

CPVEC Data Collection Log

Page/Pages	1
Harbor	Ketchikan
Date (mm/dd/yy)	5-4-22
Weather (C, PC, LR, HR)	
Air Temp C	
Check w/Harbor Master (Y/N)	
Implement Boat Safety (Y/N)	
Samplers	JCD SW

Clear, Partly Cloudy, Light Rain, Heavy Rain

Meter Calibration		DO Calibrated at 100% sat
Stadard Value	pH 7.0 pH 4.0 pH 10.0	Yes No
Calibrated	2.05 @ 15°C	
Accept if value +/- 0.1 units of 7.0 standard temp corrected.		

Sample ID*	KE09				KE08				KE05				KE04			
	1030				1040				1050				1106			
Time																
Latitude																
Longitude																
Water Depth (ft)	129 ft.				35 ft.				72 ft. 75 ft.				110 ft.			
Photographs (No)	No				No				No							
Fecal (Y/N)	Y				Y				Y							
Depth (m)	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Temp C	7.5	7.5	7.5	7.5	7.6	7.5	7.5	7.6	7.5	7.5	7.5	7.5	7.6	7.5	7.5	7.5
pH	8.17	8.22	8.24	8.24	8.19	8.20	8.42	8.21	8.21	8.20	8.36	8.23	8.15	8.14	8.21	8.19
Salinity (ppt)	29.78	29.61	29.55	29.55	29.75	29.61	29.61	29.42	27.21	29.25	29.50	29.58	27.65	28.15	28.90	29.94
D.O. mg/L	10.22	10.29	10.33	10.35	10.32	10.40	10.26	10.32	10.47	10.40	10.30	10.26	10.35	10.29	10.19	10.17
Notes/Comments																

*Sample ID is combined harbor (JH or SK), Site (01-24), Date (mm/dd).
 Add "R" for replicate, add "FB" for field blank, "EB" for equipment blank.

CPVEC Data Collection Log

Meter Calibration DO Calibrated at 100% sat
 Standard pH 7.0 pH 4.0 pH 10.0 Yes No
 Value
 Calibrated
 Accept if value +/- 0.1 units of 7.0 standard temp corrected.

Page/Pages	2	2
Harbor	KE	
Date (mm/dd/yy)	05/04/22	
Weather (C, PC, LR, HR)	Clear, Partly Cloudy, Light Rain, Heavy Rain	
Air Temp C		
Check w/Harbor Master (Y/N)		
Implement Boat Safety (Y/N)	Y	
Samplers		

Sample ID*	KE01				KE07				KE02				KE06			
Time	1115				1125				1135 1135 1125				1150			
Latitude																
Longitude																
Water Depth (ft)	22 ft				115 ft				165 ft.				156 ft.			
Photographs (No)	No				No											
Fecal (Y/N)	Yes				Yes											
Depth (m)	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Temp C	6.8	7.3	7.6	7.6	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.6	7.6	7.6	7.6	7.5
pH	8.16	8.16	8.37	8.26	8.21	8.20	8.16	8.30	8.17	8.18	8.58	8.23	8.18	8.18	8.46	8.24
Salinity (ppt)	25.25	29.47	29.63	29.48	29.91	29.93	29.94	29.95	29.51	29.60	29.63	29.67	29.36	29.44	29.53	29.60
D.O. mg/L	10.79	10.42	10.35	10.34	10.56	10.54	10.51	10.49	10.33	10.30	10.23	10.18	10.37	10.35	10.31	10.28
Notes/Comments	Fresh water outlet												(4 in 7.6C)			

*Sample ID is combined harbor (JH or SK), Site (01-24), Date (mm/dd).
 Add "R" for replicate, add "FB" for field blank, "EB" for equipment blank.



May 13, 2022

Service Request No:K2204844

Jeff Davis
Aquatic Restoration and Research Institute
22290 S. C. Street
P.O. Box 923
Talkeetna, AK 99676

Laboratory Results for: Ambient WQ- Ketchikan

Dear Jeff,

Enclosed are the results of the sample(s) submitted to our laboratory May 05, 2022
For your reference, these analyses have been assigned our service request number **K2204844**.

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

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

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager

ADDRESS 1317 S. 13th Avenue, Kelso, WA 98626
PHONE +1 360 577 7222 | FAX +1 360 636 1068
ALS Group USA, Corp.
dba ALS Environmental



Narrative Documents

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com



Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water

Service Request: K2204844
Date Received: 05/05/2022

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Eight ocean water samples were received for analysis at ALS Environmental on 05/05/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

Metals:

No significant anomalies were noted with this analysis.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by 

Date 05/13/2022



SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: KE09	Lab ID: K2204844-001
------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Ammonia as Nitrogen	0.030		0.003	0.010	mg/L	350.1
Copper, Dissolved	0.20		0.02	0.10	ug/L	200.8
Nickel, Dissolved	0.29		0.03	0.20	ug/L	200.8
Zinc, Dissolved	0.41	J	0.20	0.50	ug/L	200.8
Copper	0.19		0.02	0.10	ug/L	200.8
Nickel	0.28		0.03	0.20	ug/L	200.8
Zinc	0.35	J	0.20	0.50	ug/L	200.8

CLIENT ID: KE08	Lab ID: K2204844-002
------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Ammonia as Nitrogen	0.021		0.003	0.010	mg/L	350.1
Copper, Dissolved	0.32		0.02	0.10	ug/L	200.8
Nickel, Dissolved	0.31		0.03	0.20	ug/L	200.8
Zinc, Dissolved	0.54		0.20	0.50	ug/L	200.8
Copper	0.40		0.02	0.10	ug/L	200.8
Nickel	0.31		0.03	0.20	ug/L	200.8
Zinc	0.61		0.20	0.50	ug/L	200.8

CLIENT ID: KE05	Lab ID: K2204844-003
------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Ammonia as Nitrogen	0.015		0.003	0.010	mg/L	350.1
Copper, Dissolved	0.41		0.02	0.10	ug/L	200.8
Nickel, Dissolved	0.28		0.03	0.20	ug/L	200.8
Zinc, Dissolved	0.73		0.20	0.50	ug/L	200.8
Copper	0.50		0.02	0.10	ug/L	200.8
Nickel	0.30		0.03	0.20	ug/L	200.8
Zinc	0.88		0.20	0.50	ug/L	200.8

CLIENT ID: KE04	Lab ID: K2204844-004
------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Ammonia as Nitrogen	0.017		0.003	0.010	mg/L	350.1
Copper, Dissolved	0.40		0.02	0.10	ug/L	200.8
Nickel, Dissolved	0.29		0.03	0.20	ug/L	200.8
Zinc, Dissolved	0.75		0.20	0.50	ug/L	200.8
Copper	0.48		0.02	0.10	ug/L	200.8
Nickel	0.29		0.03	0.20	ug/L	200.8
Zinc	0.81		0.20	0.50	ug/L	200.8

CLIENT ID: KE01	Lab ID: K2204844-005
------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Ammonia as Nitrogen	0.020		0.003	0.010	mg/L	350.1
Copper, Dissolved	0.43		0.02	0.10	ug/L	200.8



SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: KE01 Lab ID: K2204844-005

Analyte	Results	Flag	MDL	MRL	Units	Method
Nickel, Dissolved	0.29		0.03	0.20	ug/L	200.8
Zinc, Dissolved	0.90		0.20	0.50	ug/L	200.8
Copper	0.78		0.02	0.10	ug/L	200.8
Nickel	0.29		0.03	0.20	ug/L	200.8
Zinc	1.63		0.20	0.50	ug/L	200.8

CLIENT ID: KE07 Lab ID: K2204844-006

Analyte	Results	Flag	MDL	MRL	Units	Method
Ammonia as Nitrogen	0.018		0.003	0.010	mg/L	350.1
Copper, Dissolved	0.17		0.02	0.10	ug/L	200.8
Nickel, Dissolved	0.29		0.03	0.20	ug/L	200.8
Zinc, Dissolved	0.31	J	0.20	0.50	ug/L	200.8
Copper	0.24		0.02	0.10	ug/L	200.8
Nickel	0.31		0.03	0.20	ug/L	200.8
Zinc	0.36	J	0.20	0.50	ug/L	200.8

CLIENT ID: KE02 Lab ID: K2204844-007

Analyte	Results	Flag	MDL	MRL	Units	Method
Ammonia as Nitrogen	0.018		0.003	0.010	mg/L	350.1
Copper, Dissolved	0.20		0.02	0.10	ug/L	200.8
Nickel, Dissolved	0.29		0.03	0.20	ug/L	200.8
Zinc, Dissolved	0.30	J	0.20	0.50	ug/L	200.8
Copper	0.22		0.02	0.10	ug/L	200.8
Nickel	0.31		0.03	0.20	ug/L	200.8
Zinc	0.36	J	0.20	0.50	ug/L	200.8

CLIENT ID: KE06 Lab ID: K2204844-008

Analyte	Results	Flag	MDL	MRL	Units	Method
Ammonia as Nitrogen	0.029		0.003	0.010	mg/L	350.1
Copper, Dissolved	0.21		0.02	0.10	ug/L	200.8
Nickel, Dissolved	0.29		0.03	0.20	ug/L	200.8
Zinc, Dissolved	0.41	J	0.20	0.50	ug/L	200.8
Copper	0.23		0.02	0.10	ug/L	200.8
Nickel	0.29		0.03	0.20	ug/L	200.8
Zinc	0.40	J	0.20	0.50	ug/L	200.8



Sample Receipt Information

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan

Service Request:K2204844

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K2204844-001	KE09	5/4/2022	1030
K2204844-002	KE08	5/4/2022	1040
K2204844-003	KE05	5/4/2022	1050
K2204844-004	KE04	5/4/2022	1100
K2204844-005	KE01	5/4/2022	1115
K2204844-006	KE07	5/4/2022	1125
K2204844-007	KE02	5/4/2022	1135
K2204844-008	KE06	5/4/2022	1150

PM HH

Cooler Receipt and Preservation Form

Client ARRI Service Request K2204844
Received: 5/5/22 Opened: 5/5/22 By: [Signature] Unloaded: 5/5/22 By: [Signature]

- 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

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp indicate with 'X'	PM Notified If out of temp	Tracking Number NA	Filed
<u>4.1</u>		<u>IR01</u>					
<u>2.6</u>		<u>IR01</u>					

- 4. Was a Temperature Blank present in cooler? NA Y N If yes, notate the temperature in the appropriate column above:
If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
- 5. Were samples received within the method specified temperature ranges? NA Y N
If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM. NA Y N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

- 6. Packing material: Inserts Raggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
- 7. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
- 8. Were samples received in good condition (unbroken) NA Y N
- 9. Were all sample labels complete (ie, analysis, preservation, etc.)? NA Y N
- 10. Did all sample labels and tags agree with custody papers? NA Y N
- 11. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
- 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
- 13. Were VOA vials received without headspace? Indicate in the table below. NA Y N
- 14. Was C12/Res negative? NA Y N
- 15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark? NA Y N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, Resolutions: _____



Miscellaneous Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

Inorganic Data Qualifiers

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

Metals Data Qualifiers

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

Organic Data Qualifiers

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

Additional Petroleum Hydrocarbon Specific Qualifiers

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

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

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

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.

Acronyms

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

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan/

Service Request: K2204844

Sample Name: KE09
Lab Code: K2204844-001
Sample Matrix: Ocean Water

Date Collected: 05/4/22
Date Received: 05/5/22

Analysis Method
200.8
350.1

Extracted/Digested By
KLINN
ESCHLOSS

Analyzed By
JCHAN
ESCHLOSS

Sample Name: KE08
Lab Code: K2204844-002
Sample Matrix: Ocean Water

Date Collected: 05/4/22
Date Received: 05/5/22

Analysis Method
200.8
350.1

Extracted/Digested By
KLINN
ESCHLOSS

Analyzed By
JCHAN
ESCHLOSS

Sample Name: KE05
Lab Code: K2204844-003
Sample Matrix: Ocean Water

Date Collected: 05/4/22
Date Received: 05/5/22

Analysis Method
200.8
350.1

Extracted/Digested By
KLINN
ESCHLOSS

Analyzed By
JCHAN
ESCHLOSS

Sample Name: KE04
Lab Code: K2204844-004
Sample Matrix: Ocean Water

Date Collected: 05/4/22
Date Received: 05/5/22

Analysis Method
200.8
350.1

Extracted/Digested By
KLINN
ESCHLOSS

Analyzed By
JCHAN
ESCHLOSS

ALS Group USA, Corp.
dba ALS Environmental

Analyst Summary report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan/

Service Request: K2204844

Sample Name: KE01
Lab Code: K2204844-005
Sample Matrix: Ocean Water

Date Collected: 05/4/22
Date Received: 05/5/22

Analysis Method	Extracted/Digested By	Analyzed By
200.8	KLINN	JCHAN
350.1	ESCHLOSS	ESCHLOSS

Sample Name: KE07
Lab Code: K2204844-006
Sample Matrix: Ocean Water

Date Collected: 05/4/22
Date Received: 05/5/22

Analysis Method	Extracted/Digested By	Analyzed By
200.8	KLINN	JCHAN
350.1	ESCHLOSS	ESCHLOSS

Sample Name: KE02
Lab Code: K2204844-007
Sample Matrix: Ocean Water

Date Collected: 05/4/22
Date Received: 05/5/22

Analysis Method	Extracted/Digested By	Analyzed By
200.8	KLINN	JCHAN
350.1	ESCHLOSS	ESCHLOSS

Sample Name: KE06
Lab Code: K2204844-008
Sample Matrix: Ocean Water

Date Collected: 05/4/22
Date Received: 05/5/22

Analysis Method	Extracted/Digested By	Analyzed By
200.8	KLINN	JCHAN
350.1	ESCHLOSS	ESCHLOSS



Sample Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com



Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE09
Lab Code: K2204844-001

Service Request: K2204844
Date Collected: 05/04/22 10:30
Date Received: 05/05/22 11:45
Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.20	ug/L	0.10	0.02	1	05/13/22 09:16	05/11/22	
Nickel	200.8	0.29	ug/L	0.20	0.03	1	05/13/22 09:16	05/11/22	
Zinc	200.8	0.41 J	ug/L	0.50	0.20	1	05/13/22 09:16	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE09
Lab Code: K2204844-001

Service Request: K2204844
Date Collected: 05/04/22 10:30
Date Received: 05/05/22 11:45
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.19	ug/L	0.10	0.02	1	05/13/22 09:04	05/11/22	
Nickel	200.8	0.28	ug/L	0.20	0.03	1	05/13/22 09:04	05/11/22	
Zinc	200.8	0.35 J	ug/L	0.50	0.20	1	05/13/22 09:04	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE08
Lab Code: K2204844-002

Service Request: K2204844
Date Collected: 05/04/22 10:40
Date Received: 05/05/22 11:45

Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.32	ug/L	0.10	0.02	1	05/13/22 09:17	05/11/22	
Nickel	200.8	0.31	ug/L	0.20	0.03	1	05/13/22 09:17	05/11/22	
Zinc	200.8	0.54	ug/L	0.50	0.20	1	05/13/22 09:17	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE08
Lab Code: K2204844-002

Service Request: K2204844
Date Collected: 05/04/22 10:40
Date Received: 05/05/22 11:45

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.40	ug/L	0.10	0.02	1	05/13/22 09:05	05/11/22	
Nickel	200.8	0.31	ug/L	0.20	0.03	1	05/13/22 09:05	05/11/22	
Zinc	200.8	0.61	ug/L	0.50	0.20	1	05/13/22 09:05	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE05
Lab Code: K2204844-003

Service Request: K2204844
Date Collected: 05/04/22 10:50
Date Received: 05/05/22 11:45
Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.41	ug/L	0.10	0.02	1	05/13/22 09:18	05/11/22	
Nickel	200.8	0.28	ug/L	0.20	0.03	1	05/13/22 09:18	05/11/22	
Zinc	200.8	0.73	ug/L	0.50	0.20	1	05/13/22 09:18	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE05
Lab Code: K2204844-003

Service Request: K2204844
Date Collected: 05/04/22 10:50
Date Received: 05/05/22 11:45
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.50	ug/L	0.10	0.02	1	05/13/22 09:06	05/11/22	
Nickel	200.8	0.30	ug/L	0.20	0.03	1	05/13/22 09:06	05/11/22	
Zinc	200.8	0.88	ug/L	0.50	0.20	1	05/13/22 09:06	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE04
Lab Code: K2204844-004

Service Request: K2204844
Date Collected: 05/04/22 11:00
Date Received: 05/05/22 11:45
Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.40	ug/L	0.10	0.02	1	05/13/22 09:19	05/11/22	
Nickel	200.8	0.29	ug/L	0.20	0.03	1	05/13/22 09:19	05/11/22	
Zinc	200.8	0.75	ug/L	0.50	0.20	1	05/13/22 09:19	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE04
Lab Code: K2204844-004

Service Request: K2204844
Date Collected: 05/04/22 11:00
Date Received: 05/05/22 11:45
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.48	ug/L	0.10	0.02	1	05/13/22 09:07	05/11/22	
Nickel	200.8	0.29	ug/L	0.20	0.03	1	05/13/22 09:07	05/11/22	
Zinc	200.8	0.81	ug/L	0.50	0.20	1	05/13/22 09:07	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE01
Lab Code: K2204844-005

Service Request: K2204844
Date Collected: 05/04/22 11:15
Date Received: 05/05/22 11:45

Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.43	ug/L	0.10	0.02	1	05/13/22 09:20	05/11/22	
Nickel	200.8	0.29	ug/L	0.20	0.03	1	05/13/22 09:20	05/11/22	
Zinc	200.8	0.90	ug/L	0.50	0.20	1	05/13/22 09:20	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE01
Lab Code: K2204844-005

Service Request: K2204844
Date Collected: 05/04/22 11:15
Date Received: 05/05/22 11:45

Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.78	ug/L	0.10	0.02	1	05/13/22 09:09	05/11/22	
Nickel	200.8	0.29	ug/L	0.20	0.03	1	05/13/22 09:09	05/11/22	
Zinc	200.8	1.63	ug/L	0.50	0.20	1	05/13/22 09:09	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE07
Lab Code: K2204844-006

Service Request: K2204844
Date Collected: 05/04/22 11:25
Date Received: 05/05/22 11:45
Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.17	ug/L	0.10	0.02	1	05/13/22 09:21	05/11/22	
Nickel	200.8	0.29	ug/L	0.20	0.03	1	05/13/22 09:21	05/11/22	
Zinc	200.8	0.31 J	ug/L	0.50	0.20	1	05/13/22 09:21	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE07
Lab Code: K2204844-006

Service Request: K2204844
Date Collected: 05/04/22 11:25
Date Received: 05/05/22 11:45
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.24	ug/L	0.10	0.02	1	05/13/22 09:10	05/11/22	
Nickel	200.8	0.31	ug/L	0.20	0.03	1	05/13/22 09:10	05/11/22	
Zinc	200.8	0.36 J	ug/L	0.50	0.20	1	05/13/22 09:10	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE02
Lab Code: K2204844-007

Service Request: K2204844
Date Collected: 05/04/22 11:35
Date Received: 05/05/22 11:45
Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.20	ug/L	0.10	0.02	1	05/13/22 09:22	05/11/22	
Nickel	200.8	0.29	ug/L	0.20	0.03	1	05/13/22 09:22	05/11/22	
Zinc	200.8	0.30 J	ug/L	0.50	0.20	1	05/13/22 09:22	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE02
Lab Code: K2204844-007

Service Request: K2204844
Date Collected: 05/04/22 11:35
Date Received: 05/05/22 11:45
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.22	ug/L	0.10	0.02	1	05/13/22 09:11	05/11/22	
Nickel	200.8	0.31	ug/L	0.20	0.03	1	05/13/22 09:11	05/11/22	
Zinc	200.8	0.36 J	ug/L	0.50	0.20	1	05/13/22 09:11	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE06
Lab Code: K2204844-008

Service Request: K2204844
Date Collected: 05/04/22 11:50
Date Received: 05/05/22 11:45
Basis: NA

Dissolved Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.21	ug/L	0.10	0.02	1	05/13/22 09:24	05/11/22	
Nickel	200.8	0.29	ug/L	0.20	0.03	1	05/13/22 09:24	05/11/22	
Zinc	200.8	0.41 J	ug/L	0.50	0.20	1	05/13/22 09:24	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE06
Lab Code: K2204844-008

Service Request: K2204844
Date Collected: 05/04/22 11:50
Date Received: 05/05/22 11:45
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	0.23	ug/L	0.10	0.02	1	05/13/22 09:14	05/11/22	
Nickel	200.8	0.29	ug/L	0.20	0.03	1	05/13/22 09:14	05/11/22	
Zinc	200.8	0.40 J	ug/L	0.50	0.20	1	05/13/22 09:14	05/11/22	



General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE09
Lab Code: K2204844-001

Service Request: K2204844
Date Collected: 05/04/22 10:30
Date Received: 05/05/22 11:45
Basis: NA

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Ammonia as Nitrogen	350.1	0.030	mg/L	0.010	0.003	1	05/10/22 13:02	05/10/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE08
Lab Code: K2204844-002

Service Request: K2204844
Date Collected: 05/04/22 10:40
Date Received: 05/05/22 11:45
Basis: NA

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Ammonia as Nitrogen	350.1	0.021	mg/L	0.010	0.003	1	05/10/22 13:02	05/10/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE05
Lab Code: K2204844-003

Service Request: K2204844
Date Collected: 05/04/22 10:50
Date Received: 05/05/22 11:45
Basis: NA

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Ammonia as Nitrogen	350.1	0.015	mg/L	0.010	0.003	1	05/10/22 13:02	05/10/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE04
Lab Code: K2204844-004

Service Request: K2204844
Date Collected: 05/04/22 11:00
Date Received: 05/05/22 11:45
Basis: NA

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Ammonia as Nitrogen	350.1	0.017	mg/L	0.010	0.003	1	05/10/22 13:02	05/10/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE01
Lab Code: K2204844-005

Service Request: K2204844
Date Collected: 05/04/22 11:15
Date Received: 05/05/22 11:45
Basis: NA

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Ammonia as Nitrogen	350.1	0.020	mg/L	0.010	0.003	1	05/10/22 13:02	05/10/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE07
Lab Code: K2204844-006

Service Request: K2204844
Date Collected: 05/04/22 11:25
Date Received: 05/05/22 11:45
Basis: NA

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Ammonia as Nitrogen	350.1	0.018	mg/L	0.010	0.003	1	05/10/22 13:02	05/10/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE02
Lab Code: K2204844-007

Service Request: K2204844
Date Collected: 05/04/22 11:35
Date Received: 05/05/22 11:45
Basis: NA

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Ammonia as Nitrogen	350.1	0.018	mg/L	0.010	0.003	1	05/10/22 13:02	05/10/22	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: KE06
Lab Code: K2204844-008

Service Request: K2204844
Date Collected: 05/04/22 11:50
Date Received: 05/05/22 11:45
Basis: NA

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Ammonia as Nitrogen	350.1	0.029	mg/L	0.010	0.003	1	05/10/22 13:02	05/10/22	



QC Summary Forms

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com



Metals

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: Method Blank
Lab Code: KQ2207291-01

Service Request: K2204844
Date Collected: NA
Date Received: NA
Basis: NA

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Copper	200.8	ND U	ug/L	0.10	0.02	1	05/13/22 09:01	05/11/22	
Nickel	200.8	ND U	ug/L	0.20	0.03	1	05/13/22 09:01	05/11/22	
Zinc	200.8	ND U	ug/L	0.50	0.20	1	05/13/22 09:01	05/11/22	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water

Service Request: K2204844
Date Analyzed: 05/13/22

Duplicate Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ2207291-02

Duplicate Lab Control Sample
KQ2207291-03

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Copper	200.8	1.96	2.00	98	1.90	2.00	95	63-128	3	20
Nickel	200.8	2.01	2.00	101	2.04	2.00	102	88-112	1	20
Zinc	200.8	1.99	2.00	99	1.97	2.00	99	79-133	1	20



General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360) 577-7222 Fax (360) 425-9096
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water
Sample Name: Method Blank
Lab Code: K2204844-MB

Service Request: K2204844
Date Collected: NA
Date Received: NA
Basis: NA

General Chemistry Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Ammonia as Nitrogen	350.1	ND U	mg/L	0.010	0.003	1	05/10/22 13:02	05/10/22	

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water

Service Request: K2204844
Date Collected: 05/04/22
Date Received: 05/05/22
Date Analyzed: 05/10/22
Date Extracted: 05/10/22

Duplicate Matrix Spike Summary
Ammonia as Nitrogen

Sample Name: KE09
Lab Code: K2204844-001
Analysis Method: 350.1
Prep Method: Method

Units: mg/L
Basis: NA

Analyte Name	Sample Result	Result	Matrix Spike K2204844-001MS		Duplicate Matrix Spike K2204844-001DMS		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
Ammonia as Nitrogen	0.030	0.230	0.200	100	0.234	0.200	102	90-110	2	20

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

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

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

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water

Service Request: K2204844
Date Collected: 05/04/22
Date Received: 05/05/22
Date Analyzed: 05/10/22

Replicate Sample Summary
General Chemistry Parameters

Sample Name: KE09
Lab Code: K2204844-001

Units: mg/L
Basis: NA

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>MRL</u>	<u>MDL</u>	<u>Sample Result</u>	<u>Duplicate Sample K2204844-001DUP Result</u>	<u>Average</u>	<u>RPD</u>	<u>RPD Limit</u>
Ammonia as Nitrogen	350.1	0.010	0.003	0.030	0.034	0.0319	14	20

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

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

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

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Aquatic Restoration and Research Institute (ARRI)
Project: Ambient WQ- Ketchikan
Sample Matrix: Ocean Water

Service Request: K2204844
Date Analyzed: 05/10/22
Date Extracted: 05/10/22

Lab Control Sample Summary
Ammonia as Nitrogen

Analysis Method: 350.1
Prep Method: Method

Units: mg/L
Basis: NA
Analysis Lot: 763618

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2204844-LCS	0.299	0.300	100	90-110



ARRI
Attn: Jeff Davis
P.O. Box 923
Talkeetna, AK 99646

ARRI
Sampler: Wilson, S.N.
Date: 5/4/2022
Time: 0922-1135
Matrix: marine water
Type: Grab

LAB RECEIVING

Date: 5/4/2022
Time: 1230

LAB REPORTING

Date: 5/9/2022
Time: 1030

ANALYST: JML

Lab #	Site	Analysis	Date	Time	Results	Units	MRL	Method
31721	KE 01	fecal coliform	5/4/2022	1510	21	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31722	KE 02	fecal coliform	5/4/2022	1510	4	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31723	KE 04	fecal coliform	5/4/2022	1510	7	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31724	KE 05	fecal coliform	5/4/2022	1510	5	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31725	KE 06	fecal coliform	5/4/2022	1510	11	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31726	KE 07	fecal coliform	5/4/2022	1510	2	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31727	KE 08	fecal coliform	5/4/2022	1510	9	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31728	KE 09	fecal coliform	5/4/2022	1510	5	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31729	WA 01	fecal coliform	5/4/2022	1510	2	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31730	WA 03	fecal coliform	5/4/2022	1510	18	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31731	WA 04	fecal coliform	5/4/2022	1510	13	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31732	WA 05	fecal coliform	5/4/2022	1510	22	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503
31733	WA 06	fecal coliform	5/4/2022	1510	6	cfu / 100 ml	1.0	9222D
		enterococci	5/4/2022	1330	<10	MPN / 100 ml	10.0	D6503



ARRI
Attn: Jeff Davis
P.O. Box 923
Talkeetna, AK 99646

ARRI

Sampler: not Isited
Date: 5/5/2022
Time: 0920-1211
Matrix: marine water
Type: Grab

LAB RECEIVING

Date: 5/5/2022
Time: 1248

LAB REPORTING

Date: 5/9/2022
Time: 1120

ANALYST: JML

Lab #	Site	Analysis	Date	Time	Results	Units	MRL	Method
31742	WA 01	fecal coliform	5/5/2022	1535	1	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31743	WA 06	fecal coliform	5/5/2022	1535	3	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31744	WA 05	fecal coliform	5/5/2022	1535	12	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31745	WA 04	fecal coliform	5/5/2022	1535	14	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31746	WA 03	fecal coliform	5/5/2022	1535	7	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31747	KE 09	fecal coliform	5/5/2022	1535	9	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31748	KE 08	fecal coliform	5/5/2022	1535	2	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	10	MPN / 100 ml	10.0	D6503
31749	KE 05	fecal coliform	5/5/2022	1535	1	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31750	KE 04	fecal coliform	5/5/2022	1535	16	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31751	KE 02	fecal coliform	5/5/2022	1535	<1	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31752	KE 01	fecal coliform	5/5/2022	1535	8	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31753	KE 07	fecal coliform	5/5/2022	1535	4	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31754	NI 02	fecal coliform	5/5/2022	1535	3	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	10.0	MPN / 100 ml	10.0	D6503
31755	NI 01	fecal coliform	5/5/2022	1535	3	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503
31756	KE 06	fecal coliform	5/5/2022	1535	<1	cfu / 100 ml	1.0	9222D
		enterococci	5/5/2022	1330	<10	MPN / 100 ml	10.0	D6503



R&M ENGINEERING-KETCHIKAN, INC.
ENGINEERS GEOLOGISTS SURVEYORS

7180 REVILLA ROAD, SUITE 300, KETCHIKAN, ALASKA 99901
PHONE: 907-225-7917 FAX: 907-225-3441 www.rmetchikan.com

ARRI
Attn: Jeff Davis
P.O. Box 923
Talkeetna, AK 99646

ARRI
Sampler: Nick Hashagen
Date: 5/10/2022
Time: 0915-1045
Matrix: marine water
Type: Grab

LAB RECEIVING

Date: 5/10/2022
Time: 1150

LAB REPORTING

Date: 5/16/2022
Time: 1120

ANALYST: JML

Lab #	Site	Analysis	Date	Time	Results	Units	MRL	Method
31773	WA 01	fecal coliform	5/10/2022	1340	4	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	10	MPN / 100 ml	10.0	D6503
31774	WA 06	fecal coliform	5/10/2022	1340	3	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	<10	MPN / 100 ml	10.0	D6503
31775	WA 05	fecal coliform	5/10/2022	1340	8	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	<10	MPN / 100 ml	10.0	D6503
31776	WA 04	fecal coliform	5/10/2022	1340	26	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	<10	MPN / 100 ml	10.0	D6503
31777	WA 03	fecal coliform	5/10/2022	1340	8	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	<10	MPN / 100 ml	10.0	D6503
31778	KE 09	fecal coliform	5/10/2022	1340	10	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	<10	MPN / 100 ml	10.0	D6503
31779	KE 08	fecal coliform	5/10/2022	1340	21	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	<10	MPN / 100 ml	10.0	D6503
31780	KE 05	fecal coliform	5/10/2022	1340	18	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	<10	MPN / 100 ml	10.0	D6503
31781	KE 04	fecal coliform	5/10/2022	1340	15	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	<10	MPN / 100 ml	10.0	D6503
31782	KE 02	fecal coliform	5/10/2022	1340	7	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	20	MPN / 100 ml	10.0	D6503
31783	KE 01	fecal coliform	5/10/2022	1340	44	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	<10	MPN / 100 ml	10.0	D6503
31784	KE 07	fecal coliform	5/10/2022	1340	2	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	<10	MPN / 100 ml	10.0	D6503
31785	KE 06	fecal coliform	5/10/2022	1340	11	cfu / 100 ml	1.0	9222D
		enterococci	5/10/2022	1505	<10	MPN / 100 ml	10.0	D6503



ARRI
Attn: Jeff Davis
P.O. Box 923
Talkeetna, AK 99646

ARRI
Sampler: Nick Hashalen
Date: 5/12/2022
Time: 0930-1125
Matrix: marine water
Type: Grab

LAB RECEIVING

Date: 5/12/2022
Time: 1200

LAB REPORTING

Date: 5/16/2022
Time: 1140

ANALYST: JML

Lab #	Site	Analysis	Date	Time	Results	Units	MRL	Method
31805	WA 01	fecal coliform	5/12/2022	1520	11	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31806	WA 06	fecal coliform	5/12/2022	1520	3	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31807	WA 05	fecal coliform	5/12/2022	1520	5	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31808	WA 04	fecal coliform	5/12/2022	1520	12	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31809	WA 03	fecal coliform	5/12/2022	1520	2	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31810	KE 09	fecal coliform	5/12/2022	1520	4	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31811	KE 08	fecal coliform	5/12/2022	1520	5	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31812	KE 05	fecal coliform	5/12/2022	1520	4	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31813	KE 04	fecal coliform	5/12/2022	1520	12	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31814	KE 02	fecal coliform	5/12/2022	1520	3	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31815	KE 01	fecal coliform	5/12/2022	1520	7	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31816	KE 07	fecal coliform	5/12/2022	1520	3	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503
31817	KE 06	fecal coliform	5/12/2022	1520	2	cfu / 100 ml	1.0	9222D
		enterococci	5/12/2022	1405	<10	MPN / 100 ml	10.0	D6503



ARRI
Attn: Jeff Davis
P.O. Box 923
Talkeetna, AK 99646

ARRI
Sampler: Nick Hashagen
Date: 5/17/2022
Time: 0910-1040
Matrix: marine water
Type: Grab

LAB RECEIVING

Date: 5/17/2022
Time: 1140

LAB REPORTING

Date: 5/20/2022
Time: 1000

ANALYST: JML

Lab #	Site	Analysis	Date	Time	Results	Units	MRL	Method
31826	WA 01	fecal coliform	5/17/2022	1320	9	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	10	MPN / 100 ml	10.0	D6503
31827	WA 06	fecal coliform	5/17/2022	1320	23	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	<10	MPN / 100 ml	10.0	D6503
31828	WA 05	fecal coliform	5/17/2022	1320	18	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	<10	MPN / 100 ml	10.0	D6503
31829	WA 04	fecal coliform	5/17/2022	1320	6	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	10	MPN / 100 ml	10.0	D6503
31830	WA 03	fecal coliform	5/17/2022	1320	6	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	<10	MPN / 100 ml	10.0	D6503
31831	KE 09	fecal coliform	5/17/2022	1320	12	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	30	MPN / 100 ml	10.0	D6503
31832	KE 08	fecal coliform	5/17/2022	1320	7	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	10	MPN / 100 ml	10.0	D6503
31833	KE 05	fecal coliform	5/17/2022	1320	15	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	<10	MPN / 100 ml	10.0	D6503
31834	KE 04	fecal coliform	5/17/2022	1320	21	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	20	MPN / 100 ml	10.0	D6503
31835	KE 02	fecal coliform	5/17/2022	1320	3	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	10	MPN / 100 ml	10.0	D6503
31836	KE 01	fecal coliform	5/17/2022	1320	38	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	10	MPN / 100 ml	10.0	D6503
31837	KE 07	fecal coliform	5/17/2022	1320	2	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	<10	MPN / 100 ml	10.0	D6503
31838	KE 06	fecal coliform	5/17/2022	1320	7	cfu / 100 ml	1.0	9222D
		enterococci	5/17/2022	1405	<10	MPN / 100 ml	10.0	D6503