Signature:	Signature:
Printed Name: Alex Smith	Printed Name: ALS	Printed Name:	Printed Name:	Printed Name:	Printed Name:
Firm: REH	Firm:	Firm:	Firm:	Firm:	Firm:
Date/Time:	Date/Time: 12/14/17 1010	Date/Time:	Date/Time:	Date/Time:	Date/Time:

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CHAIN OF CUSTODY

83679

004

SR# K1713449

COC Set ___ of ___

COC# 2

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name	Hesring to Lake
Project Number	0242643A
Project Manager	Mary Sorensen
Company	Ramboll Environ
Address	1600 Parkway Cir. Suite 310, ATL, GA
Phone #	770-548-1799
email	msorensen@ramboll.com
Sampler Signature	
Sampler Printed Name	Alex Smith

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	300.0 SO4	7470B/HgT	9050/TOC D	9060/TOCT	1631E/HgLLD	1630/MeHgD	1630 MeHgT	SM2340C/HARD	200.8 Metals	Remarks
1. SW001(9)CI3-171211		171211	1330	SW	5	X	X		X			X	X	X	Non-Filtered
2. SW001(9)CI3-171211		171211	1330		4	X		X		X	X		X	X	Filtered *
3. SW001(9)HQ1-171211		171211	1400		5	X	X		X			X	X	X	Non-Filtered
4. SW001(9)HQ1-171211		171211	1400		4	X		X		X	X		X	X	Filtered *
5. SW001(3)HI1-171211		171211	1435		5	X	X		X			X	X	X	Non-Filtered
6. SW001(3)HI1-171211		171211			4	X		X		X	X		X	X	Filtered *
7. SW001(3)HI1-171211MS(MS)		171211			3		X					X		X	Non-Filtered
8. SW001(3)HI1-171211MS(MS)		171211		↓	3					X	X			X	Filtered *
9.															
10.															

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

X II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

___ IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.# ___

Bill To: ___

Turnaround Requirements

___ 24 hr. ___ 48 hr.

___ 5 Day

X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other ___ (Circle One)

* Dissolved 300.0 (SO4) and SM2340C (Hardness) if suff. sample volume except for the MS/MSD ⇒ no 300.0 or DOC/TOC or Hardness

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature CODY GRAVES	Signature	Signature	Signature	Signature
Printed Name Alex Smith	Printed Name ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm REH	Firm 12/14/17 1010	Firm	Firm	Firm	Firm
Date/Time	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

ALS

CHAIN OF CUSTODY
83679

004

SR# K1713449

COC Set ___ of ___

COC# 3

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Herrington Lake	Project Number: 02472643A
Project Manager: Mary Sorensen	
Company: Ramboll Environ	
Address: 1600 Parkway Circle Suite 310 ATL, GA	
Phone #: 770-548 1799	email: mgorensen@ramboll.com
Sampler Signature:	Sampler Printed Name: Alex Smith

CLIENT SAMPLE ID	LABID	SAMPLING Date	Time	Matrix	NUMBE OF CONTAINE S	300.0 SO_4	7470A/ Hg T	9050 / TOC D	9060 / TOC T	1631E / Hg LLD	1633 / Meth Hg D	1630 / MeHg T	SM 2340 CC / HARD	200.8 metals	Remarks
1. SW001(3)HI-171211	MSD	17/12/11	1435	SW	3		X		X			X		X	Non-Filtered
2. SW001(3)HI-171211	MSD	17/12/11	1435		3			X		X	X			X	Filtered *
3. DUP-001-171212		17/12/12	0800		5	X	X		X			X	X	X	Non-Filtered
4. DUP-001-171212		17/12/12	0800		4	X		X		X	X		X	X	Filtered *
5. SW001(25)CH-171212		17/12/12	0915		5	X	X		X			X	X	X	Non-filtered
6. SW001(25)CH-171212		17/12/12	0915		4	X		X		X	X		X	X	Filtered *
7. SW001(25)-CH3-171212		17/12/12	0945		5	X	X		X			X	X	X	Non Filtered
8. SW001(25)CH3-171212		17/12/12	0945	↓	4	X		X		X	X		X	X	Filtered *
9.															
10.															

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.#

Bill To:

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other ___ (Circle One)

* Dissolved 300.0 (504) and SM2340C (Hardness) if suff. Samp. Volume

"171211" = Dec 11th, 2017

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Alex Smith	Signature: CODY GRAVES	Signature:	Signature:	Signature:	Signature:
Printed Name: Alex Smith	Printed Name: ALS	Printed Name:	Printed Name:	Printed Name:	Printed Name:
Firm: REH	Firm:	Firm:	Firm:	Firm:	Firm:
Date/Time:	Date/Time: 12/14/17 1010	Date/Time:	Date/Time:	Date/Time:	Date/Time:

ALS

CHAIN OF CUSTODY
83679

004

SR# K1713449

COC Set ___ of ___

COC# 4

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

Project Name: Herrington Lake	Project Number: 02426432
Project Manager: Mary Sorensen	
Company: Ramboll Environ	
Address: 1600 Parkwood Cir. Suite 310 Atl, GA	
Phone #: 770 548 1799	email: msorensen@Ramboll.com
Sampler Signature:	Sampler Printed Name: Alex Smith

CLIENT SAMPLE ID	LABID	SAMPLING Date	Time	Matrix	NUMBER OF CONTAINERS	300.0 SO4	7470A / Hg T	9030 / TOC D	9060 / TOC T	1631E / Hg LLD	1630 / Methyl Hg D	1630 / Meth Hg T	SM2340C / HARD	200.8 METALS		Remarks
1. SWAC1(25)LHL4-171212		171212	1015	SW	5	X	X		X			X		X		Non Filtered
2. SWAC1(25)LHL4-171212		171212	1015		4	X		X		X	X			X		Filtered *
3. SWAC1(25)LHL5-171212		171212	1045		5	X	X		X			X		X		Non Filtered
4. SWAC1(25)LHL5-171212		171212	1045		4	X		X		X	X			X		Filtered *
5. SWAC1(25)LHL6-171212		171212	1215		5	X	X		X			X		X		Non Filtered
6. SWDO1(25)LHL6-171212		171212	1215	↓	4	X		X		X	X			X		Filtered *
7. EQUIP BLANK DUP-171212		171212	1600	DI	5	X	X		X			X		X		Non Filtered
8.																
9.																
10.																

Report Requirements

- ___ I. Routine Report: Method Blank, Surrogate, as required
- X II. Report Dup., MS, MSD as required
- ___ III. CLP Like Summary (no raw data)
- ___ IV. Data Validation Report
- ___ V. EDD

Invoice Information

P.O.#

Bill To:

Turnaround Requirements

___ 24 hr. ___ 48 hr.
___ 5 Day
X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Dissolved Metals: Al (As) Sb Ba Be (B) Ca (Cd) Co Cr Cu (Fe) Pb (Mg) Mn Mo Ni K Ag Na (Se) Sr Tl Sn V (Zn) Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other ___ (Circle One)

* Diss. 300.0(504) and SM2340C (Hardness) if suff. samp. Volume

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: Alex Smith	Printed Name: ALS	Printed Name	Printed Name	Printed Name	Printed Name
Firm: REH	Firm	Firm	Firm	Firm	Firm
Date/Time	Date/Time: 12/14/17 1016	Date/Time	Date/Time	Date/Time	Date/Time