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 #: A1607444
Date: 8/18/2016
Work ID: KWF Baseline Monitoring 2016
Date Received: 7/27/2016
Proj #: 2016

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A1607444-01	RM 19 Slikok Creek	A1607444-02	RM 21 Soldotna Bridge
A1607444-03	RM 21 Soldotna Bridge- Dupl	A1607444-04	RM 22 - Soldotna Creek
A1607444-05	RM 23 - Swiftwater 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: A1607444

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:

Five (5) samples were received 7/28/2016 12:25 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.

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
Test Method: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals - Aqueous

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Report Section: Client Sample Report

Client Sample Name: **RM 19 Slikok Creek**

Matrix: Aqueous Collection Date: 7/26/2016 8:55:00AM

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

Lab Sample Number: A1607444-01A
Prep Date: 08-15-2016 18:08
Analytical Method ID: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - N
Prep Method ID:
Prep Batch Number: A160816001
Report Basis: As Received
Sample prep wt./vol: 25.00 ml
pH on receipt: < 2.00

Analysis Date: 8/15/2016 6:00:00PM
Instrument: Thermospectr
File Name:
Dilution Factor: 1
Analyst Initials: LL
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Nitrate-Nitrite as Nitrogen		**0.139**		mg/L	0.10	0.028	1

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: A1607444-01C
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals
Prep Method ID:
Prep Batch Number: R1608111403-24
Report Basis: As Received
Sample prep wt./vol:
pH on receipt: < 2.00

Analysis Date: 8/5/2016 3:55:00AM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: JM
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
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	
Zinc	7440-66-6	**83.0**		ug/L	10	2.0	

Lab Sample Number: A1607444-01B
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals
Prep Method ID:
Prep Batch Number: R1608181653-29
Report Basis: As Received
Sample prep wt./vol:
pH on receipt: < 2.00

Analysis Date: 8/6/2016 9:05:00PM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: CRR
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Calcium	7440-70-2	**14,000**		ug/L	200	35	1
Magnesium	7439-96-4	**2,400**		ug/L	200	11	

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Report Section: Client Sample Report

Client Sample Name: **RM 19 Slikok Creek**

Matrix: Aqueous

Collection Date: 7/26/2016 8:55:00AM

Lab Sample Number: A1607444-01B

Prep Date: 08-04-2016 14:08

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

Prep Method ID:

Prep Batch Number: R1608181653-29

Report Basis: As Received

Sample prep wt./vol:

pH on receipt: < 2.00

Analysis Date: 8/8/2016 8:18:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: CRR

Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Iron	7439-89-6	**910**		ug/L	100	22	2

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Report Section: Client Sample Report

Client Sample Name: **RM 21 Soldotna Bridge**

Matrix: Aqueous Collection Date: 7/26/2016 9:45:00AM

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

Lab Sample Number: A1607444-02A
Prep Date: 08-15-2016 18:08
Analytical Method ID: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - N
Prep Method ID:
Prep Batch Number: A160816001
Report Basis: As Received
Sample prep wt./vol: 25.00 ml
pH on receipt: < 2.00

Analysis Date: 8/15/2016 6:00:00PM
Instrument: Thermospectr
File Name:
Dilution Factor: 1
Analyst Initials: LL
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Nitrate-Nitrite as Nitrogen		**0.120**		mg/L	0.10	0.028	1

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: A1607444-02C
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals
Prep Method ID:
Prep Batch Number: R1608111403-24
Report Basis: As Received
Sample prep wt./vol:
pH on receipt: < 2.00

Analysis Date: 8/5/2016 3:58:00AM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: JM
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
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	**2.8**		ug/L	2.0	0.20	
Lead	7439-92-1	**ND**		ug/L	1.0	0.10	
Zinc	7440-66-6	**46.0**		ug/L	10	2.0	

Lab Sample Number: A1607444-02B
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals
Prep Method ID:
Prep Batch Number: R1608181653-29
Report Basis: As Received
Sample prep wt./vol:
pH on receipt: < 2.00

Analysis Date: 8/6/2016 9:07:00PM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: CRR
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Calcium	7440-70-2	**11,000**		ug/L	200	35	1
Magnesium	7439-96-4	**1,100**		ug/L	200	11	

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Report Section: Client Sample Report

Client Sample Name: **RM 21 Soldotna Bridge**

Matrix: Aqueous

Collection Date: 7/26/2016 9:45:00AM

Lab Sample Number: A1607444-02B

Prep Date: 08-04-2016 14:08

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

Prep Method ID:

Prep Batch Number: R1608181653-29

Report Basis: As Received

Sample prep wt./vol:

pH on receipt: < 2.00

Analysis Date: 8/8/2016 8:20:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: CRR

Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Iron	7439-89-6	**510**		ug/L	100	22	2

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Report Section: Client Sample Report

Client Sample Name: **RM 21 Soldotna Bridge- Duplicate**

Matrix: Aqueous Collection Date: 7/26/2016 9:45:00AM

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

Lab Sample Number: A1607444-03A
Prep Date: 08-15-2016 18:08
Analytical Method ID: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - N
Prep Method ID:
Prep Batch Number: A160816001
Report Basis: As Received
Sample prep wt./vol: 25.00 ml
pH on receipt: < 2.00

Analysis Date: 8/15/2016 6:00:00PM
Instrument: Thermospectr
File Name:
Dilution Factor: 1
Analyst Initials: LL
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Nitrate-Nitrite as Nitrogen		**0.122**		mg/L	0.10	0.028	1

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: A1607444-03C
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals
Prep Method ID:
Prep Batch Number: R1608111403-24
Report Basis: As Received
Sample prep wt./vol:
pH on receipt: < 2.00

Analysis Date: 8/5/2016 4:10:00AM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: JM
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
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	
Zinc	7440-66-6	**55.0**		ug/L	10	2.0	

Lab Sample Number: A1607444-03B
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals
Prep Method ID:
Prep Batch Number: R1608181653-29
Report Basis: As Received
Sample prep wt./vol:
pH on receipt: < 2.00

Analysis Date: 8/6/2016 9:10:00PM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: CRR
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Calcium	7440-70-2	**11,000**		ug/L	200	35	1
Magnesium	7439-96-4	**1,100**		ug/L	200	11	

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Report Section: Client Sample Report

Client Sample Name: **RM 21 Soldotna Bridge- Duplicate**

Matrix: Aqueous

Collection Date: 7/26/2016 9:45:00AM

Lab Sample Number: A1607444-03B

Prep Date: 08-04-2016 14:08

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

Prep Method ID:

Prep Batch Number: R1608181653-29

Report Basis: As Received

Sample prep wt./vol:

pH on receipt: < 2.00

Analysis Date: 8/8/2016 8:23:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: CRR

Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Iron	7439-89-6	**630**		ug/L	100	22	2

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Report Section: Client Sample Report

Client Sample Name: **RM 22 - Soldotna Creek**

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

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

Lab Sample Number: A1607444-04A
Prep Date: 08-15-2016 18:08
Analytical Method ID: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - N
Prep Method ID:
Prep Batch Number: A160816001
Report Basis: As Received
Sample prep wt./vol: 25.00 ml
pH on receipt: < 2.00

Analysis Date: 8/15/2016 6:00:00PM
Instrument: Thermospectr
File Name:
Dilution Factor: 1
Analyst Initials: LL
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Nitrate-Nitrite as Nitrogen		**ND**		mg/L	0.10	0.028	1

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: A1607444-04C
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals
Prep Method ID:
Prep Batch Number: R1608111403-24
Report Basis: As Received
Sample prep wt./vol:
pH on receipt: < 2.00

Analysis Date: 8/5/2016 4:13:00AM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: JM
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Arsenic	7440-38-2	**7.5**		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	
Zinc	7440-66-6	**59.0**		ug/L	10	2.0	

Lab Sample Number: A1607444-04B
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals
Prep Method ID:
Prep Batch Number: R1608181653-29
Report Basis: As Received
Sample prep wt./vol:
pH on receipt: < 2.00

Analysis Date: 8/6/2016 9:12:00PM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: CRR
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Calcium	7440-70-2	**21,000**		ug/L	200	35	1
Magnesium	7439-96-4	**5,800**		ug/L	200	11	

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Report Section: Client Sample Report

Client Sample Name: **RM 22 - Soldotna Creek**

Matrix: Aqueous

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

Lab Sample Number: A1607444-04B

Prep Date: 08-04-2016 14:08

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

Prep Method ID:

Prep Batch Number: R1608181653-29

Report Basis: As Received

Sample prep wt./vol:

pH on receipt: < 2.00

Analysis Date: 8/8/2016 8:26:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: CRR

Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Iron	7439-89-6	**480**		ug/L	100	22	2

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Report Section: Client Sample Report

Client Sample Name: **RM 23 - Swiftwater Creek**

Matrix: Aqueous Collection Date: 7/26/2016 11:10:00AM

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

Lab Sample Number: A1607444-05A
Prep Date: 08-15-2016 18:08
Analytical Method ID: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - N
Prep Method ID:
Prep Batch Number: A160816001
Report Basis: As Received
Sample prep wt./vol: 25.00 ml
pH on receipt: < 2.00

Analysis Date: 8/15/2016 6:00:00PM
Instrument: Thermospectr
File Name:
Dilution Factor: 1
Analyst Initials: LL
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Nitrate-Nitrite as Nitrogen		**0.125**		mg/L	0.10	0.028	1

The following test was conducted by: TestAmerica - Denver

Lab Sample Number: A1607444-05C
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals
Prep Method ID:
Prep Batch Number: R1608111403-24
Report Basis: As Received
Sample prep wt./vol:
pH on receipt: < 2.00

Analysis Date: 8/5/2016 4:17:00AM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: JM
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
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	
Zinc	7440-66-6	**90.0**		ug/L	10	2.0	

Lab Sample Number: A1607444-05B
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals
Prep Method ID:
Prep Batch Number: R1608181653-29
Report Basis: As Received
Sample prep wt./vol:
pH on receipt: < 2.00

Analysis Date: 8/6/2016 9:15:00PM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: CRR
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Calcium	7440-70-2	**11,000**		ug/L	200	35	1
Magnesium	7439-96-4	**1,100**		ug/L	200	11	

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Report Section: Client Sample Report

Client Sample Name: **RM 23 - Swiftwater Creek**

Matrix: Aqueous

Collection Date: 7/26/2016 11:10:00AM

Lab Sample Number: A1607444-05B

Prep Date: 08-04-2016 14:08

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

Prep Method ID:

Prep Batch Number: R1608181653-29

Report Basis: As Received

Sample prep wt./vol:

pH on receipt: < 2.00

Analysis Date: 8/8/2016 8:28:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: CRR

Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Iron	7439-89-6	**640**		ug/L	100	22	2

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1607444

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: 8/15/2016 6:00:00PM

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

Lab Sample Number:	A160816001-MB	Analysis Date:	8/15/2016 6:00:00PM
Prep Date:	08-15-2016 18:08	Instrument:	Thermospectr
Analytical Method ID:	SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - N	File Name:	
Prep Method ID:		Dilution Factor:	1
Prep Batch Number:	A160816001		
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		

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Nitrate-Nitrite as Nitrogen		ND		mg/L	0.10	0.028	1

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Report Section: Method Blank Report

Client Sample Name: **MB 280-336391/1-A**

Matrix: Collection Date: 8/4/2016 2:50:00PM

Lab Sample Number: MB 280-336391/1-A
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200. 7 - Metals by ICP - 200.7 metals
Prep Method ID:
Prep Batch Number: R1608181653-29
Report Basis: As Received
Sample prep wt./vol:

Analysis Date: 8/6/2016 8:35:00PM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: CRR
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
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	

Lab Sample Number: MB 280-336391/1-A
Prep Date: 08-04-2016 14:08
Analytical Method ID: 200.8 - Metals by ICP/MS - Total
Prep Method ID:
Prep Batch Number: R1608111403-23
Report Basis: As Received
Sample prep wt./vol:

Analysis Date: 8/6/2016 8:35:00PM
Instrument:
File Name:
Dilution Factor: 1
Analyst Initials: CRR
Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
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	

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A1607444

Project: KWF Baseline Monitoring 2016

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **A160816001**

LCS REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method -MB: A160816001-MB

Prep Date: 8/15/2016

MB Anal. Date: 8/15/2016 6:00:00PM Units: mg/L

LCS Anal. Date: 8/15/2016 6:00:00PM Matrix: Aqueous

Analyte Name	SampResult	LCSRes.	SPLev	Recov.	Recov Lim	RPDLim	Flag
Nitrate-Nitrite as Nitrogen	ND	0.597	0.614	97.2	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 signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Tests Run at:

Workorder (SDG): A1607444

Project: KWF Baseline Monitoring 2016

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **R1608111403-23**

LCS REPORT

Analysis: 200.8 - Metals by ICP/MS - Total MB: MB 280-336391/1-A

Prep Date: 8/4/2016

MB Anal. Date: 8/6/2016 8:35:00PM Units: ug/L

LCS Anal. Date: 8/6/2016 8:37:00PM Matrix:

Analyte Name	SampResult	LCSRes.	SPLev	Recov.	Recov Lim	RPDLim	Flag
Calcium	ND	49,600	50,000	99.2	90 - 111		
Iron	ND	946	1,000	94.6	89 - 115		
Magnesium	ND	49,300	50,000	98.6	90 - 113		

Prep Batch: **R1608181653-29**

LCS REPORT

Analysis: 200. 7 - Metals by ICP - 200.7 metals MB: MB 280-336391/1-A

Prep Date: 8/4/2016

MB Anal. Date: 8/6/2016 8:35:00PM Units: ug/L

LCS Anal. Date: 8/6/2016 8:37:00PM Matrix:

Analyte Name	SampResult	LCSRes.	SPLev	Recov.	Recov Lim	RPDLim	Flag
Calcium	ND	49,600	50,000	99.2	90 - 111		
Iron	ND	946	1,000	94.6	89 - 115		
Magnesium	ND	49,300	50,000	98.6	90 - 113		

Prep Batch: **R1608111403-24**

MS/MSD REPORT

Analysis: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals Parent: A1607444-02C

Prep Date: 8/4/2016

Samp. Anal. Date: 8/5/2016 3:58:00AM Units: ug/L

MS Anal. Date: 8/5/2016 4:02:00AM MSD Anal. Date: 8/5/2016 4:06:00AM Matrix: Aqueous

Analyte Name	SampResult	MSRes.	MSDRes	SPLev	SPDLev	Recov.	MSD Rec.	RPD	Recov Lim	RPDLim	Flag
Arsenic	ND	40.1	40.1	41.3	41.3	97.0	97.0	0.0	79 - 120	0	
Lead	ND	39.8	40.0	40.2	40.4	99.0	99.0	0.5	88 - 115	0	*RPD*
Copper	2.80	40.3	40.4	39.9	40.0	94.0	94.0	0.2	90 - 115	0	*RPD*
Cadmium	ND	40.0	39.9	40.0	39.9	100.0	100.0	0.3	89 - 111	0	*RPD*

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

Tests Run at: TestAmerica - Denver

Workorder (SDG): A1607444

Project: KWF Baseline Monitoring 2016

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **R1608111403-24**

MS/MSD REPORT

Analysis: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals

Parent: A1607444-02C

Prep Date: 8/4/2016

Samp. Anal. Date: 8/5/2016 3:58:00AM

Units: ug/L

MS Anal. Date: 8/5/2016 4:02:00AM MSD Anal. Date: 8/5/2016 4:06:00AM

Matrix: Aqueous

Analyte Name	SampResult	MSRes.	MSDRes	SPLev	SPDLev	Recov.	MSD Rec.	RPD	Recov Lim	RPDLim	Flag	
Zinc	46.0	82.1	83.1	39.7	39.9	91.0	93.0	1.2	88 - 115	0		*RPD*
Chromium	ND	38.0	38.4	40.0	40.0	95.0	96.0	1.0	86 - 115	0		*RPD*

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 signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **181,177** **Lab Project Number:** **A1607444**

Prep Date: 8/4/2016

Lab Method Blank Id: MB 280-336391/1-A
Prep Batch ID: R1608111403-23
Method: 200.8 - Metals by ICP/MS - Total

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

SampleNum	ClientSampleName	DataFile	AnalysisDate
LCS 280-336391/2-A	LCS 280-336391/2-A		8/6/2016 8:37:00PM

Prep Date: 8/15/2016

Lab Method Blank Id: A160816001-MB
Prep Batch ID: A160816001
Method: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method -

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

SampleNum	ClientSampleName	DataFile	AnalysisDate
A1607443-02A	Batch QC		8/15/2016 6:00:00PM
A1607444-01A	RM 19 Slikok Creek		8/15/2016 6:00:00PM
A1607444-02A	RM 21 Soldotna Bridge		8/15/2016 6:00:00PM
A1607444-03A	RM 21 Soldotna Bridge- Duplicate		8/15/2016 6:00:00PM
A1607444-04A	RM 22 - Soldotna Creek		8/15/2016 6:00:00PM
A1607444-05A	RM 23 - Swiftwater Creek		8/15/2016 6:00:00PM
A160816001-LCS	LCS		8/15/2016 6:00:00PM
A1607443-02A-DUP	DUP		8/15/2016 6:00:00PM
A1607443-02A-MS	MS		8/15/2016 6:00:00PM

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **181,177** **Lab Project Number:** **A1607444**

Prep Date: 8/4/2016

Lab Method Blank Id: MB 280-336391/1-A

Prep Batch ID: R1608181653-29

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:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A1607444-01B	RM 19 Slikok Creek		8/6/2016 9:05:00PM
A1607444-01B	RM 19 Slikok Creek		8/8/2016 8:18:00PM
A1607444-02B	RM 21 Soldotna Bridge		8/6/2016 9:07:00PM
A1607444-02B	RM 21 Soldotna Bridge		8/8/2016 8:20:00PM
A1607444-03B	RM 21 Soldotna Bridge- Duplicate		8/6/2016 9:10:00PM
A1607444-03B	RM 21 Soldotna Bridge- Duplicate		8/8/2016 8:23:00PM
A1607444-04B	RM 22 - Soldotna Creek		8/6/2016 9:12:00PM
A1607444-04B	RM 22 - Soldotna Creek		8/8/2016 8:26:00PM
A1607444-05B	RM 23 - Swiftwater Creek		8/6/2016 9:15:00PM
A1607444-05B	RM 23 - Swiftwater Creek		8/8/2016 8:28:00PM
LCS 280-336391/2-A	LCS 280-336391/2-A		8/6/2016 8:37:00PM

Workorder (SDG): A1607444

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

Workorder (SDG): A1607444

Project: **KWF Baseline Monitoring 2016**

Client: **Kenai Watershed Forum**

Client Project Number: **2016**

REPORTING CONVENTIONS FOR THIS REPORT

A1607444

TestPkgName	Basis	# Sig Figs	Reporting Limit
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

AAA Chain of Custody Form

ARS Aleut Analytical

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

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

Client Name & Address:
Kenai Watershed Forum
44129 Sterling Hwy
Soldotna, AK 99669

Contact Person: **Branden Bornemann**
Phone No: 907-260-5449 c:953.2605
Fax No: (907) 260-5412
E-mail: **branden@kenaiwatershed.org**

Special Instructions/Comments:

TEAM ID: ADF&G Habitat Division
Project Name: Kenai River Baseline Project - July 2016

Turnaround Time for Results (TAT)
___ Standard ___ Expedited (< 10 days, prior authorization required) *(please specify due date below; add'tl charges may apply)*
Results Due Date:

Section To be Completed by AAA
Quote ID No: A16030019 **LGN: A16074444**
Account #: Cash: Credit Card:

Invoice to Name & Address:

P.O. or Contract

Requested Analysis/Method

Lab Bottle Order No: / Client Sample Identification / Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	Nitrate SM4500-NO3E	Lot#: Pres: H2SO4	200.8 Metals by ICP-Total TR	Lot#: Pres: HNO3	200.8 Dissolved Metals	Lot#: Pres: HNO3	Total Phos SM4500	Lot#: Pres: H2SO4	Lot#: Pres:	Lot#: Pres:	Lot#: Pres:	Lot#: Pres:	Field Preserved	Field Filtered	MS/MSD ?
RM 19 - Slikok Creek	7/26	855	Aq	4	x		x		x		x								x MS<2
RM 21 - Soldotna Bridge	7/26	945	Aq	4	x		x		x		x								
RM 21 - Soldotna Bridge -Duplicate	7/26	945	Aq	4	x		x		x		x								
RM 22 - Soldotna Creek	7/26	1030	Aq	4	x		x		x										
Rm 23 - Swiftwater Park	7/26	1110	Aq	4	x		x		x		x								

Collected/Relinquished by:	Date	Time	Received by:	Date	Time
			Bonnie Templi	7/26/16	11:29 am
Relinquished by:	Date	Time	Received by:	Date	Time
			Ian Schaad	7/26/16	11:29
Relinquished by:	Date	Time	Received by:	Date	Time
Name of Sampler: (printed)					

To be Completed by AAA

	ANC	WAS	FBKS
Chain-of-Custody Seal?:	—		
Initialed By:	—		
Temp/Loc:	10.2		
Thermo ID#:	G1109		
Shipping Via:	Client		

updated April 6, 2006

* Samples received once within 24 hrs. of sampling
↓ Slikok Creek ... 2x's & needs to be preserved