



ARS Aleut Analytical, LLC
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5/16/2018

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

Work Order #: A1804325
Date: 5/16/2018
Work ID: Kenai Penn Borough
Date Received: 4/24/2018
Proj #: Kenai Penn Borough

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A1804325-01	RM 0 - No Name Creek	A1804325-02	RM 1.5 - Kenai City Dock
A1804325-03	RM 1.5 - Kenai City Dock Dup		

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: A1804325

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 4/24/2018 11:05 AM at ARS Aleut Analytical - Anchorage. Samples were received at a temperature of 8.5 deg C. in cooler 1 at ARS Aleut Analytical. The samples were received in good condition and in order per chain of custody.

Samples requiring metals analyses were subcontracted to Test America - Denver and arrived 4/27/2018 9:10 AM and at a temperature of 16.7°C.

Samples requiring inorganic analyses were subcontracted to Test America - Houston and arrived 4/27/2018 9:10 AM and at a temperature of 0.6°C. Please see sample results for individual analysis locations.

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 tests and have been represented to us as having met criteria:

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

Test Method: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals - Aqueous
MS/MSD and DUP OUTLIERS:

Zinc was recovered outside the acceptance limits in the batch MS/MSD associated with this analysis. However, the sample spiked is not associated with this project.

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

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

Client Sample Name: RM 0 - No Name Creek

Matrix: Aqueous

Collection Date: 4/24/2018 9:56:00AM

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

Lab Sample Number: A1804325-01A

Analysis Date: 5/1/2018 3:42:00PM

Prep Date: 05-01-2018 15:05

Instrument: Thermospectr

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

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: A180502005

Report Basis: As Received

Analyst Initials: AAS/CS/JR

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

The following test was conducted by: TestAmerica - Houston

Lab Sample Number: A1804325-01D

Analysis Date: 5/10/2018 2:25:00PM

Prep Date: 05-10-2018 05:05

Instrument:

Analytical Method ID: SM4500-PE - Phos

File Name:

Prep Method ID: 4500-PB

Dilution Factor: 1

Prep Batch Number: R1805150602-4

Report Basis: As Received

Analyst Initials: SC1

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>
Phosphorous, Total		0.075		mg/L	0.050	0.021	1

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: A1804325-01C

Analysis Date: 5/2/2018 5:34:00PM

Prep Date: 05-01-2018 07:05

Instrument:

Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals

File Name:

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: R1805140626-11

Report Basis: As Received

Analyst Initials: LMT

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>
Arsenic	7440-38-2	ND		ug/L	5.0	0.50	1
Cadmium	7440-43-9	ND		ug/L	1.0	0.040	
Chromium	7440-47-3	ND		ug/L	3.0	0.88	
Copper	7440-50-8	ND		ug/L	2.0	0.20	
Lead	7439-92-1	ND		ug/L	1.0	0.10	

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

Client Sample Name: **RM 0 - No Name Creek**

Matrix: Aqueous Collection Date: 4/24/2018 9:56:00AM

Lab Sample Number: A1804325-01C Analysis Date: 5/7/2018 3:54:00PM
Prep Date: 05-01-2018 07:05 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1805140626-11
Report Basis: As Received Analyst Initials: LMT
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>
Zinc	7440-66-6	97.0		ug/L	10	2.0	2

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: A1804325-01B Analysis Date: 5/4/2018 12:08:00AM
Prep Date: 05-03-2018 08:05 Instrument:
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1805140626-10
Report Basis: As Received Analyst Initials: SJS
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	7,600		ug/L	200	35	1
Magnesium	7439-96-4	2,800		ug/L	200	11	

Lab Sample Number: A1804325-01B Analysis Date: 5/7/2018 6:43:00PM
Prep Date: 05-03-2018 08:05 Instrument:
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1805140626-10
Report Basis: As Received Analyst Initials: SJS
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>
Iron	7439-89-6	4,500		ug/L	100	22	2

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

Client Sample Name: **RM 1.5 - Kenai City Dock**

Matrix: Aqueous

Collection Date: 4/24/2018 8:42:00AM

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

Lab Sample Number: A1804325-02A

Analysis Date: 5/1/2018 3:42:00PM

Prep Date: 05-01-2018 15:05

Instrument: Thermospectr

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

File Name:

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: A180502008

Report Basis: As Received

Analyst Initials: AAS/CS/JR

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

The following test was conducted by: TestAmerica - Houston

Lab Sample Number: A1804325-02D

Analysis Date: 5/10/2018 2:25:00PM

Prep Date: 05-10-2018 05:05

Instrument:

Analytical Method ID: SM4500-PE - Phos

File Name:

Prep Method ID: 4500-PB

Dilution Factor: 1

Prep Batch Number: R1805150602-4

Report Basis: As Received

Analyst Initials: SC1

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>
Phosphorous, Total		0.094		mg/L	0.050	0.021	1

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: A1804325-02C

Analysis Date: 5/2/2018 5:37:00PM

Prep Date: 05-01-2018 07:05

Instrument:

Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals

File Name:

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: R1805140626-11

Report Basis: As Received

Analyst Initials: LMT

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>
Arsenic	7440-38-2	ND		ug/L	5.0	0.50	1
Cadmium	7440-43-9	ND		ug/L	1.0	0.040	
Chromium	7440-47-3	ND		ug/L	3.0	0.88	
Copper	7440-50-8	ND		ug/L	2.0	0.20	
Lead	7439-92-1	ND		ug/L	1.0	0.10	

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

Client Sample Name: **RM 1.5 - Kenai City Dock**

Matrix: Aqueous Collection Date: 4/24/2018 8:42:00AM

Lab Sample Number: A1804325-02C Analysis Date: 5/7/2018 3:57:00PM
Prep Date: 05-01-2018 07:05 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1805140626-11
Report Basis: As Received Analyst Initials: LMT
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>
Zinc	7440-66-6	51.0		ug/L	10	2.0	2

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: A1804325-02B Analysis Date: 5/4/2018 12:11:00AM
Prep Date: 05-03-2018 08:05 Instrument:
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1805140626-10
Report Basis: As Received Analyst Initials: SJS
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	130,000		ug/L	200	35	1
Magnesium	7439-96-4	440,000		ug/L	200	11	

Lab Sample Number: A1804325-02B Analysis Date: 5/7/2018 6:46:00PM
Prep Date: 05-03-2018 08:05 Instrument:
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1805140626-10
Report Basis: As Received Analyst Initials: SJS
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>
Iron	7439-89-6	2,000		ug/L	100	22	2

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

Client Sample Name: **RM 1.5 - Kenai City Dock Duplicate**

Matrix: Aqueous

Collection Date: 4/24/2018 8:55:00AM

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

Lab Sample Number: A1804325-03A

Analysis Date: 5/1/2018 3:42:00PM

Prep Date: 05-01-2018 15:05

Instrument: Thermospectr

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

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: A180502005

Report Basis: As Received

Analyst Initials: AAS/CS/JR

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		0.132		mg/L	0.10	0.028	1

The following test was conducted by: TestAmerica - Houston

Lab Sample Number: A1804325-03D

Analysis Date: 5/10/2018 2:25:00PM

Prep Date: 05-10-2018 05:05

Instrument:

Analytical Method ID: SM4500-PE - Phos

File Name:

Prep Method ID: 4500-PB

Dilution Factor: 1

Prep Batch Number: R1805150602-4

Report Basis: As Received

Analyst Initials: SC1

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>
Phosphorous, Total		0.18		mg/L	0.050	0.021	1

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: A1804325-03C

Analysis Date: 5/2/2018 5:41:00PM

Prep Date: 05-01-2018 07:05

Instrument:

Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals

File Name:

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: R1805140626-11

Report Basis: As Received

Analyst Initials: LMT

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>
Arsenic	7440-38-2	ND		ug/L	5.0	0.50	1
Cadmium	7440-43-9	ND		ug/L	1.0	0.040	
Chromium	7440-47-3	ND		ug/L	3.0	0.88	
Copper	7440-50-8	ND		ug/L	2.0	0.20	
Lead	7439-92-1	ND		ug/L	1.0	0.10	

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

Client Sample Name: **RM 1.5 - Kenai City Dock Duplicate**

Matrix: Aqueous Collection Date: 4/24/2018 8:55:00AM

Lab Sample Number: A1804325-03C Analysis Date: 5/7/2018 4:01:00PM
Prep Date: 05-01-2018 07:05 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1805140626-11
Report Basis: As Received Analyst Initials: LMT
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>
Zinc	7440-66-6	76.0		ug/L	10	2.0	2

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: A1804325-03B Analysis Date: 5/4/2018 12:13:00AM
Prep Date: 05-03-2018 08:05 Instrument:
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1805140626-10
Report Basis: As Received Analyst Initials: SJS
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	140,000		ug/L	200	35	1
Magnesium	7439-96-4	470,000		ug/L	200	11	

Lab Sample Number: A1804325-03B Analysis Date: 5/7/2018 6:48:00PM
Prep Date: 05-03-2018 08:05 Instrument:
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1805140626-10
Report Basis: As Received Analyst Initials: SJS
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>
Iron	7439-89-6	2,900		ug/L	100	22	2

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Aqueous

Collection Date: 5/1/2018 3:42:00PM

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

Lab Sample Number: A180502005-MB

Analysis Date: 5/1/2018 3:42:00PM

Prep Date: 05-01-2018 15:05

Instrument: Thermospectr

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

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: A180502005

Report Basis: As Received

Analyst Initials: AAS/CS/JR

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

Lab Sample Number: A180502008-MB

Analysis Date: 5/1/2018 3:42:00PM

Prep Date: 05-01-2018 15:05

Instrument: Thermospectr

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

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: A180502008

Report Basis: As Received

Analyst Initials: AAS/CS/JR

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): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Report Section: Method Blank Report

Client Sample Name: MB 600-238187/3-A

Matrix:

Collection Date: 5/10/2018 5:12:00AM

The following test was conducted by: TestAmerica - Houston

Lab Sample Number: MB 600-238187/3-A

Analysis Date: 5/10/2018 2:25:00PM

Prep Date: 05-10-2018 05:05

Instrument:

Analytical Method ID: SM4500-PE - Phos

File Name:

Prep Method ID: 4500-PB

Dilution Factor: 1

Prep Batch Number: R1805150602-4

Report Basis: As Received

Analyst Initials: SC1

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>
Phosphorous, Total		ND		mg/L	0.050	0.021	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Report Section: Method Blank Report

Client Sample Name: MB 280-413331/1-A

Matrix:

Collection Date: 5/3/2018 8:41:00AM

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: MB 280-413331/1-A

Analysis Date: 5/3/2018 11:28:00PM

Prep Date: 05-03-2018 08:05

Instrument:

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

File Name:

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: R1805140626-10

Report Basis: As Received

Analyst Initials: SJS

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
Magnesium	7439-96-4	ND		ug/L	200	11	

Lab Sample Number: MB 280-413331/1-A

Analysis Date: 5/4/2018 2:43:00PM

Prep Date: 05-03-2018 08:05

Instrument:

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

File Name:

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: R1805140626-10

Report Basis: As Received

Analyst Initials: SJS

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>
Iron	7439-89-6	ND		ug/L	100	22	2

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Project Number:

Prep Batch: A180502008

QUALITY CONTROL REPORT

LCS REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method -MB: A180502008-MB

Prep Date: 5/1/2018

MB Anal. Date: 5/1/2018 3:42:00PM

Units: mg/L

LCS Anal. Date: 5/1/2018 3:42:00PM

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	0.702	0.690	101.7	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): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Tests Run at: TestAmerica - Denver

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Project Number:

Prep Batch: R1805140626-10

QUALITY CONTROL REPORT

LCS REPORT

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

MB: MB 280-413331/1-A

Prep Date: 5/3/2018

MB Anal. Date: 5/3/2018 11:28:00PM

Units: ug/L

LCS Anal. Date: 5/3/2018 11:31:00PM

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	46,600	50,000	93.2	90 - 111		
Iron	ND	1,000	1,000	100.0	89 - 115		
Magnesium	ND	50,600	50,000	101.2	90 - 113		

Prep Batch: R1805150602-4

LCS REPORT

Analysis: SM4500-PE - Phos

MB: MB 600-238187/3-A

Prep Date: 5/10/2018

MB Anal. Date: 5/10/2018 2:25:00PM

Units: mg/L

LCS Anal. Date: 5/10/2018 2:25:00PM

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>
Phosphorous, Total	ND	0.477	0.500	95.4	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): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 194,276 Lab Project Number: A1804325

Prep Date: 5/1/2018

Lab Method Blank Id: A180502005-MB

Prep Batch ID: A180502005

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>
A1804322-01B	Batch QC		5/1/2018 3:42:00PM
A1804325-01A	RM 0 - No Name Creek		5/1/2018 3:42:00PM
A1804325-03A	RM 1.5 - Kenai City Dock Duplicate		5/1/2018 3:42:00PM
A180502005-LCS	LCS		5/1/2018 3:42:00PM
A1804322-01B-DUP	DUP		5/1/2018 3:42:00PM
A1804322-01B-MS	MS		5/1/2018 3:42:00PM

Prep Date: 5/1/2018

Lab Method Blank Id: A180502008-MB

Prep Batch ID: A180502008

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>
A1804319-01B	Batch QC		5/1/2018 3:42:00PM
A1804325-02A	RM 1.5 - Kenai City Dock		5/1/2018 3:42:00PM
A180502008-LCS	LCS		5/1/2018 3:42:00PM
A1804319-01B-DUP	DUP		5/1/2018 3:42:00PM
A1804319-01B-MS	MS		5/1/2018 3:42:00PM

Prep Date: 5/3/2018

Lab Method Blank Id: MB 280-413331/1-A

Prep Batch ID: R1805140626-10

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>
A1804325-01B	RM 0 - No Name Creek		5/4/2018 12:08:00AM
A1804325-01B	RM 0 - No Name Creek		5/7/2018 6:43:00PM
A1804325-02B	RM 1.5 - Kenai City Dock		5/4/2018 12:11:00AM
A1804325-02B	RM 1.5 - Kenai City Dock		5/7/2018 6:46:00PM
A1804325-03B	RM 1.5 - Kenai City Dock Duplicate		5/4/2018 12:13:00AM
A1804325-03B	RM 1.5 - Kenai City Dock Duplicate		5/7/2018 6:48:00PM
LCS 280-413331/2-A	LCS 280-413331/2-A		5/3/2018 11:31:00PM
LCS 280-413331/2-A	LCS 280-413331/2-A		5/4/2018 2:46:00PM

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 194,276 **Lab Project Number:** A1804325

Prep Date: 5/10/2018

Lab Method Blank Id: MB 600-238187/3-A

Prep Batch ID: R1805150602-4

Method: SM4500-PE - Phos

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>
A1804325-01D	RM 0 - No Name Creek		5/10/2018 2:25:00PM
A1804325-02D	RM 1.5 - Kenai City Dock		5/10/2018 2:25:00PM
A1804325-03D	RM 1.5 - Kenai City Dock Duplicate		5/10/2018 2:25:00PM
LCS 600-238187/4-A	LCS 600-238187/4-A		5/10/2018 2:25:00PM

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

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): A1804325

Project: Kenai Penn Borough

Client: Kenai Watershed Forum

Client Project Number: Kenai Penn Borough

REPORTING CONVENTIONS FOR THIS REPORT

A1804325

<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
200.8 (Aqueous) - Dissolved 200.8 Metals	As Received	2	Report to PQL
4500-NO3E (Aqueous) - Nitrate+Nitrite pres	As Received	3	Report to PQL
4500-PE/4500-PB (Aqueous) - Phos	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 #206
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
225.381.2995 fax

Sampling Event ID:

Client/Company Name & Address:
Kenai Watershed Forum
44129 Sterling HWY
Soldotna, AK 99669

Team ID: Kenai Peninsula Borough
Project Name: KWF Baseline Monitoring April 2018

Quote Number: LGN: A1804 825
Account #: Invoice Contact Name & Address & Phone:
Check Credit

Contact Person:

Phone No:

Fax No:

E-mail:

Special Instructions/Requirements:

* Received on frozen ice within 24 hrs of Sampling 4/24/18 MRE

Kit Preparation/Shipping Charge:

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

1 RM 0 -No Name Creek

2 RM 1.5 -Kenai City Dock

3 RM 1.5 -Kenai City Dock Duplicate

4

5

6

7

8

9

10

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

Relinquished by:

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Date Time Received by:

Date Time Received by:

Date Time Received by:

Date Time Received by:

Date Time Received by:

Date Time Received by:

Date Time Received by:

Date Time Received by:

Date Time Received by:

Date Time Received by:

Date Sampled Time Sampled

Matrix Aqueous DW-Drinking Water WW-Waste Water Sol/Solid Other

No. of Containers

Nitrate -SM4500 NO3E Preservative Lot#

200.7 Metals Preservative Lot#

200.8 Dissolved Metals Preservative Lot#

Total Phos SM4500 Preservative Lot#

Preservative Lot#

Preservative Lot#

Field Preserved

Field Filtered

Use for MS/MSD

Comments

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

PO/Contract No.:

Requested Analysis/Method

Section To Be Completed by AAA

Condition of Custody Seal:

Receiving location:

Intact

Broken

Temperature on arrival:

8.5

°C

Thermometer ID # 458 Measurement method: Temp Blank Other

Shipping method/Tracking number: Aes