



ARS Aleut Analytical, LLC
3710 Woodland Dr. Suite 900
Anchorage, AK 99517
Phone: 907-258-2155
Fax: 907-258-6634

8/17/2017

Kenai Watershed Forum
44129 Sterling Highway
Soldotna, AK 99669
Attn: Jeff Sires

Work Order #: A1707351
Date: 8/17/2017
Work ID: KWF Baseline Monitoring July 2017
Date Received: 7/25/2017
Proj #: KWF Baseline Monitoring July 2017

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A1707351-01	RM79.5 -Juneau Creek		

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

Mary Curry
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

ARS Aleut Analytical, LLC

Work Order: A1707351

Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

Standard Methods for the Examination of Water and Wastewater, 22nd Edition, 2012.

Methods for the Determination of Metals in Environmental Samples, EPA/600/R-94/111, May 1994.

SAMPLE RECEIPT:

One (1) sample was received on 7/25/2017 11:00:00 AM at a temperature of 7.8°C at AAA - Anchorage. The sample was received in good condition and in order per chain of custody.

REVIEW FOR COMPLIANCE WITH AAA QA PLAN

A summary of our review is shown below.

All analytical results contained in this report have been reviewed under AAA's internal quality assurance and quality control program. Any deviations in quality control parameters for specific analyses are noted in the following text. A complete quality assurance report, including laboratory control, matrix spike, and sample duplicate recoveries, is kept on file in our office and is available upon request.

All method specifications were met for the following tests, unless otherwise noted:

Test Method: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - nitrate+nitrite pres f - Aqueous

Test Method: SM4500-PE - Total Phos HACH 8190 - Aqueous

The following are subcontracted tests and have been represented to us as having met criteria, unless otherwise noted:

Test Method: 200.7 - Metals by ICP - 200.7 metals - Aqueous

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1707351

Project: KWF Baseline Monitoring July 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring July 2017

Report Section: Client Sample Report

Client Sample Name: **RM79.5 -Juneau Creek**

Matrix: Aqueous

Collection Date: 7/25/2017 9:22:00AM

The following test was conducted by: (ARS) American Radiation Service

Lab Sample Number: A1707351-01B

Prep Date: 08-02-2017

Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals

Prep Method ID:

Prep Batch Number: R1708161449-24

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 8/2/2017 3:54:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: CBAILEY

Prep Extract Vol: ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>run #:</u>
Calcium	7440-70-2	15,100		ug/L	300	100	1
Iron	7439-89-6	35.20	J	ug/L	60	20	
Magnesium	7439-96-4	1,180		ug/L	60	20	

The following test was conducted by: ARS Aleut Analytical,LLC

Lab Sample Number: A1707351-01D

Prep Date: 08-10-2017 12:08

Analytical Method ID: SM4500-PE - Total Phos HACH 8190

Prep Method ID: 4500-PE

Prep Batch Number: F170810003

Report Basis: As Received

Sample prep wt./vol: 5.00 ml

pH on receipt: < 2.00

Analysis Date: 8/10/2017 12:55:00PM

Instrument: Spectrophoto

File Name:

Dilution Factor: 1

Analyst Initials: SC

Prep Extract Vol: 5.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>run #:</u>
Phosphorous, Total		ND		mg/L	0.10	0.025	1

The following test was conducted by: ARS Aleut Analytical,LLC

Lab Sample Number: A1707351-01A

Prep Date: 08-08-2017 12:08

Analytical Method ID: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - nFile Name:

Prep Method ID:

Prep Batch Number: F170810005

Report Basis: As Received

Sample prep wt./vol: 25.00 ml

pH on receipt: < 2.00

Analysis Date: 8/8/2017 12:20:00PM

Instrument: Spectrophoto

Dilution Factor: 1

Analyst Initials: SC

Prep Extract Vol: 25.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>run #:</u>
Nitrate-Nitrite as Nitrogen		ND		mg/L	0.10	0.015	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1707351

Project: KWF Baseline Monitoring July 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring July 2017

Report Section: Method Blank Report

Client Sample Name:

Matrix:

Collection Date: 8/2/2017 3:21:00PM

The following test was conducted by: (ARS) American Radiation Service

Lab Sample Number: ARS1-B17-01617-03

Prep Date: 08-02-2017

Analytical Method ID: 200.7 - Metals by ICP - 200.7 metals

Prep Method ID:

Prep Batch Number: R1708161449-24

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 8/2/2017 3:21:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: CBAILEY

Prep Extract Vol: ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>run #:</u>
Calcium	7440-70-2	ND		ug/L	300	100	1
Iron	7439-89-6	ND		ug/L	60	20	
Magnesium	7439-96-4	ND		ug/L	60	20	

The following test was conducted by: ARS Aleut Analytical,LLC

Lab Sample Number: F170810003-MB

Prep Date: 08-10-2017 12:08

Analytical Method ID: SM4500-PE - Total Phos HACH 8190

Prep Method ID: 4500-PE

Prep Batch Number: F170810003

Report Basis: As Received

Sample prep wt./vol: 5.00 ml

pH on receipt: 0.00

Analysis Date: 8/10/2017 12:55:00PM

Instrument: Spectrophoto

File Name:

Dilution Factor: 1

Analyst Initials: SC

Prep Extract Vol: 5.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>run #:</u>
Phosphorous, Total		ND		mg/L	0.10	0.025	1

The following test was conducted by: ARS Aleut Analytical,LLC

Lab Sample Number: F170810005-MB

Prep Date: 08-08-2017 12:08

Analytical Method ID: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - nFile Name:

Prep Method ID:

Prep Batch Number: F170810005

Report Basis: As Received

Sample prep wt./vol: 25.00 ml

pH on receipt: 0.00

Analysis Date: 8/8/2017 12:20:00PM

Instrument: Spectrophoto

Dilution Factor: 1

Analyst Initials: SC

Prep Extract Vol: 25.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>run #:</u>
Nitrate-Nitrite as Nitrogen		ND		mg/L	0.10	0.015	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1707351

Project: KWF Baseline Monitoring July 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring July 2017

Tests Run at:

Workorder (SDG): A1707351

Project: KWF Baseline Monitoring July 2017

Project Number:

QUALITY CONTROL REPORT

Prep Batch: F170810005

LCS REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - MB: F170810005-MB

Prep Date: 8/8/2017

MB Anal. Date: 8/8/2017 12:20:00PM

Units: mg/L

LCS Anal. Date: 8/8/2017 12:20:00PM

Matrix: Aqueous

<u>Analyte Name</u>	<u>SampResult</u>	<u>LCSRes.</u>	<u>SPLev</u>	<u>Recov.</u>	<u>Recov Lim</u>	<u>RPDLim</u>	<u>Flag</u>
Nitrate-Nitrite as Nitrogen	ND	0.351	0.328	107.0	90 - 110		

Prep Batch: F170810003

LCS REPORT

Analysis: SM4500-PE - Total Phos HACH 8190

MB: F170810003-MB

Prep Date: 8/10/2017

MB Anal. Date: 8/10/2017 12:55:00PM

Units: mg/L

LCS Anal. Date: 8/10/2017 12:55:00PM

Matrix: Aqueous

<u>Analyte Name</u>	<u>SampResult</u>	<u>LCSRes.</u>	<u>SPLev</u>	<u>Recov.</u>	<u>Recov Lim</u>	<u>RPDLim</u>	<u>Flag</u>
Phosphorous, Total	ND	0.293	0.320	91.7	90 - 110		

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1707351

Project: KWF Baseline Monitoring July 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring July 2017

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1707351

Project: KWF Baseline Monitoring July 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring July 2017

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 188,887 Lab Project Number: A1707351

Prep Date: 8/10/2017

Lab Method Blank Id: F170810003-MB

Prep Batch ID: F170810003

Method: SM4500-PE - Total Phos HACH 8190

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A1707350-01D	Batch QC		8/10/2017 12:55:00PM
A1707351-01D	RM79.5 -Juneau Creek		8/10/2017 12:55:00PM
F170810003-LCS	LCS		8/10/2017 12:55:00PM
A1707350-01D-DUP	DUP		8/10/2017 12:55:00PM
A1707350-01D-MS	MS		8/10/2017 12:55:00PM
A1707350-01D-MSD	MSD		8/10/2017 12:55:00PM

Prep Date: 8/8/2017

Lab Method Blank Id: F170810005-MB

Prep Batch ID: F170810005

Method: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method -

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A1707350-01A	Batch QC		8/8/2017 12:20:00PM
A1707351-01A	RM79.5 -Juneau Creek		8/8/2017 12:20:00PM
F170810005-LCS	LCS		8/8/2017 12:20:00PM
A1707350-01A-DUP	DUP		8/8/2017 12:20:00PM
A1707350-01A-MS	MS		8/8/2017 12:20:00PM

Prep Date: 8/2/2017

Lab Method Blank Id: ARS1-B17-01617-03

Prep Batch ID: R1708161449-24

Method: 200.7 - Metals by ICP - 200.7 metals

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A1707351-01B	RM79.5 -Juneau Creek		8/2/2017 3:54:00PM

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1707351

Project: KWF Baseline Monitoring July 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring July 2017

DATA FLAGS AND DEFINITIONS

The PQL is the Method Quantitation Limit as defined by USACE.

Reporting Limit: Limit below which results are shown as "ND". This may be the PQL, MDL, or a value between. See the report conventions below.

Result Field:

ND = Not Detected at or above the Reporting Limit

NA = Analyte not applicable (see Case Narrative for discussion)

Qualifier Fields:

LOW = Recovery is below Lower Control Limit

HIGH = Recovery, RPD, or other parameter is above Upper Control Limit

E = Reported concentration is above the instrument calibration upper range

Organic Analysis Flags:

B = Analyte was detected in the laboratory method blank

J = Analyte was detected above MDL or Reporting Limit but below the Quant Limit (PQL)

Inorganic Analysis Flags:

J = Analyte was detected above the Reporting Limit but below the Quant Limit (PQL)

W = Post digestion spike did not meet criteria

S = Reported value determined by the Method of Standard Additions (MSA)

Several ways of defining the limit of detection and quantitation are prevalent in the laboratory industry and may appear in Analytica reports. These include the following:

MRL = "minimum reporting level", from the EPA Safe Drinking Water program (SDW)

PQL = "practical quantitation limit", from SW-846

EQL = "estimated quantitation limit", from SW-846

LOQ = "limit of quantitation", from a number of authoritative sources

In Analytica's work, all of these terms have the same meaning, equivalent to the EPA definition of the MRL. This reporting level is supported by a satisfactory calibration data point which is at that level or lower, and also is supported by a method detection limit (MDL) determined by the procedure in 40CFR. The MDL is lower than the MRL and represents an estimate of the level where positive detections have a 99% probability of being real, but where quantitation accuracy is unknown.

The MRL as defined by Analytica is the lowest demonstrated point of known quantitation accuracy.

The MRL should not be confused with the MCL, which is the EPA-defined "maximum contaminant level" allowed for certain regulated targets under specific regulations, such as the National Primary Drinking Water Regulations. Normally, the MRL is set at a level which is much lower than the MCL in order to ensure that levels are well below those limits. Not all target analytes have MCL levels established.

Other Flags may be applied. See Case Narrative for Description

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1707351

Project: KWF Baseline Monitoring July 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring July 2017

REPORTING CONVENTIONS FOR THIS REPORT

A1707351

<u>TestPkgName</u>	<u>Basis</u>	<u># Sig Figs</u>	<u>Reporting Limit</u>
200.7 (Aqueous) - 200.7 metals	As Received	3	Report to MDL, J qual below PQL
4500-NO3E (Aqueous) - nitrate+nitrite pres f	As Received	3	Report to PQL
4500-PE/4500-PE (Aqueous) - Total Phos HACH 8190	As Received	2	Report to PQL

AAA Chain of Custody

Custody form MUST be signed

Please provide as much information as possible

Anchorage Laboratory
3710 Woodland Dr, Suite 900
Anchorage, AK 99517
907.258.2155 907.258.6634
fax

Fairbanks Laboratory
475 Hall Street
Fairbanks, AK 99701
907.456.3116
907.456.3125 fax

ARS Corporate Office
609 North River Road
Port Allen, LA 70767
225.381.2991
225.381.2996 fax

formerly Analytica Group

Sampling Event ID:

[illegible]