



ARS Aleut Analytical, LLC
4307 Arctic Boulevard
Anchorage, AK 99503
Phone: 907-258-2155
Fax: 907-258-6634

8/18/2016

Kenai Watershed Forum
44129 Sterling Highway
Soldotna, AK 99669
Attn: Branden Bornemann

Work Order #: A1607439
Date: 8/18/2016
Work ID: KWF Baseline Monitoring 2016
Date Received: 7/26/2016
Proj #: 2016

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A1607439-01	Rm 79.5 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,

Jerry Baker
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

ARS Aleut Analytical, LLC

Work Order: A1607439

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

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

Standard Methods for the Examination of Water and Wastewater, 21st Edition, 2005.

SAMPLE RECEIPT:

One (1) sample was received 7/28/2016 12:25 PM at ARS Aleut Analytical - Anchorage. The sample was received in good condition and in order per chain of custody.

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN:

A summary of our review is shown below.

All analytical results contained in this report have been reviewed under Analytica's internal quality assurance and quality control program. Any deviations in quality control parameters for specific analyses are noted in the following text.

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

The following is a subcontracted test and has been represented to us as having met criteria:

Test Method: 200. 7 - Metals by ICP - 200.7 metals - Aqueous

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607439

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Client Sample Report

Client Sample Name: Rm 79.5 Juneau Creek

Matrix: Aqueous

Collection Date: 7/26/2016 10:30:00AM

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

Lab Sample Number: A1607439-01A

Analysis Date: 8/11/2016 4:35:00PM

Prep Date: 08-11-2016 16:08

Instrument: Thermospectr

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

File Name:

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: A160811011

Report Basis: As Received

Analyst Initials: LL

Sample prep wt./vol: 25.00 ml

Prep Extract Vol: 25.00 ml

pH on receipt: < 2.00

<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	0.028	1

Lab Sample Number: A1607439-01B

Analysis Date: 8/6/2016 9:37:00PM

Prep Date: 08-05-2016 14:08

Instrument:

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

File Name:

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: R1608181628-28

Report Basis: As Received

Analyst Initials: CMK

Sample prep wt./vol:

Prep Extract Vol: ml

pH on receipt: < 2.00

<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	14,000		ug/L	200	35	1
Iron	7439-89-6	ND		ug/L	100	22	
Magnesium	7439-96-4	1,100		ug/L	200	11	

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607439

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Aqueous

Collection Date: 8/11/2016 4:35:00PM

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

Lab Sample Number: A160811011-MB

Analysis Date: 8/11/2016 4:35:00PM

Prep Date: 08-11-2016 16:08

Instrument: Thermospectr

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

File Name:

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: A160811011

Report Basis: As Received

Analyst Initials: LL

Sample prep wt./vol: 25.00 ml

Prep Extract Vol: 25.00 ml

pH on receipt: 0.00

<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	0.028	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607439

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Method Blank Report

Client Sample Name: MB 280-336543/1-A

Matrix:

Collection Date: 8/5/2016 2:40:00PM

Lab Sample Number: MB 280-336543/1-A

Analysis Date: 8/6/2016 9:02:00PM

Prep Date: 08-05-2016 14:08

Instrument:

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

File Name:

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: R1608181628-28

Report Basis: As Received

Analyst Initials: CMK

Sample prep wt./vol:

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	200	35	1
Iron	7439-89-6	ND		ug/L	100	22	
Magnesium	7439-96-4	ND		ug/L	200	11	

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607439

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A1607439

Project: KWF Baseline Monitoring 2016

Project Number:

Prep Batch: A160811011

QUALITY CONTROL REPORT

LCS REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method -MB: A160811011-MB

Prep Date: 8/11/2016

MB Anal. Date: 8/11/2016 4:35:00PM

Units: mg/L

LCS Anal. Date: 8/11/2016 4:35:00PM

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	0.567	0.614	92.3	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): A1607439

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Tests Run at:

Workorder (SDG): A1607439

Project: KWF Baseline Monitoring 2016

Project Number:

QUALITY CONTROL REPORT

Prep Batch: R1608181628-28

LCS REPORT

Analysis: 200. 7 - Metals by ICP - 200.7 metals

MB: MB 280-336543/1-A

Prep Date: 8/5/2016

MB Anal. Date: 8/6/2016 9:02:00PM

Units: ug/L

LCS Anal. Date: 8/6/2016 9:05:00PM

Matrix:

<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>
Calcium	ND	50,600	50,000	101.2	90 - 111		
Iron	ND	1,020	1,000	102.0	89 - 115		
Magnesium	ND	51,500	50,000	103.0	90 - 113		

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): A1607439

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607439

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 181,165 Lab Project Number: A1607439

Prep Date: 8/5/2016

Lab Method Blank Id: MB 280-336543/1-A

Prep Batch ID: R1608101338-11

Method: 200.8 - Metals by ICP/MS - Total

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>
LCS 280-336543/2-A	LCS 280-336543/2-A		8/6/2016 9:05:00PM

Prep Date: 8/11/2016

Lab Method Blank Id: A160811011-MB

Prep Batch ID: A160811011

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>
A1607319-01H	Batch QC		8/11/2016 4:35:00PM
A1607439-01A	Rm 79.5 Juneau Creek		8/11/2016 4:35:00PM
A160811011-LCS	LCS		8/11/2016 4:35:00PM
A1607319-01H-DUP	DUP		8/11/2016 4:35:00PM
A1607319-01H-MS	MS		8/11/2016 4:35:00PM

Prep Date: 8/5/2016

Lab Method Blank Id: MB 280-336543/1-A

Prep Batch ID: R1608181628-28

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>
A1607439-01B	Rm 79.5 Juneau Creek		8/6/2016 9:37:00PM
LCS 280-336543/2-A	LCS 280-336543/2-A		8/6/2016 9:05:00PM

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607439

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

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): A1607439

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

REPORTING CONVENTIONS FOR THIS REPORT

A1607439

<u>TestPkgName</u>	<u>Basis</u>	<u># Sig Figs</u>	<u>Reporting Limit</u>
200.7 (Aqueous) - 200.7 metals	As Received	2	Report to PQL
4500-NO3E (Aqueous) - Nitrate+Nitrite pres	As Received	3	Report to PQL



ARS
ARS Alert Analytical

AAA Chain of Custody Form

4307 Arctic Blvd.
Anchorage, AK 99503
(907) 258-2155
(907) 258-6634 fax

ARS Corporate Office
2609 North River Road
Port Allen, LA 70767
(907) 456-3116
(907) 456-3125 fax

475 Hall Street
Fairbanks, AK 99701
(907) 456-3116
(907) 456-3125 fax

701 W. Parks Hwy. #203
Wasilla, AK 99654
(907) 373-5440
(907) 258-6634 fax

Chain of Custody No: _____

TEAM ID: KWF

Project Name: Kenai River Baseline Project - July 2016

Section To be Completed by AAA
Quote ID No: A16030019 LGN: A1607439

Turnaround Time for Results (TAT)

Standard _____ Expedited (< 10 days, prior authorization required)
(please specify due date below, add'l charge may apply)

Results Due Date: _____

Special Instructions/Comments: _____

P.O. or Contract _____

Lab Bottle Order No: _____

Requested Analysis/Method

Client Sample Identification / Location

RM 79.5 Juneau Creek

Date Sampled 7/26/16 Time Sampled 1030

Matrix (S-DW-WW-Other) Aq

No. of Containers 4

Nitrate SM4500-NO3E

Lot #: X Pres: H2SO4

200.8 Metals by ICP-Total TR

Lot #: X Pres: HNO3

200.8 Dissolved Metals

Lot #: X Pres: HNO3

Total Phos SM4500

Lot #: X Pres: H2SO4

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Field Preserved

Field Filtered

MS/MSD ?

Collected/Relinquished by:

Date

Time

Received by:

Date

Time

Relinquished by:

Date

Time

Received by:

Date

Time

Relinquished by:

Date

Time

Received by:

Date

Time

Name of Sampler: (printed)

Chain-of-Custody Seal?: _____
Initiated By: _____
Temp/Loc: 10.8
Thermo ID#: 61109
Shipping Via: Client

To be Completed by AAA

ANC

WAS

FBKS

Samples received within 2 hrs. of sampling SAG 7/27/16