



ARS Aleut Analytical, LLC
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5/15/2017

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

Work Order #: A1704320
Date: 5/15/2017
Work ID: KWF Baseline Monitoring APR 2017
Date Received: 4/25/2017
Proj #: KWF Baseline Monitoring APR 2017

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A1704320-01	RM 40 - Bing's Landing	A1704320-02	RM 43 - Upstream of Dow Isl
A1704320-03	RM 44 - Mouth of Kiley River		

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: A1704320

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:

Three (3) samples were received 4/25/2017 12:11 PM at ARS Aleut Analytical - Anchorage. The samples were 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.

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

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

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

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1704320

Project: KWF Baseline Monitoring APR 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring APR 2017

Report Section: Client Sample ReportClient Sample Name: **RM 40 - Bing's Landing**

Matrix: Aqueous

Collection Date: 4/25/2017 7:32:00AM

The following test was conducted by: Eurofins Eaton Analytical (EEA)

Lab Sample Number: A1704320-01B

Prep Date: 05-04-2017 16:05

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

Prep Method ID:

Prep Batch Number: R17051238-2579

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/5/2017 3:53:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: KW

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	9.9		mg/L	0.10	0.10	1
Iron	7439-89-6	0.41		mg/L	0.020	0.020	
Magnesium	7439-96-4	1.1		mg/L	0.10	0.10	

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

Lab Sample Number: A1704320-01C

Prep Date: 05-01-2017 15:05

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

Prep Method ID: 4500-PE

Prep Batch Number: F170502007

Report Basis: As Received

Sample prep wt./vol: 5.00 ml

pH on receipt: < 2.00

Analysis Date: 5/1/2017 3:40:00PM

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: A1704320-01A

Prep Date: 05-08-2017 14:05

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

Prep Method ID:

Prep Batch Number: F170508002

Report Basis: As Received

Sample prep wt./vol: 25.00 ml

pH on receipt: < 2.00

Analysis Date: 5/8/2017 2:00:00PM

Instrument: Spectrophoto

File Name:

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		0.166		mg/L	0.10	0.015	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1704320

Project: KWF Baseline Monitoring APR 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring APR 2017

Report Section: Client Sample ReportClient Sample Name: **RM 43 - Upstream of Dow Island**

Matrix: Aqueous

Collection Date: 4/25/2017 9:30:00AM

The following test was conducted by: Eurofins Eaton Analytical (EEA)

Lab Sample Number: A1704320-02B

Prep Date: 05-04-2017 16:05

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

Prep Method ID:

Prep Batch Number: R17051238-2579

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/5/2017 3:59:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: KW

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	9.9		mg/L	0.10	0.10	1
Iron	7439-89-6	0.71		mg/L	0.020	0.020	
Magnesium	7439-96-4	1.1		mg/L	0.10	0.10	

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

Lab Sample Number: A1704320-02C

Prep Date: 05-01-2017 15:05

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

Prep Method ID: 4500-PE

Prep Batch Number: F170502007

Report Basis: As Received

Sample prep wt./vol: 5.00 ml

pH on receipt: < 2.00

Analysis Date: 5/1/2017 3:40:00PM

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: A1704320-02A

Prep Date: 05-08-2017 14:05

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

Prep Method ID:

Prep Batch Number: F170508002

Report Basis: As Received

Sample prep wt./vol: 25.00 ml

pH on receipt: < 2.00

Analysis Date: 5/8/2017 2:00:00PM

Instrument: Spectrophoto

File Name:

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		0.177		mg/L	0.10	0.015	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1704320

Project: KWF Baseline Monitoring APR 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring APR 2017

Report Section: Client Sample ReportClient Sample Name: **RM 44 - Mouth of Kiley River**

Matrix: Aqueous

Collection Date: 4/25/2017 10:49:00AM

The following test was conducted by: Eurofins Eaton Analytical (EEA)

Lab Sample Number: A1704320-03B

Prep Date: 05-04-2017 16:05

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

Prep Method ID:

Prep Batch Number: R17051238-2579

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/5/2017 4:01:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: KW

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	7.6		mg/L	0.10	0.10	1
Iron	7439-89-6	0.90		mg/L	0.020	0.020	
Magnesium	7439-96-4	1.5		mg/L	0.10	0.10	

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

Lab Sample Number: A1704320-03C

Prep Date: 05-01-2017 15:05

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

Prep Method ID: 4500-PE

Prep Batch Number: F170502007

Report Basis: As Received

Sample prep wt./vol: 5.00 ml

pH on receipt: < 2.00

Analysis Date: 5/1/2017 3:40:00PM

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: A1704320-03A

Prep Date: 05-08-2017 14:05

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

Prep Method ID:

Prep Batch Number: F170508002

Report Basis: As Received

Sample prep wt./vol: 25.00 ml

pH on receipt: < 2.00

Analysis Date: 5/8/2017 2:00:00PM

Instrument: Spectrophoto

File Name:

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): A1704320

Project: KWF Baseline Monitoring APR 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring APR 2017

Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Aqueous

Collection Date: 5/1/2017 3:40:00PM

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

Lab Sample Number: F170502007-MB

Analysis Date: 5/1/2017 3:40:00PM

Prep Date: 05-01-2017 15:05

Instrument: Spectrophoto

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

File Name:

Prep Method ID: 4500-PE

Dilution Factor: 1

Prep Batch Number: F170502007

Report Basis: As Received

Analyst Initials: SC

Sample prep wt./vol: 5.00 ml

Prep Extract Vol: 5.00 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>
Phosphorous, Total		ND		mg/L	0.10	0.025	1

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

Lab Sample Number: F170508002-MB

Analysis Date: 5/8/2017 2:00:00PM

Prep Date: 05-08-2017 14:05

Instrument: Spectrophoto

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

File Name:

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: F170508002

Report Basis: As Received

Analyst Initials: SC

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	0.015	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1704320

Project: KWF Baseline Monitoring APR 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring APR 2017

Tests Run at:

Workorder (SDG): A1704320

Project: KWF Baseline Monitoring APR 2017

Project Number:

QUALITY CONTROL REPORT

Prep Batch: F170508002

LCS REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method -MB: F170508002-MB

Prep Date: 5/8/2017

MB Anal. Date: 5/8/2017 2:00:00PM

Units: mg/L

LCS Anal. Date: 5/8/2017 2:00:00PM

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	0.311	0.328	94.8	90 - 110		

Prep Batch: F170502007

LCS REPORT

Analysis: SM4500-PE - Total Phos HACH 8190

MB: F170502007-MB

Prep Date: 5/1/2017

MB Anal. Date: 5/1/2017 3:40:00PM

Units: mg/L

LCS Anal. Date: 5/1/2017 3:40:00PM

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	0.284	0.320	88.9	90 - 110		low

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): A1704320

Project: KWF Baseline Monitoring APR 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring APR 2017

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1704320

Project: KWF Baseline Monitoring APR 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring APR 2017

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 186,823 Lab Project Number: A1704320

Prep Date: 5/1/2017

Lab Method Blank Id: F170502007-MB

Prep Batch ID: F170502007

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>
A1704314-01C	Batch QC		5/1/2017 3:40:00PM
A1704320-01C	RM 40 - Bing's Landing		5/1/2017 3:40:00PM
A1704320-02C	RM 43 - Upstream of Dow Island		5/1/2017 3:40:00PM
A1704320-03C	RM 44 - Mouth of Kiley River		5/1/2017 3:40:00PM
F170502007-LCS	LCS		5/1/2017 3:40:00PM
A1704314-01C-DUP	DUP		5/1/2017 3:40:00PM
A1704314-01C-MS	MS		5/1/2017 3:40:00PM
A1704314-01C-MSD	MSD		5/1/2017 3:40:00PM

Prep Date: 5/8/2017

Lab Method Blank Id: F170508002-MB

Prep Batch ID: F170508002

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>
A1704313-01A	Batch QC		5/8/2017 2:00:00PM
A1704320-01A	RM 40 - Bing's Landing		5/8/2017 2:00:00PM
A1704320-02A	RM 43 - Upstream of Dow Island		5/8/2017 2:00:00PM
A1704320-03A	RM 44 - Mouth of Kiley River		5/8/2017 2:00:00PM
F170508002-LCS	LCS		5/8/2017 2:00:00PM
A1704313-01A-DUP	DUP		5/8/2017 2:00:00PM
A1704313-01A-MS	MS		5/8/2017 2:00:00PM

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1704320

Project: KWF Baseline Monitoring APR 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring APR 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): A1704320

Project: KWF Baseline Monitoring APR 2017

Client: Kenai Watershed Forum

Client Project Number: KWF Baseline Monitoring APR 2017

REPORTING CONVENTIONS FOR THIS REPORT

A1704320

<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 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

Mat-Su Service Center
701 East Parks Highway #203
Wasilla, AK 99654
907.373.5440

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

ARS Corporate Office
2609 North River Road
Port Allen, LA 70767
225.381.2991
225.381.2996 fax

Client/Company Name & Address:

Kenai Watershed Forum
44129 Sterling Hwy
Soldotna, AK 99669

Contact Person:

Phone No:

Fax No:

E-mail:

Special Instructions/Requirements:

TEAM ID: AK DNR and AK DEC

Project Name: KWF Baseline Monitoring April 2017

Turnaround Time (TAT) for Results

☐ Standard ☐ Expedited (prior authorization required for < 10 days)
please specify due date below; additional charges may apply

Requested Date for Results:

Results to STATE: ☐ Yes ☐ No ☐ Routine ☐ Non-Routine

Sampling Event ID:

Section To Be Completed by AAA

Quote Number:

LGN:

A1704320

Account #:

Invoice Contact Name & Address & Phone:

PO/Contract No.:

Requested Analysis/Method

Kit Preparation/Shipping Charge:

Client Sample Identification
(Name, Designation, Location, etc.)

1 RM 40 -Bing's Landing

2 RM 43 -Upstream of Dow Island

3 RM 44 -Mouth of Kiley River

4 RM 50 -Skilak Lake Outflow

5

6

7

8

9

10

Matrix
Aquatic
DW-Drinking Water
WW-Waste Water
Soil/Solid Other

Date Sampled

Time Sampled

No. of Containers

Nitrate -SM4500 NO3E
Preservative
Lot#

200.8 Metals by ICP
Preservative
Lot#

Total Phos SM4500
Preservative
Lot#

Preservative
Lot#

Preservative
Lot#

Preservative
Lot#

Field Preserved

Field Filtered

Use for MS/MSD

Comments

Relinquished by:

Date

Time

Received by:

Date

Time

Relinquished by:

Date

Time

Relinquished by:

Date

Time

Name of Sampler: (printed)

Section To Be Completed by AAA

Condition of Custody Seal:

Intact

Broken

Absent

Receiving location:

Temperature on arrival:

40 F °C

°C

Thermometer ID #

Measurement method:

Temp Blank Other

Shipping method/Tracking number: