

## Inorganics Case Narrative

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### Colorado Oil & Gas Conservation Commission TBAL

Work Order Number: 1308545

1. This report consists of 2 water samples.
2. The samples were received cool and intact by ALS on 08/30/13.
3. The samples were prepared for analysis based on Methods for the Chemical Analysis of Waters and Wastes (MCAWW), May 1994 procedures and Environmental Monitoring Systems Laboratory (EMSL) Rev 2.1 procedures.
4. The samples were analyzed following MCAWW and EMSL procedures for the current revisions of the following SOPs and methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	310.1	1106
Bicarbonate	310.1	1106
Carbonate	310.1	1106
pH	150.1	1126
Specific conductance	120.1	1128
TDS	160.1	1101
Bromide	300.0 Revision 2.1	1113
Chloride	300.0 Revision 2.1	1113
Fluoride	300.0 Revision 2.1	1113
Nitrate as N	300.0 Revision 2.1	1113
Nitrite as N	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

5. All standards and solutions were used within their recommended shelf life.
6. The samples were prepared and analyzed within the established hold time for each analysis.

All in house quality control procedures were followed, as described below.



7. General quality control procedures.

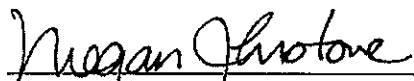
- A preparation (method) blank and laboratory control sample (LCS) were prepared and analyzed with the samples in each applicable preparation batch.
- The method blank associated with each applicable batch was below the reporting limit for the requested analytes.
- All laboratory control sample criteria were met.
- All initial and continuing calibration blanks were below the reporting limit for the requested analytes.
- All initial and continuing calibration verifications were within the acceptance criteria for the requested analytes.

8. Matrix specific quality control procedures.

Per method requirements, matrix QC was performed for each analysis. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.

9. Reduced aliquots were taken of the samples for the alkalinity, bicarbonate, and carbonate analysis. Reporting limits were elevated accordingly.
10. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939. Whenever manual integrations are performed, before and after chromatograms of the peak that were manually integrated are included in the report along with the reason why the re-integration was necessary.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.



Megan Johnson  
Inorganics Primary Data Reviewer

9/11/13

Date



Inorganics Final Data Reviewer

9/11/13

Date



### **Inorganic Data Reporting Qualifiers**

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- Concentration qualifier -- A “J” is entered if the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to ALS’s Method Detection Limit. If the analyte was analyzed for but not detected a “U” is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
  - N - Spiked sample recovery not within control limits.
  - \* - Duplicate analysis (relative percent difference) not within control limits.
  - Z - Calibration spike recovery not within control limits.



## **Chain of Custody**

# ALS Environmental -- FC

## Sample Number(s) Cross-Reference Table

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**OrderNum:** 1308545

**Client Name:** Colorado Oil & Gas Conservation Commission

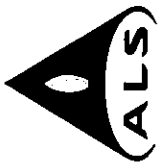
**Client Project Name:** TBAL

**Client Project Number:**

**Client PO Number:** PHA 14-22

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Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
704681 Dolores WW	1308545-1		WATER	29-Aug-13	9:01
Trip Blank	1308545-2		WATER	29-Aug-13	6:00
705737 Dolores MW	1308545-3		WATER	29-Aug-13	10:20
704681 Dolores WW 20	1308545-4		WATER	29-Aug-13	8:44
704681 Dolores WW 5	1308545-5		WATER	29-Aug-13	8:26



# ALS Laboratory Group

225 Commerce Drive, Fort Collins, Colorado 80524  
TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

## Chain-of-Custody

Form 202-8

WORKORDER # 1308545

PROJECT NAME	TRAL	SAMPLER	PHE	DATE	7/13/13	PAGE	1 of 1
PROJECT NO.		SITE ID		TURNAROUND	28 days	DISPOSAL	By Lab or Return to Client
COMPANY NAME	Local Oil & Gas Services	EDD FORMAT					
SEND REPORT TO	Peter G. Gintantus	PURCHASE ORDER					
ADDRESS	PO Box 146	BILL TO COMPANY					
CITY/STATE/ZIP	Trinidad CO 81082	INVOICE ATTN TO					
PHONE	719-846-3091	ADDRESS					
FAX		CITY/STATE/ZIP					
E-MAIL	peter.gintantus@state.co.us	PHONE					
		FAX					

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC
①	704681 Delores NW	W	7/13/13	09:01	6	1	
	"	↓	↓	↓	6	8	
	"	↓	↓	↓	1	3	
②	Trip Blk	W	7/13/13	06:00	2	1	
③	705737 Delores NW	W	7/13/13	10:20	6	1	
	"	↓	↓	↓	3	8	
		↓	↓	↓	6	8	
		↓	↓	↓	1	3	
④	704681 Delores NW	W	7/13/13	08:44	3	1	
⑤	704681 Delores NW	W	7/13/13	08:26	3	1	

\*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments:	Amcws = Procl, F, Na, Mg, Ca, Fe, Mn, Pb, Cu, Zn, Ni, Cr, Co, Cd, Hg, Se, As, Sb, Bi, Mo, Sn, W, V, Ti, Zr, Hf, Ta, Nb, K, Rb, Cs, Ba, Sr, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Sc, Y, In, Ga, Al, B, Be, Li, Na, K, Rb, Cs, Ag, Au, Hg, Pb, Bi, Po, At, Rn, Fr, Ac, Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, Lr, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Sc, Y, In, Ga, Al, B, Be, Li, Na, K, Rb, Cs, Ag, Au, Hg, Pb, Bi, Po, At, Rn, Fr, Ac, Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, Lr
QC PACKAGE (check below)	
LEVEL II (Standard QC)	
LEVEL III (Std QC + forms)	
LEVEL IV (Std QC + forms + raw data)	X

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

SIGNATURE	PRINTED NAME	DATE	TIME
RECEIVED BY	Peter Gintantus	7/13/13	16:40
RECEIVED BY	Jacob R. Oddy	8/30/13	09:30
RECEIVED BY			
RECEIVED BY			
RECEIVED BY			



**ALS Environmental - Fort Collins**  
**CONDITION OF SAMPLE UPON RECEIPT FORM**

Client: COGCC

Workorder No: 1308545

Project Manager: ARW

Initials: JLR

Date: 8/30/13

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	NONE	<input checked="" type="radio"/> YES	NO
3. Are Custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible?		<input checked="" type="radio"/> YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<input checked="" type="radio"/> YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES	NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	N/A	<input checked="" type="radio"/> YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 <input checked="" type="radio"/> #4	RAD ONLY	<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u> <u>2</u>			
Temperature (°C): <u>2°C</u> <u>4°C</u>			
No. of custody seals on cooler: <u>2</u> <u>1</u>			
External µR/hr reading: <u>11</u> <u>11</u>			
Background µR/hr reading: <u>10</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <input checked="" type="radio"/> YES / NO / NA (If no, see Form 008.)			

**Additional Information:** PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO / ☒ NA Contact: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Project Manager Signature / Date: \_\_\_\_\_

\*IR Gun #2: Oakton, SN 29922500201-0066  
\*IR Gun #4: Oakton, SN 2372220101-0002

1308545

PETER GINTAUTAS  
719-846-3091  
COLORADO OIL & GAS CONSERVATIO  
213 CORUNDUM RD  
TRINIDAD CO 81082

41 LBS

DWT: 26,16,15

2 OF 2

SHIP TO:  
AMY WOLF  
970-490-1511  
ALS LABORATORY GROUP  
225 COMMERCE DRIVE  
FORT COLLINS CO 80524-2762

CO 805 0-01

UPS NEXT DAY AIR

TRACKING #: 1Z 014 8WR 01 9830 5716

BILLING: P/P

Reference#1: Special Project TBAL

UPS 15.6.12. WNTT290 36.0A 01/2013

1020

112

1

TM





## Sample Results

# BICARBONATE AS CaCO<sub>3</sub>

Method EPA310.1

## Sample Results

Lab Name: ALS Environmental -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: TBAL

Work Order Number: 1308545

Final Volume: 100 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: METHOD

Result Units: MG/L

Analyst: Kristen A. Middleton

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag	Sample Aliquot
704681 Dolores WW	1308545-1	08/29/2013	09/06/2013	09/06/2013	N/A	1	170	20		25 ml
705737 Dolores MW	1308545-3	08/29/2013	09/06/2013	09/06/2013	N/A	1	140	20		25 ml

### Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *ak1308545-1*

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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LIMS Version: 6.658

# CARBONATE AS CaCO3

Method EPA310.1

## Sample Results

**Lab Name:** ALS Environmental -- FC  
**Client Name:** Colorado Oil & Gas Conservation Commission  
**Client Project ID:** TBAL  
**Work Order Number:** 1308545 **Final Volume:** 100 ml  
**Reporting Basis:** As Received **Matrix:** WATER  
**Prep Method:** METHOD **Result Units:** MG/L  
**Analyst:** Kristen A. Middleton

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag	Sample Aliquot
704681 Dolores WW	1308545-1	08/29/2013	09/06/2013	09/06/2013	N/A	1	20	20	U	25 ml
705737 Dolores MW	1308545-3	08/29/2013	09/06/2013	09/06/2013	N/A	1	22	20		25 ml

### Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

**Data Package ID:** *ak1308545-1*

# TOTAL ALKALINITY AS CaCO3

Method EPA310.1

## Sample Results

**Lab Name:** ALS Environmental -- FC  
**Client Name:** Colorado Oil & Gas Conservation Commission  
**Client Project ID:** TBAL  
**Work Order Number:** 1308545 **Final Volume:** 100 ml  
**Reporting Basis:** As Received **Matrix:** WATER  
**Prep Method:** METHOD **Result Units:** MG/L  
**Analyst:** Kristen A. Middleton

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag	Sample Aliquot
704681 Dolores WW	1308545-1	08/29/2013	09/06/2013	09/06/2013	N/A	1	170	20		25 ml
705737 Dolores MW	1308545-3	08/29/2013	09/06/2013	09/06/2013	N/A	1	160	20		25 ml

### Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

**Data Package ID:** *ak1308545-1*

**Date Printed:** Wednesday, September 11, 2013

**ALS Environmental -- FC**

LIMS Version: 6.658

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# pH in water @25 Degrees Celsius

Method EPA150.1

## Sample Results

Lab Name: ALS Environmental -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: TBAL

Work Order Number: 1308545

Final Volume: 20 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: NONE

Result Units: pH

Analyst: Kristen A. Middleton

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag	Sample Aliquot
704681 Dolores WW	1308545-1	08/29/2013	09/03/2013	09/03/2013	N/A	1	8.35	0.1		20 ml
705737 Dolores MW	1308545-3	08/29/2013	09/03/2013	09/03/2013	N/A	1	8.98	0.1		20 ml

### Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *ph1308545-1*

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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# SPECIFIC CONDUCTIVITY

Method EPA120.1

## Sample Results

**Lab Name:** ALS Environmental -- FC  
**Client Name:** Colorado Oil & Gas Conservation Commission  
**Client Project ID:** TBAL  
**Work Order Number:** 1308545  
**Reporting Basis:** As Received  
**Prep Method:** NONE  
**Analyst:** Alex J. Devonald  
**Final Volume:** 45 ml  
**Matrix:** WATER  
**Result Units:** umhos/cm

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag	Sample Aliquot
704681 Dolores WW	1308545-1	08/29/2013	09/03/2013	09/03/2013	N/A	1	511	1		45 ml
705737 Dolores MW	1308545-3	08/29/2013	09/03/2013	09/03/2013	N/A	1	430	1		45 ml

### Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

**Data Package ID:** *sc1308545-1*

**Date Printed:** Wednesday, September 11, 2013

**ALS Environmental -- FC**

LIMS Version: 6.658

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# TOTAL DISSOLVED SOLIDS

Method EPA160.1

## Sample Results

Lab Name: ALS Environmental -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: TBAL

Work Order Number: 1308545

Final Volume: 100 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: METHOD

Result Units: MG/L

Analyst: Alex J. Devonald

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag	Sample Aliquot
704681 Dolores WW	1308545-1	08/29/2013	09/05/2013	09/06/2013	N/A	1	320	20		100 ml
705737 Dolores MW	1308545-3	08/29/2013	09/05/2013	09/06/2013	N/A	1	260	20		100 ml

### Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *td1308545-1*

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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# Ion Chromatography

Method EPA300.0 Revision 2.1

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Field ID: 704681 Dolores WW

Lab ID: 1308545-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 29-Aug-13

Date Extracted: 30-Aug-13

Date Analyzed: 30-Aug-13

Prep Method: NONE

Prep Batch: IC130830-1

QCBatchID: IC130830-1-1

Run ID: IC130830-1A2

Cleanup: NONE

Basis: As Received

File Name: 30830\_021.DXD

Analyst: Alex J. Devonald

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	MDL/DL	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE AnalysisTime: 14:18	1	2.5	0.1	0.03		
16887-00-6	CHLORIDE AnalysisTime: 14:18	1	17	0.2	0.06		
14797-65-0	NITRITE AS N AnalysisTime: 14:18	1	0.1	0.1	0.03	U	
24959-67-9	BROMIDE AnalysisTime: 14:18	1	0.17	0.2	0.06	J	
14797-55-8	NITRATE AS N AnalysisTime: 14:18	1	0.2	0.2	0.06	U	
14808-79-8	SULFATE AnalysisTime: 14:18	1	57	1	0.3		

Data Package ID: *ic1308545-1*

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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# Ion Chromatography

Method EPA300.0 Revision 2.1

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Field ID: 705737 Dolores MW

Lab ID: 1308545-3

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 29-Aug-13

Date Extracted: 30-Aug-13

Date Analyzed: 30-Aug-13

Prep Method: NONE

Prep Batch: IC130830-1

QCBatchID: IC130830-1-1

Run ID: IC130830-1A2

Cleanup: NONE

Basis: As Received

File Name: 30830\_025.DXD

Analyst: Alex J. Devonald

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit\ LOD\LOQ	MDL/DL	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE AnalysisTime: 15:14	1	7.8	0.1	0.03		
16887-00-6	CHLORIDE AnalysisTime: 15:14	1	12	0.2	0.06		
14797-65-0	NITRITE AS N AnalysisTime: 15:14	1	0.1	0.1	0.03	U	
24959-67-9	BROMIDE AnalysisTime: 15:14	1	0.13	0.2	0.06	J	
14797-55-8	NITRATE AS N AnalysisTime: 15:14	1	0.2	0.2	0.06	U	
14808-79-8	SULFATE AnalysisTime: 15:14	1	15	1	0.3		

Data Package ID: *ic1308545-1*

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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## **Summary Report Forms**

# BICARBONATE AS CaCO<sub>3</sub>

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: AK130906-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK130906-1

QCBatchID: AK130906-1-1

Run ID: AK130906-1A

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag
AK130906-1MB	9/6/2013	09/06/2013	N/A	1	5	5	U

## Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *ak1308545-1*

Date Printed: Wednesday, September 11, 2013

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# CARBONATE AS CaCO<sub>3</sub>

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: AK130906-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK130906-1

QCBatchID: AK130906-1-1

Run ID: AK130906-1A

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag
AK130906-1MB	9/6/2013	09/06/2013	N/A	1	5	5	U

## Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *ak1308545-1*

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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# TOTAL ALKALINITY AS CaCO3

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: AK130906-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK130906-1

QCBatchID: AK130906-1-1

Run ID: AK130906-1A

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit LOD/LOQ	Flag
AK130906-1MB	9/6/2013	09/06/2013	N/A	1	5	5	U

## Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *ak1308545-1*

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

LIMS Version: 6.658

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# TOTAL ALKALINITY AS CaCO<sub>3</sub>

Method EPA310.1

## Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: AK130906-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/06/2013

Date Analyzed: 09/06/2013

Prep Batch: AK130906-1

QCBatchID: AK130906-1-1

Run ID: AK130906-1A

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
	TOTAL ALKALINITY AS CaCO <sub>3</sub>	100	97.7	5		98	85 - 115

Data Package ID: *ak1308545-1*

Date Printed: Wednesday, September 11, 2013

ALS Environmental -- FC

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# Prep Batch ID: AK130906-1

Start Date: 09/06/13

End Date: 09/06/13

Concentration Method: NONE

Batch Created By: ajd

Start Time: 11:30

End Time: 13:00

Extract Method: METHOD

Date Created: 09/06/13

Prep Analyst: Kristin L. Ratajczak

Initial Volume Units: ml

Time Created: 10:18

Comments:

Final Volume Units: ml

Validated By: klr

Date Validated: 09/06/13

Time Validated: 13:13

QC Batch ID: AK130906-1-1

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
AK130906-1	MB	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1308515
AK130906-1	LCS	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1308515
1308515-3	DUP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1308515
1309052-2	DUP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1309052
1308515-1	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1308515
1308515-2	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1308515
1308515-3	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1308515
1308545-1	SMP	704681 Dolores WW	WATER	8/29/2013	25	100	NONE	1	1308545
1308545-3	SMP	705737 Dolores MW	WATER	8/29/2013	25	100	NONE	1	1308545
1308559-1	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1308559
1308559-2	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1308559
1308560-2	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1308560
1308561-1	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1308561
1308563-2	SMP	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1308563
1308563-3	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1308563
1308563-4	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1308563
1308563-5	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1308563
1309040-2	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1309040
1309040-3	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1309040
1309041-1	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1309041
1309052-2	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1309052
1309052-3	SMP	XXXXXX	WATER	XXXXXX	25	100	NONE	1	1309052

## Prep Batch ID: PH130903-1

Start Date: 09/03/13

End Date: 09/03/13

Concentration Method: NONE

Batch Created By: AJD

Start Time: 11:00

End Time: 16:30

Extract Method: NONE

Date Created: 09/03/13

Prep Analyst: Alex J. Devonald

Initial Volume Units: ml

Time Created: 11:21

Final Volume Units: ml

Validated By: AJD

Date Validated: 09/03/13

Time Validated: 17:05

Comments:

QC Batch ID: PH130903-1-1

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
1308542-1	DUP	XXXXXX	WATER	XXXXXX	20	20	NONE	1	1308542
1308542-1	SMP	XXXXXX	WATER	XXXXXX	20	20	NONE	1	1308542
1308545-1	SMP	704681 Dolores WW	WATER	8/29/2013	20	20	NONE	1	1308545
1308545-3	SMP	705737 Dolores MW	WATER	8/29/2013	20	20	NONE	1	1308545

QC Types

CAR	Carrier reference sample	DUP	Laboratory Duplicate
LCS	Laboratory Control Sample	LCSD	Laboratory Control Sample Duplicate
MB	Method Blank	MS	Laboratory Matrix Spike
MSD	Laboratory Matrix Spike Duplicate	REP	Sample replicate
RVS	Reporting Level Verification Standard	SMP	Field Sample
SYS	Sample Yield Spike		



**PH**  
**Method EPA150.1**  
**Calibration Verifications**

**Lab Name:** ALS Environmental -- FC

**Work Order Number:** 1308545

**Client Name:** Colorado Oil & Gas Conservation Commission

**ClientProject ID:** TBAL

---

**Run ID:** pH130903-1A

**Result Units:** pH

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Lab ID	Verification Type	Date Analyzed	Time Analyzed	Spike Added	Result	Reporting Limit	Result Qualifier	% Rec.	Control Limits
ICV	Initial Calibration	9/3/2013		7	7.00	0.1	N/A		6.95 - 7.05
CCV1	Continuing Calibration	9/3/2013		7	7.01	0.1	N/A		6.9 - 7.1

**Data Package ID:** *ph1308545-1*

---

**Date Printed:** Wednesday, September 11, 2013

**ALS Environmental -- FC**

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# Prep Batch ID: SC130903-1

Start Date: 09/03/13

End Date: 09/03/13

Concentration Method: NONE

Batch Created By: AJD

Start Time: 11:00

End Time: 15:30

Extract Method: NONE

Date Created: 09/03/13

Prep Analyst: Alex J. Devonald

Initial Volume Units: ml

Time Created: 11:22

Comments:

Final Volume Units: ml

Validated By: AJD

Date Validated: 09/03/13

Time Validated: 17:09

QC Batch ID: SC130903-1-1

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
1308557-1	DUP	XXXXXX	WATER	XXXXXX	45	45	NONE	1	1308557
1308545-1	SMP	704681 Dolores WW	WATER	8/29/2013	45	45	NONE	1	1308545
1308545-3	SMP	705737 Dolores MW	WATER	8/29/2013	45	45	NONE	1	1308545
1308557-1	SMP	XXXXXX	WATER	XXXXXX	45	45	NONE	1	1308557
1308576-1	SMP	XXXXXX	WATER	XXXXXX	45	45	NONE	1	1308576
1308576-2	SMP	XXXXXX	WATER	XXXXXX	45	45	NONE	1	1308576
1308576-3	SMP	XXXXXX	WATER	XXXXXX	45	45	NONE	1	1308576
1308576-4	SMP	XXXXXX	WATER	XXXXXX	45	45	NONE	1	1308576
1308577-1	SMP	XXXXXX	WATER	XXXXXX	45	45	NONE	1	1308577
1308577-2	SMP	XXXXXX	WATER	XXXXXX	45	45	NONE	1	1308577

QC Types

CAR	Carrier reference sample	DUP	Laboratory Duplicate
LCS	Laboratory Control Sample	LCSD	Laboratory Control Sample Duplicate
MB	Method Blank	MS	Laboratory Matrix Spike
MSD	Laboratory Matrix Spike Duplicate	REP	Sample replicate
RVS	Reporting Level Verification Standard	SMP	Field Sample
SYS	Sample Yield Spike		

# SPECIFIC CONDUCTIVITY

Method EPA120.1

## Calibration Verifications

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Run ID: SC130903-1A

Result Units: umhos/c

Lab ID	Verification Type	Date Analyzed	Time Analyzed	Spike Added	Result	Reporting Limit	Result Qualifier	% Rec.	Control Limits
ICV	Initial Calibration	9/3/2013		718	723	1	N/A	101	646.2 - 789.7
CCV1	Continuing Calibration	9/3/2013		1410	1420	1	N/A	101	1271.7 - 1554.3

Data Package ID: *sc1308545-1*

Date Printed: Wednesday, September 11, 2013

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# Total Dissolved Solids

Method EPA160.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: TD130905-2MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 05-Sep-13

Date Analyzed: 06-Sep-13

Prep Method: METHOD

Prep Batch: TD130905-2

QCBatchID: TD130905-2-1

Run ID: TD130906-1A

Cleanup: NONE

Basis: N/A

File Name: Manual Entry

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit LOD/LOQ	Result Qualifier	EPA Qualifier
10-33-3	TOTAL DISSOLVED SOLIDS	1	20	20	U	

Data Package ID: *td1308545-1*

Date Printed: Wednesday, September 11, 2013

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# Total Dissolved Solids

Method EPA160.1

## Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: TD130905-2LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 09/05/2013

Date Analyzed: 09/06/2013

Prep Method: METHOD

Prep Batch: TD130905-2

QCBatchID: TD130905-2-1

Run ID: TD130906-1A

Cleanup: NONE

Basis: N/A

File Name: Manual Entry

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
10-33-3	TOTAL DISSOLVED SOLIDS	400	403	20		101	85 - 115%

Data Package ID: *td1308545-1*

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# Prep Batch ID: TD130905-2

Start Date: 09/05/13

End Date: 09/05/13

Concentration Method: NONE

Batch Created By: klr

Start Time: 7:30

End Time: 11:20

Extract Method: METHOD

Date Created: 09/05/13

Prep Analyst: Kristin L. Ratajczak

Initial Volume Units: ml

Time Created: 11:32

Comments:

Final Volume Units: ml

Validated By: ajd

Date Validated: 09/06/13

Time Validated: 16:45

QC Batch ID: TD130905-2-1

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
TD130905-2	MB	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1308513
TD130905-2	LCS	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1308513
1308513-121	DUP	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1308513
1308559-1	DUP	XXXXXX	WATER	XXXXXX	25	25	NONE	1	1308559
1308513-121	SMP	XXXXXX	WATER	XXXXXX	10	10	NONE	1	1308513
1308513-127	SMP	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1308513
1308513-128	SMP	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1308513
1308513-129	SMP	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1308513
1308513-130	SMP	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1308513
1308545-1	SMP	704681 Dolores WW	WATER	8/29/2013	100	100	NONE	1	1308545
1308545-3	SMP	705737 Dolores MW	WATER	8/29/2013	100	100	NONE	1	1308545
1308559-1	SMP	XXXXXX	WATER	XXXXXX	25	25	NONE	1	1308559
1308559-2	SMP	XXXXXX	WATER	XXXXXX	25	25	NONE	1	1308559
1308561-1	SMP	XXXXXX	WATER	XXXXXX	100	100	NONE	1	1308561
1308577-1	SMP	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1308577
1308577-2	SMP	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1308577

QC Types

CAR	Carrier reference sample	DUP	Laboratory Duplicate
LCS	Laboratory Control Sample	LCSD	Laboratory Control Sample Duplicate
MB	Method Blank	MS	Laboratory Matrix Spike
MSD	Laboratory Matrix Spike Duplicate	REP	Sample replicate
RVS	Reporting Level Verification Standard	SMP	Field Sample
SYS	Sample Yield Spike		

# Ion Chromatography

Method EPA300.0 Revision 2.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: IC130830-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 30-Aug-13

Date Analyzed: 30-Aug-13

Prep Batch: IC130830-1

QCBatchID: IC130830-1-1

Run ID: IC130830-1A2

Cleanup: NONE

Basis: N/A

File Name: 30830\_014.dxd

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit LOD/LOQ	MDL	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE	1	0.1	0.1	0.03	U	
16887-00-6	CHLORIDE	1	0.2	0.2	0.06	U	
14797-65-0	NITRITE AS N	1	0.1	0.1	0.03	U	
24959-67-9	BROMIDE	1	0.2	0.2	0.06	U	
14797-55-8	NITRATE AS N	1	0.2	0.2	0.06	U	
14808-79-8	SULFATE	1	1	1	0.3	U	

Data Package ID: ic1308545-1

Date Printed: Wednesday, September 11, 2013

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# Ion Chromatography

Method EPA300.0 Revision 2.1

## Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: IC130830-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 08/30/2013

Date Analyzed: 08/30/2013

Prep Method: NONE

Prep Batch: IC130830-1

QCBatchID: IC130830-1-1

Run ID: IC130830-1A2

Cleanup: NONE

Basis: N/A

File Name: 30830\_013.dxd

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
16984-48-8	FLUORIDE	2	1.9	0.1		95	90 - 110%
16887-00-6	CHLORIDE	5	4.98	0.2		100	90 - 110%
14797-65-0	NITRITE AS N	2	1.97	0.1		98	90 - 110%
24959-67-9	BROMIDE	5	5.19	0.2		104	90 - 110%
14797-55-8	NITRATE AS N	5	5.15	0.2		103	90 - 110%
14808-79-8	SULFATE	20	19.6	1		98	90 - 110%

Data Package ID: *ic1308545-1*

Date Printed: Wednesday, September 11, 2013

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# Prep Batch ID: IC130830-1

Start Date: 08/30/13

End Date: 08/30/13

Concentration Method: NONE

Batch Created By: AJD

Start Time: 11:40

End Time: 12:20

Extract Method: NONE

Date Created: 08/30/13

Prep Analyst: Alex J. Devonald

Initial Volume Units: ml

Time Created: 11:41

Final Volume Units: ml

Validated By: AJD

Date Validated: 09/03/13

Time Validated: 9:27

## Comments:

QC Batch ID: IC130830-1-1

Lab ID	QC Type	Field ID	Matrix	Date Collected	Initial Wt/Vol	Final Wt/Vol	Cleanup Method	Cleanup DF	Order Number
IC130830-1	RVS	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1308541
IC130830-1	MB	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1308541
IC130830-1	LCS	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1308541
1308541-1	MS	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1308541
1308541-1	MSD	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1308541
1308541-1	SMP	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1308541
1308545-1	SMP	704681 Dolores WW	WATER	8/29/2013	5	5	NONE	1	1308545
1308545-3	SMP	705737 Dolores MW	WATER	8/29/2013	5	5	NONE	1	1308545
1308546-1	SMP	XXXXXX	WATER	XXXXXX	5	5	NONE	1	1308546

## QC Types

CAR	Carrier reference sample	DUP	Laboratory Duplicate
LCS	Laboratory Control Sample	LCSD	Laboratory Control Sample Duplicate
MB	Method Blank	MS	Laboratory Matrix Spike
MSD	Laboratory Matrix Spike Duplicate	REP	Sample replicate
RVS	Reporting Level Verification Standard	SMP	Field Sample
SYS	Sample Yield Spike		

# Ion Chromatography

Method EPA300.0

## Calibration Verifications

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: ICV

QC Type: Initial Calibration

File Name: 0714b\_010.dxd

Run ID: IC130830-1A2

Date Analyzed: 08/14/2013

Time Analyzed: 21:40

Result Units: MG/L

CASNO	Target Analyte	Spike Added	Result	Reporting Limit	Result Qualifier	% Rec.	Control Limits
16984-48-8	FLUORIDE	2.5	2.36	0.1		94	90 - 110%
16887-00-6	CHLORIDE	5	4.70	0.2		94	90 - 110%
14797-65-0	NITRITE AS N	4	4.04	0.1		101	90 - 110%
24959-67-9	BROMIDE	5	4.69	0.2		94	90 - 110%
14797-55-8	NITRATE AS N	5	4.62	0.2		92	90 - 110%
14808-79-8	SULFATE	25	23.4	1		94	90 - 110%

Data Package ID: ic1308545-1

Date Printed: Wednesday, September 11, 2013

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# Ion Chromatography

Method EPA300.0

## Calibration Verifications

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: CCV1

QC Type: Continuing Calibration

File Name: 30830\_011.dxd

Run ID: IC130830-1A2

Date Analyzed: 08/30/2013

Time Analyzed: 11:58

Result Units: MG/L

CASNO	Target Analyte	Spike Added	Result	Reporting Limit	Result Qualifier	% Rec.	Control Limits
16984-48-8	FLUORIDE	5	4.83	0.1		97	90 - 110%
16887-00-6	CHLORIDE	10	9.96	0.2		100	90 - 110%
14797-65-0	NITRITE AS N	5	5.05	0.1		101	90 - 110%
24959-67-9	BROMIDE	10	9.88	0.2		99	90 - 110%
14797-55-8	NITRATE AS N	10	10.1	0.2		101	90 - 110%
14808-79-8	SULFATE	50	51.4	1		103	90 - 110%

Data Package ID: ic1308545-1

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# Ion Chromatography

## Method EPA300.0 Calibration Verifications

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: CCV2

QC Type: Continuing Calibration

File Name: 30830\_023.DXD

Run ID: IC130830-1A2

Date Analyzed: 08/30/2013

Time Analyzed: 14:46

Result Units: MG/L

CASNO	Target Analyte	Spike Added	Result	Reporting Limit	Result Qualifier	% Rec.	Control Limits
16984-48-8	FLUORIDE	5	4.91	0.1		98	90 - 110%
16887-00-6	CHLORIDE	10	9.96	0.2		100	90 - 110%
14797-65-0	NITRITE AS N	5	5.05	0.1		101	90 - 110%
24959-67-9	BROMIDE	10	9.84	0.2		98	90 - 110%
14797-55-8	NITRATE AS N	10	10.1	0.2		101	90 - 110%
14808-79-8	SULFATE	50	51.4	1		103	90 - 110%

Data Package ID: ic1308545-1

Date Printed: Wednesday, September 11, 2013

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# Ion Chromatography

## Method EPA300.0 Calibration Verifications

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: CCV3

QC Type: Continuing Calibration

File Name: 30830\_028.DXD

Run ID: IC130830-1A2

Date Analyzed: 08/30/2013

Time Analyzed: 15:57

Result Units: MG/L

CASNO	Target Analyte	Spike Added	Result	Reporting Limit	Result Qualifier	% Rec.	Control Limits
16984-48-8	FLUORIDE	5	4.85	0.1		97	90 - 110%
16887-00-6	CHLORIDE	10	9.84	0.2		98	90 - 110%
14797-65-0	NITRITE AS N	5	5.02	0.1		100	90 - 110%
24959-67-9	BROMIDE	10	9.75	0.2		98	90 - 110%
14797-55-8	NITRATE AS N	10	9.93	0.2		99	90 - 110%
14808-79-8	SULFATE	50	50.6	1		101	90 - 110%

Data Package ID: ic1308545-1

Date Printed: Wednesday, September 11, 2013

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# Ion Chromatography

Method EPA300.0

Calibration Blanks

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: ICB

QC Type: Initial Calibration

Run ID: IC130830-1A2

Date Analyzed: 08/14/2013

Time Analyzed: 9:26:28 PM

Result Units: MG/L

CASNO	Target Analyte	Result	Reporting Limit	Result Qualifier
16984-48-8	FLUORIDE	0.1	0.1	U
16887-00-6	CHLORIDE	0.2	0.2	U
14797-65-0	NITRITE AS N	0.1	0.1	U
24959-67-9	BROMIDE	0.2	0.2	U
14797-55-8	NITRATE AS N	0.2	0.2	U
14808-79-8	SULFATE	1	1	U

Data Package ID: *ic1308545-1*

Date Printed: Wednesday, September 11, 2013

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# Ion Chromatography

Method EPA300.0

Calibration Blanks

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: CCB1

QC Type: Continuing Calibration

Run ID: IC130830-1A2

Date Analyzed: 08/30/2013

Time Analyzed: 12:12:12 PM

Result Units: MG/L

CASNO	Target Analyte	Result	Reporting Limit	Result Qualifier
16984-48-8	FLUORIDE	0.1	0.1	U
16887-00-6	CHLORIDE	0.2	0.2	U
14797-65-0	NITRITE AS N	0.1	0.1	U
24959-67-9	BROMIDE	0.2	0.2	U
14797-55-8	NITRATE AS N	0.2	0.2	U
14808-79-8	SULFATE	1	1	U

Data Package ID: *ic1308545-1*

Date Printed: Wednesday, September 11, 2013

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# Ion Chromatography

Method EPA300.0

Calibration Blanks

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: CCB2

QC Type: Continuing Calibration

Run ID: IC130830-1A2

Date Analyzed: 08/30/2013

Time Analyzed: 3:00:55 PM

Result Units: MG/L

CASNO	Target Analyte	Result	Reporting Limit	Result Qualifier
16984-48-8	FLUORIDE	0.1	0.1	U
16887-00-6	CHLORIDE	0.2	0.2	U
14797-65-0	NITRITE AS N	0.1	0.1	U
24959-67-9	BROMIDE	0.2	0.2	U
14797-55-8	NITRATE AS N	0.2	0.2	U
14808-79-8	SULFATE	1	1	U

Data Package ID: *ic1308545-1*

Date Printed: Wednesday, September 11, 2013

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# Ion Chromatography

Method EPA300.0

Calibration Blanks

Lab Name: ALS Environmental -- FC

Work Order Number: 1308545

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: TBAL

Lab ID: CCB3

QC Type: Continuing Calibration

Run ID: IC130830-1A2

Date Analyzed: 08/30/2013

Time Analyzed: 4:11:13 PM

Result Units: MG/L

CASNO	Target Analyte	Result	Reporting Limit	Result Qualifier
16984-48-8	FLUORIDE	0.1	0.1	U
16887-00-6	CHLORIDE	0.2	0.2	U
14797-65-0	NITRITE AS N	0.1	0.1	U
24959-67-9	BROMIDE	0.2	0.2	U
14797-55-8	NITRATE AS N	0.2	0.2	U
14808-79-8	SULFATE	1	1	U

Data Package ID: *ic1308545-1*

Date Printed: Wednesday, September 11, 2013

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## Raw Data

# Alkalinity Raw Data Worksheet

Anal Run ID AK130906-1A

Anal Start Date 9/6/2013

Standardization Ref ID AlkalinityCAL130906-1

## Standardization Of Alkalinity

Rep Num	THAM Conc	Aliq Titrated (mL)	vol to pH 4.5(mL)	HCl Conc(N)	Conc Units
1	0.2	1	10.27	0.0194742	N
2	0.2	1	10.39	0.0192493	N
3	0.2	1	10.32	0.0193799	N

Avg HCl Conc  
0.01936777

Num	Don't Use	ReRun Num	Lab ID	QC Type	Anal Dil	Aliq Titrated (mL)	vol to pH 8.3(mL)	vol to pH 4.5(mL)	total vol(mL)	HCO <sub>3</sub> (mg/L as CaCO <sub>3</sub> )	CO <sub>3</sub> (mg/L as CaCO <sub>3</sub> )	OH (mg/L as CaCO <sub>3</sub> )	Total Alk (mg/L as CaCO <sub>3</sub> )	Expected	%Rec	vol to LL pH(mL)
1	<input type="checkbox"/>	0	AK130906-1	MB	1	100	0	0.42	0.42	4.067232	0	0	4.067232			NA
2	<input type="checkbox"/>	0	AK130906-1	LCS	1	100	4.82	5.27	10.09	4.357747	93.35267	0	97.71042			NA
3	<input type="checkbox"/>	0	1308515-1	SMP	1	25	0	14.34	14.34	555.4677	0	0	555.4677			NA
4	<input type="checkbox"/>	0	1308515-2	SMP	1	25	0	5.35	5.35	207.2352	0	0	207.2352			NA
5	<input type="checkbox"/>	0	1308515-3	SMP	1	25	0	8.32	8.32	322.2797	0	0	322.2797			NA
6	<input type="checkbox"/>	0	1308515-3	DUP	1	25	0	8.24	8.24	319.1809	0	0	319.1809			NA
7	<input type="checkbox"/>	0	1308545-1	SMP	1	25	0	4.38	4.38	169.6617	0	0	169.6617			NA
8	<input type="checkbox"/>	0	1308545-3	SMP	1	25	0.28	3.94	4.22	141.7721	21.69191	0	163.464			NA
9	<input type="checkbox"/>	0	1308559-1	SMP	1	25	0	5.15	5.15	199.4881	0	0	199.4881			NA
10	<input type="checkbox"/>	0	1308559-2	SMP	1	25	0	4.68	4.68	181.2824	0	0	181.2824			NA
11	<input type="checkbox"/>	0	1308560-2	SMP	1	25	0	9.04	9.04	350.1693	0	0	350.1693			NA
12	<input type="checkbox"/>	0	1308561-1	SMP	1	25	0	9.06	9.06	350.9441	0	0	350.9441			NA
13	<input type="checkbox"/>	0	1308563-2	SMP	1	100	0	0.23	0.23	0.2905166	0	0	0.2905166			0.2
14	<input type="checkbox"/>	0	1308563-3	SMP	1	25	0	4.82	4.82	186.7053	0	0	186.7053			NA
15	<input type="checkbox"/>	0	1308563-4	SMP	1	25	0	3.31	3.31	128.2147	0	0	128.2147			NA
16	<input type="checkbox"/>	0	1308563-5	SMP	1	25	0	5.45	5.45	211.1087	0	0	211.1087			NA
17	<input type="checkbox"/>	0	1309040-2	SMP	1	25	0	3.82	3.82	147.9698	0	0	147.9698			NA
18	<input type="checkbox"/>	0	1309040-3	SMP	1	25	0	6.22	6.22	240.9351	0	0	240.9351			NA
19	<input type="checkbox"/>	0	1309041-1	SMP	1	25	0	5.64	5.64	218.4685	0	0	218.4685			NA
20	<input type="checkbox"/>	0	1309052-2	SMP	1	25	0	4.2	4.2	162.6893	0	0	162.6893			NA
21	<input type="checkbox"/>	0	1309052-2	DUP	1	25	0	4.26	4.26	165.0134	0	0	165.0134			NA
22	<input type="checkbox"/>	0	1309052-3	SMP	1	25	0	4.05	4.05	156.879	0	0	156.879			NA
23	<input type="checkbox"/>	0	AK130906-2	MB	1	100	0	0.31	0.31	3.002005	0	0	3.002005			NA
24	<input type="checkbox"/>	0	AK130906-2	LCS	1	100	4.92	5.08	10	1.54942	95.28944	0	96.83886			NA
25	<input type="checkbox"/>	0	1308462-1	SMP	1	25	0	4.53	4.53	175.472	0	0	175.472			NA
26	<input type="checkbox"/>	0	1308468-11	SMP	1	25	0	2.64	2.64	102.2618	0	0	102.2618			NA
27	<input type="checkbox"/>	0	1308468-11	DUP	1	25	0	2.74	2.74	106.1354	0	0	106.1354			NA
28	<input type="checkbox"/>	0	1308509-2	SMP	1	25	0.53	8.74	9.29	317.2441	42.6091	0	359.8532			NA
29	<input type="checkbox"/>	0	1308530-2	SMP	1	25	0	5.68	5.68	220.0179	0	0	220.0179			NA
30	<input type="checkbox"/>	0	1308530-2	DUP	1	25	0	5.72	5.72	221.5673	0	0	221.5673			NA
31	<input type="checkbox"/>	0	1308543-2	SMP	1	25	0	3.64	3.64	140.9974	0	0	140.9974			NA
32	<input type="checkbox"/>	0	1308543-3	SMP	1	25	0	2.91	2.91	112.7204	0	0	112.7204			NA
33	<input type="checkbox"/>	0	1308543-5	SMP	1	25	0	9.31	9.31	360.628	0	0	360.628			NA
34	<input type="checkbox"/>	0	1308543-6	SMP	1	25	0	10.34	10.34	400.5255	0	0	400.5255			NA
35	<input type="checkbox"/>	0	1308546-1	SMP	1	25	0	4.22	4.22	163.464	0	0	163.464			NA
36	<input type="checkbox"/>	0	1308564-2	SMP	1	25	0	8.03	8.03	311.0464	0	0	311.0464			NA
37	<input type="checkbox"/>	0	1308564-7	SMP	1	25	0	5.87	5.87	227.3777	0	0	227.3777			NA

Num	Don't Use	ReRun Num	Lab ID	QC Type	Anal Dil	Aliq Titrated (mL)	vol to pH 8.3(mL)	vol to pH 4.5(mL)	total vol(mL)	HCO <sub>3</sub> (mg/L as CaCO <sub>3</sub> )	CO <sub>3</sub> (mg/L as CaCO <sub>3</sub> )	OH (mg/L as CaCO <sub>3</sub> )	Total Alk (mg/L as CaCO <sub>3</sub> )	Expected	%Rec	vol to LL pH(mL)
38	<input type="checkbox"/>	0	1308564-12	SMP	1	25	0	9.51	9.51	368.3751	0	0	368.3751			NA
39	<input type="checkbox"/>	0	1308564-17	SMP	1	25	0	3.6	3.6	139.448	0	0	139.448			NA
40	<input type="checkbox"/>	0	1308564-22	SMP	1	25	0	6.63	6.63	256.8167	0	0	256.8167			NA
41	<input type="checkbox"/>	0	1308564-27	SMP	1	25	0	6.52	6.52	252.5558	0	0	252.5558			NA
42	<input type="checkbox"/>	0	1308558-6	SMP	1	25	0	0.25	0.25	2.711488	0	0	2.711488			0.18
43	<input type="checkbox"/>	0	WC130906-1	MB	1	100	0	0.44	0.44	4.26091	0	0	4.26091			NA
44	<input type="checkbox"/>	0	WC130906-1	LCS	1	100	4.22	5.17	9.389999	9.199691	81.73199	0	90.93169			NA
45	<input type="checkbox"/>	0	1308431-2	SMP	1	100	0	0.25	0.25	0.2905166	0	0	0.2905166			0.22
46	<input type="checkbox"/>	0	1308431-3	SMP	1	100	0	1.12	1.12	10.84595	0	0	10.84595			NA
47	<input type="checkbox"/>	0	1308558-2	SMP	1	100	0	2.44	2.44	23.62868	0	0	23.62868			NA
48	<input type="checkbox"/>	0	1308558-3	SMP	1	100	0	1.02	1.02	9.877564	0	0	9.877564			NA
49	<input type="checkbox"/>	0	1308558-3	DUP	1	100	0	1.1	1.1	10.65228	0	0	10.65228			NA
50	<input type="checkbox"/>	0	1308558-4	SMP	1	100	0	0.4	0.4	0.3873557	0	0	0.3873557			0.36
51	<input type="checkbox"/>	0	1308558-5	SMP	1	100	0	0.4	0.4	2.033616	0	0	2.033616			0.19
52	<input type="checkbox"/>	0	1308558-7	SMP	1	100	0	0.37	0.37	1.936777	0	0	1.936777			0.17
53	<input type="checkbox"/>	0	1308558-8	SMP	1	100	0	3.79	3.79	36.70193	0	0	36.70193			NA
54	<input type="checkbox"/>	0	1308577-1	SMP	1	25	0	4.41	4.41	170.8237	0	0	170.8237			NA
55	<input type="checkbox"/>	0	1308577-2	SMP	1	25	0	1.96	1.96	75.92167	0	0	75.92167			NA

**Comments:** Prepped and analyzed on 09/06/13 from 0930-1645. KLR/AJD.

#### Standards, Batch QC, and Matrix Spike Information

ID	Parent ID	Parent Conc	Parent Vol.	Final Vol.
ICV	ST101202-3	10000	1	100
CCV	ST101202-3	10000	1	100

#### Reagent List:

0.020 N HCl Titrant	RG130724-2
Phenolphthalein Indicator	RG130531-5
Bromocresol Green Indicator	RG130820-1
0.20 N Std. THAM	ST121213-1
0.20 N NaCO <sub>3</sub> (ICV, LCS, CCV's - 1.0 mL)	ST121213-2

## pH Calculations and Quality Control Results

Prep & Analysis Date: 09/03/2013  
 Prep & Analysis Time: 11:00 - 16:30  
 Analyst: AJD/KLR

### Reagent List:

4.01: ST130712-2	10.01: ST130816-1	2.00: ST130725-1
7.00 (CCV): ST120921-2	7.00 (ICV): ST130708-1	12.45: ST130715-1

ID	Temp. (°C)	Method	sample vol (g)	sample vol (mL)	pH Value	QC Acceptance Range (pH units)
pH 4.01	25.4	NA	NA	NA	4.01	+/- 0.05
pH 7.00	25.4	NA	NA	NA	7.00	
pH 10.01	25.4	NA	NA	NA	10.01	
ICV - pH 7.00	25.4	NA	NA	NA	7.00	
1308542-1	25.4	EPA150.1	NA	20.0	6.97	
1308542-1DUP	25.4	EPA150.1	NA	20.0	6.95	
1308545-1	25.4	EPA150.1	NA	20.0	8.35	
1308545-3	25.4	EPA150.1	NA	20.0	8.98	
1308546-1	25.4	4500-H	NA	20.0	7.92	
1308557-1	25.4	9040PH	NA	20.0	8.14	
1308558-6	25.4	9040PH	NA	20.0	5.98	+/- 0.10
1308577-1	25.4	9040PH	NA	20.0	7.49	
1308577-2	25.4	9040PH	NA	20.0	7.71	
1308578-1	25.4	9040PH	NA	20.0	3.92	
CCV- pH 7.00	25.4	NA	NA	NA	7.01	
1308558-2	25.4	9045PH	20	20.0	7.02	
1308558-2DUP	25.4	9045PH	20	20.0	6.93	
1308558-3	25.4	9045PH	20	20.0	7.42	
1308558-4	25.4	9045PH	20	20.0	6.11	
1308558-5	25.4	9045PH	20	20.0	6.33	
1308558-7	25.4	9045PH	20	20.0	6.13	+/- 0.10
1308558-8	25.4	9045PH	20	20.0	7.94	
CCV- pH 7.00	25.4	NA	NA	20.0	7.00	

### DUPLICATE SUMMARY (Aq)

ID	native pH Value	duplic pH Value	difference of native - dup	accept. limit
1308542-1	6.97	6.95	0.02	0.2 pH units

### DUPLICATE SUMMARY (Soil)

ID	native pH Value	duplic pH Value	difference of native - dup	accept. limit
1308558-2	7.02	6.93	0.09	0.5 pH units

# Specific Conductivity Calculations & Quality Control Results

Prep & Analysis Date: 09/03/2013  
 Prep & Analysis Time: 11:00 - 15:30  
 Analyst: AJD/KLR

ID	sample vol (mL)	Temp. °C	Conductivity Reading (umhos/cm)	% Recovery	recovery limit
Calibration Standard ( * )	NA	25.4	1413	101	646.2 - 789.8
ICV-2nd Source ( ** )	NA	25.4	723		
1308545-1	45	25.4	511		
1308545-3	45	25.4	430		
1308546-1	45	25.4	824		
1308557-1	45	25.4	7270		
1308557-1DUP	45	25.4	7220		
1308576-1	45	25.4	122		
1308576-2	45	25.4	310		
1308576-3	45	25.4	169		
1308576-4	45	25.4	307		
1308577-1	45	25.4	25000		
CCV-1 ( * )	NA	25.4	1422	101	1271.7 - 1554.3
1308577-2	45	25.4	17440	101	1271.7 - 1554.3
CCV-1 ( * )	NA	25.4	1433		

## DUPLICATE SUMMARY

ID	native Spec. Cond. Value	duplic Spec. Cond. Value	RPD %	RPD accept. limit
1308557-1	7270.0000	7220.0000	1	0-10%

## Specific Conductivity - EPA Method 120.1/9050A/SM2510B - SOP 1128

Instrument : Fisher Scientific Conductivity/pH/mV meter model accumet 50 (SN C0000643)  
 Electrode : YSI Incorporated. Model 3440 (Cell K = 10/cm) OR  
 VWR Digital Conductivity Meter w/ electrode NIST (SN A22036)

Reagent List: 0.010 M KCl Solution [1413umhos/cm] ( \* );  
**ST130712-1**

0.005 M KCl Solu+C21tion [718umhos/cm] ( \*\* );  
**ST130607-4**

# TDS Raw Data Worksheet

Anal Run ID **TD130906-1A**

Anal Start Date **9/6/2013**

Num	Don't Use	ReRun Num	Lab ID	QC Type	Samp Vol (ml)	Empty Beaker (g)	A - Beaker + Residue gross (g)	A - Net mass (mg)	B - Beaker + Residue gross (g)	B - Net mass (mg)	Constant Wt (+/- 0.5mg)	Constant Wt (+/- 4%)	calculated conc (mg/L)	DL (mg/L)
1	<input type="checkbox"/>	0	TD130905-1	MB	100	86.4986	86.4987	0.1	86.4984	-0.2	0.3	NA	-2	20
2	<input type="checkbox"/>	0	TD130905-1	LCS	100	70.6194	70.6594	40	70.6586	39.2	0.8	2.02%	392	20
3	<input type="checkbox"/>	0	1308513-67	SMP	100	77.684	77.6976	13.6	77.6977	13.7	0.1	0.73%	137	20
4	<input type="checkbox"/>	0	1308513-70	SMP	100	67.9267	67.9421	15.4	67.9425	15.8	0.4	2.56%	158	20
5	<input type="checkbox"/>	0	1308513-84	SMP	25	50.8275	50.9207	93.2	50.9208	93.3	0.1	0.11%	3732	80
6	<input type="checkbox"/>	0	1308513-84	DUP	25	49.241	49.334	93	49.3344	93.4	0.4	0.43%	3736	80
7	<input type="checkbox"/>	0	1308513-85	SMP	10	45.0141	45.0805	66.4	45.0801	66	0.4	0.60%	6600	200
8	<input type="checkbox"/>	0	1308513-86	SMP	25	76.9446	77.0702	125.6	77.0687	124.1	1.5	1.20%	4964	80
9	<input type="checkbox"/>	0	1308513-87	SMP	50	76.1639	76.2737	109.8	76.2726	108.7	1.1	1.01%	2174	40
10	<input type="checkbox"/>	0	1308513-88	SMP	25	76.0016	76.0771	75.5	76.0764	74.8	0.7	0.93%	2992	80
11	<input type="checkbox"/>	0	1308513-90	SMP	50	78.3659	78.4184	52.5	78.4179	52	0.5	0.96%	1040	40
12	<input type="checkbox"/>	0	1308513-91	SMP	100	65.44	65.4403	0.3	65.4399	-0.1	0.4	NA	-1	20
13	<input type="checkbox"/>	0	1308513-97	SMP	50	51.0669	51.1292	62.3	51.1308	63.9	1.6	2.54%	1278	40
14	<input type="checkbox"/>	0	1308513-98	SMP	50	61.7452	61.8081	62.9	61.8099	64.7	1.8	2.82%	1294	40
15	<input type="checkbox"/>	0	1308513-100	SMP	100	80.8184	80.8733	54.9	80.8745	56.1	1.2	2.16%	561	20
16	<input type="checkbox"/>	0	1308513-105	SMP	50	44.4059	44.469	63.1	44.47	64.1	1	1.57%	1282	40
17	<input type="checkbox"/>	0	1308513-105	DUP	50	50.0535	50.1161	62.6	50.1174	63.9	1.3	2.06%	1278	40
18	<input type="checkbox"/>	0	1308513-111	SMP	100	77.7519	77.7898	37.9	77.7911	39.2	1.3	3.37%	392	20
19	<input type="checkbox"/>	0	1308513-112	SMP	100	71.3746	71.4015	26.9	71.4025	27.9	1	3.65%	279	20
20	<input type="checkbox"/>	0	1308513-114	SMP	100	77.2778	77.301	23.2	77.3018	24	0.8	3.39%	240	20
21	<input type="checkbox"/>	0	1308513-115	SMP	100	98.2502	98.2654	15.2	98.266	15.8	0.6	3.87%	158	20
22	<input type="checkbox"/>	0	1308513-118	SMP	10	75.818	75.9291	111.1	75.9301	112.1	1	0.90%	11210	200
23	<input type="checkbox"/>	0	1308513-122	SMP	100	80.4478	80.4639	16.1	80.4643	16.5	0.4	2.45%	165	20
24	<input type="checkbox"/>	0	TD130905-2	MB	100	97.0591	97.0585	-0.6	97.0589	-0.2	0.4	NA	-2	20
25	<input type="checkbox"/>	0	TD130905-2	LCS	100	80.8188	80.8586	39.8	80.8591	40.3	0.5	1.25%	403	20
26	<input type="checkbox"/>	0	1308513-121	SMP	10	46.0448	46.1621	117.3	46.16	115.2	2.1	1.81%	11520	200
27	<input type="checkbox"/>	0	1308513-121	DUP	10	44.8816	44.9969	115.3	44.9931	111.5	3.8	3.35%	11150	200
28	<input type="checkbox"/>	0	1308513-127	SMP	100	80.6024	80.6194	17	80.6195	17.1	0.1	0.59%	171	20
29	<input type="checkbox"/>	0	1308513-128	SMP	100	80.6781	80.6912	13.1	80.6915	13.4	0.3	2.26%	134	20
30	<input type="checkbox"/>	0	1308513-129	SMP	100	77.9328	77.9491	16.3	77.9487	15.9	0.4	2.48%	159	20
31	<input type="checkbox"/>	0	1308513-130	SMP	100	80.7328	80.7519	19.1	80.7525	19.7	0.6	3.09%	197	20
32	<input type="checkbox"/>	0	1308545-1	SMP	100	81.3328	81.3645	31.7	81.3651	32.3	0.6	1.88%	323	20
33	<input type="checkbox"/>	0	1308545-3	SMP	100	68.9793	69.0042	24.9	69.0052	25.9	1	3.94%	259	20
34	<input type="checkbox"/>	0	1308559-1	SMP	25	43.7878	43.8696	81.8	43.8665	78.7	3.1	3.86%	3148	80
35	<input type="checkbox"/>	0	1308559-1	DUP	25	51.1856	51.2676	82	51.2646	79	3	3.73%	3160	80
36	<input type="checkbox"/>	0	1308559-2	SMP	25	63.2725	63.353	80.5	63.3509	78.4	2.1	2.64%	3136	80
37	<input type="checkbox"/>	0	1308561-1	SMP	100	78.4626	78.5321	69.5	78.5329	70.3	0.8	1.14%	703	20
38	<input type="checkbox"/>	0	1308577-1	SMP	5	45.1418	45.2508	109	45.2483	106.5	2.5	2.32%	21300	400
39	<input type="checkbox"/>	0	1308577-2	SMP	5	48.5275	48.6001	72.6	48.5983	70.8	1.8	2.51%	14160	400
40	<input type="checkbox"/>	0	1308546-1	SMP	100	78.3295	78.3837	54.2	78.3846	55.1	0.9	1.65%	551	20

Shaded values used to determine the calculated concentration

Anal Run ID TD130906-1A

Anal Start Date 9/6/2013

Num	Don't Use	ReRun Num	Lab ID	QC Type	Samp Vol (ml)	Empty Beaker (g)	A - Beaker + Residue gross (g)	A - Net mass (mg)	B - Beaker + Residue gross (g)	B - Net mass (mg)	Constant Wt (+/- 0.5mg)	Constant Wt (+/- 4%)	calculated conc (mg/L)	DL (mg/L)
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**Comments:** Analyzed on 09/06/2013 from 11:15 to 15:30. AJD

**Standards, Batch QC, and Matrix Spike Information**

ID	Parent ID	Parent Conc	Parent Vol.	Final Vol.
LCS	ST130318-1	40000	1	100

**Reagent List:**

TDS Spike Solution: 40.0 mg NaCl/mL ST130318-1

Shaded values used to determine the calculated concentration



Line	Sample	Sample Type	Method	Data File	Comment
1	5X STD	Calibration	130814ic1.met	c:\peaknet\data\130814bic1\130714b_002.dxd	
2	10X STD	Calibration	130814ic1.met	c:\peaknet\data\130814bic1\130714b_003.dxd	
3	25X STD	Calibration	130814ic1.met	c:\peaknet\data\130814bic1\130714b_004.dxd	
4	100X STD	Calibration	130814ic1.met	c:\peaknet\data\130814bic1\130714b_005.dxd	
5	500X STD	Calibration	130814ic1.met	c:\peaknet\data\130814bic1\130714b_006.dxd	
6	1000X STD	Calibration	130814ic1.met	c:\peaknet\data\130814bic1\130714b_007.dxd	
7	0 STD	Calibration	130814ic1.met	c:\peaknet\data\130814bic1\130714b_008.dxd	
8	ICB	Sample	130814ic1.met	c:\peaknet\data\130814bic1\130714b_009.dxd	
9	ICV	Sample	130814ic1.met	c:\peaknet\data\130814bic1\130714b_010.dxd	
10	Blank	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_010.dxd	Blank
11	CCV	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_011.dxd	CCV All targets Pass
12	CCB	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_012.dxd	CCB All targets Pass
13	IC130830-1LCS	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_013.dxd	water
14	IC130830-1MB	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_014.dxd	water
15	IC130830-1RVS	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_015.dxd	NO3,SO4
16	1308541-1	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_016.dxd	NO3,SO4
17	1308541-1MS	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_017.dxd	NO3,SO4
18	1308541-1MSD	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_018.dxd	Br,Cl,F,NO2,NO3,SO4
19	1308546-1	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_019.dxd	Br,Cl,F,NO2,NO3,SO4
20	1308546-1 5x	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_020.dxd	Br,Cl,F,NO2,NO3,SO4
21	1308545-1	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_021.dxd	Br,Cl,F,NO2,NO3,SO4
22	1308545-1 5x	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_022.dxd	Br,Cl,F,NO2,NO3,SO4
23	CCV	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_023.dxd	CCV All targets Pass
24	CCB	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_024.dxd	CCB
25	1308545-3	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_025.dxd	Br,Cl,F,NO2,NO3,SO4
26	1308545-3 5x	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_026.dxd	Br,Cl,F,NO2,NO3,SO4
27	1308445-2 50x	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_027.dxd	Cl,SO4 (RR for Cl)
28	CCV	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_028.dxd	CCV All targets Pass
29	CCB	Sample	130814ic1a.met	c:\peaknet\data\130830ic1\130830_029.dxd	CCB
30	Stop	Sample	stop.met	c:\peaknet\data\130830ic1\130830_030.dxd	Stop

Default Method Path: C:\PEAKNET\METHOD

Default Data Path: C:\PEAKNET\DATA\130701IC1

Comment:

BatchDx created schedule.

Analyst: AOD

Instrument #1: DIONEX DX-120. ID Serial Number: 99060762

Analytical Column: Dionex IonPac AS14 S/N 029999

Methods: EPA 300.0 and SW9056. ALS SOP 1113

Eluent: Made daily, 10mL of Eluent Concentrate ID: RG130304-2 to 1000mL of DI water.

Final ID Aliq

cal std level 1 (1000x)	10.00	ST130603-9, ST130613-1	0.01
cal std level 2 (100x)	5.00	"	0.05
cal std level 3 (25x)	5.00	"	0.20
cal std level 4 (10x)	5.00	"	0.50
cal std level 5 (5x)	5.00	"	1.00
cal std level 6 (2.5x)	5.00	"	2.00

CCV	5.00	ST130729-2, ST130806-3	0.50
RVS	5.00	ST130613-1, ST130806-3	0.01
ICV	5.00	ST130502-5	0.25
		ST130626-11	0.10
LCS & MS/D	5.00	ST130208-9, ST130806-2	0.05

Dilutions Table: All to 5mL Final Volume

10X	0.5mL
20X	0.25mL
25X	0.2mL
50X	0.1mL
100X	0.05mL
200X	0.025mL
500X	0.01mL

## Method Report - 130814ic1.met

---

### Method Information : Select Module(s)

System Name : DX-120 IC-1  
System Number : 1  
Method Type : Ion Chromatography  
Column : AS14 4-MM  
Analyst : WETCHEM  
Comment : Flow rate = 1.2 mL/min,  
Eluent = 3.5mM Na2CO3 / 1.0 mM NaHCO3

---

### DX-120 Timed Events

Module Name : DX-120 #1  
Module Serial Number : 99060762  
System Mode : Column  
Column : A  
Pump : On  
SRS / Cell : On  
Eluent Pressure : On  
Pressure Unit : psi  
TTL 1 Label : TTL 1  
TTL 2 Label : TTL 2  
Comment :

Time	Offset	Valve	TTL1	TTL2	AC	Collect
Init	*	Load	Low	Low	Off	
0.00		Load	Low	Low	Off	Begin
0.10		Inject	Low	Low	Off	
0.40		Load	Low	Low	Off	
11.80		Load	High	Low	Off	

---

### DX-120 Detector Parameters

Detector Type : DX-120  
Data collection time (minutes) : 14.00  
Data Collection Rate : 5.00  
Real time plot scale maximum ( $\mu$ S) : 40.000  
Real time plot scale minimum ( $\mu$ S) : -3.000

---

### DX-120 Integration Parameters

Peak detection algorithm : Standard  
Starting peak width (seconds) : 8.00  
Peak threshold : 0.50  
Peak area reject (area counts) : 800.00  
Reference peak area reject (area counts) : 1000.00

---

### DX-120 Smoothing Parameters

Filter Type : No filter

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**DX-120 Report Data****Report Format File : C:\PeakNet\method\IC Report\_std.rpt****Print Sample Analysis : Yes****Print Calibration Update : Yes****Print Check Standard : Yes****System Suitability Tests :****No system suitability tests selected.**

---

**DX-120 Integration Data Events**

Time	Description
0.00	Stop peak detection
0.05	Force baseline at start of all peaks
1.90	Start peak detection
2.20	Void volume treatment for this peak
3.00	Void volume treatment for this peak

---

**DX-120 Calibration Parameters****External or internal calibration : EXTERNAL****Number of replicates for calibration : 1****Rejection : Manual****Level Weighting : Equal****Calibration standard volume : 1.00****Default sample volume : 1.00****Amount units :****Replace retention time : Yes****Update response : Yes****Default dilution factor : 1.00****Default response factor for unknown peaks : 0.00**

---

**Calculate unknowns by area or height : Area****DX-120 Component Identification Table**

Component	Retention	Tolerance	Reference
Fluoride	2.83 min	5.00 %	
Chloride	3.85 min	5.00 %	
Nitrite as N	4.53 min	4.90 %	
Bromide	5.60 min	7.30 %	
Nitrate as N	6.47 min	10.00 %	
Orthophosphate as P	8.97 min	4.10 %	
Sulfate	10.93 min	4.10 %	
Nitrate/Nitrite as N	20.00 min	5.00 %	

---

### DX-120 Component Quantitation Table

Component	Retention	Low Limit	High Limit
Fluoride	2.83 min	100	10000
Chloride	3.85 min	200	20000
Nitrite as N	4.53 min	100	10000
Bromide	5.60 min	200	20000
Nitrate as N	6.47 min	200	20000
Orthophosphate as P	8.97 min	300	20000
Sulfate	10.93 min	500	100000
Nitrate/Nitrite as N	20.00 min	1	10

### DX-120 Component Calibration Table

Component	Retention Time	Curve Fit	Origin	Cal. by	Response Component	Relative Factor
Fluoride	2.83 min	Quadratic	Ignore	Area		0.00
Chloride	3.85 min	Quadratic	Ignore	Area		0.00
Nitrite as N	4.53 min	Quadratic	Ignore	Area		0.00
Bromide	5.60 min	Quadratic	Ignore	Area		0.00
Nitrate as N	6.47 min	Quadratic	Ignore	Area		0.00
Orthophosphate as P	8.97 min	Quadratic	Ignore	Area		0.00
Sulfate	10.93 min	Quadratic	Ignore	Area		0.00
Nitrate/Nitrite as N	20.00 min	Quadratic	Ignore	Area		0.00

### DX-120 Component = Fluoride Levels Table

Retention Time : 2.83 min

Amount units :

Replicate unit type : Area

Number of levels : 7

Number of replicates : 1

Level	Amount	Replicate 1
1	10000.00	2.09342e + 006
2	5000.00	1.01061e + 006
3	2000.00	373139
4	500.00	86811
5	100.00	17291
6	50.00	10708

---

**DX-120 Component = Chloride Levels Table****Retention Time : 3.85 min****Amount units :****Replicate unit type : Area****Number of levels : 7****Number of replicates : 1**

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<b>Level</b>	<b>Amount</b>	<b>Replicate 1</b>
<b>1</b>	<b>20000.00</b>	<b>3.04975e + 006</b>
<b>2</b>	<b>10000.00</b>	<b>1.41923e + 006</b>
<b>3</b>	<b>4000.00</b>	<b>522029</b>
<b>4</b>	<b>1000.00</b>	<b>125340</b>
<b>5</b>	<b>200.00</b>	<b>27852</b>
<b>6</b>	<b>100.00</b>	<b>16655</b>

---

**DX-120 Component = Nitrite as N Levels Table****Retention Time : 4.53 min****Amount units :****Replicate unit type : Area****Number of levels : 7****Number of replicates : 1**

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<b>Level</b>	<b>Amount</b>	<b>Replicate 1</b>
<b>1</b>	<b>10000.00</b>	<b>3.16429e + 006</b>
<b>2</b>	<b>5000.00</b>	<b>1.48949e + 006</b>
<b>3</b>	<b>2000.00</b>	<b>566133</b>
<b>4</b>	<b>500.00</b>	<b>134230</b>
<b>5</b>	<b>100.00</b>	<b>24753</b>
<b>6</b>	<b>50.00</b>	<b>10259</b>

---

**DX-120 Component = Bromide Levels Table****Retention Time : 5.60 min****Amount units :****Replicate unit type : Area****Number of levels : 7****Number of replicates : 1**

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<b>Level</b>	<b>Amount</b>	<b>Replicate 1</b>
<b>1</b>	<b>20000.00</b>	<b>1.0775e + 006</b>
<b>2</b>	<b>10000.00</b>	<b>518603</b>
<b>3</b>	<b>4000.00</b>	<b>197556</b>
<b>4</b>	<b>1000.00</b>	<b>46864</b>
<b>5</b>	<b>200.00</b>	<b>8352</b>
<b>6</b>	<b>100.00</b>	<b>4147</b>

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**DX-120 Component = Nitrate as N Levels Table**

**Retention Time : 6.47 min**

**Amount units :**

**Replicate unit type : Area**

**Number of levels : 7**

**Number of replicates : 1**

<b>Level</b>	<b>Amount</b>	<b>Replicate 1</b>
<b>1</b>	<b>20000.00</b>	<b>8.27424e + 006</b>
<b>2</b>	<b>10000.00</b>	<b>3.77847e + 006</b>
<b>3</b>	<b>4000.00</b>	<b>1.33643e + 006</b>
<b>4</b>	<b>1000.00</b>	<b>300391</b>
<b>5</b>	<b>200.00</b>	<b>55640</b>
<b>6</b>	<b>100.00</b>	<b>26319</b>

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**DX-120 Component = Orthophosphate as P Levels Table**

**Retention Time : 8.97 min**

**Amount units :**

**Replicate unit type : Area**

**Number of levels : 7**

**Number of replicates : 1**

<b>Level</b>	<b>Amount</b>	<b>Replicate 1</b>
<b>1</b>	<b>20000.00</b>	<b>2.84012e + 006</b>
<b>2</b>	<b>10000.00</b>	<b>1.41609e + 006</b>
<b>3</b>	<b>4000.00</b>	<b>551983</b>
<b>4</b>	<b>1000.00</b>	<b>148363</b>
<b>5</b>	<b>200.00</b>	<b>43853</b>
<b>6</b>	<b>100.00</b>	<b>24583</b>

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**DX-120 Component = Sulfate Levels Table**

**Retention Time : 10.93 min**

**Amount units :**

**Replicate unit type : Area**

**Number of levels : 7**

**Number of replicates : 1**

<b>Level</b>	<b>Amount</b>	<b>Replicate 1</b>
<b>1</b>	<b>100000.00</b>	<b>1.27997e + 007</b>
<b>2</b>	<b>50000.00</b>	<b>5.92418e + 006</b>
<b>3</b>	<b>20000.00</b>	<b>2.11679e + 006</b>
<b>4</b>	<b>5000.00</b>	<b>483911</b>
<b>5</b>	<b>1000.00</b>	<b>88240</b>
<b>6</b>	<b>500.00</b>	<b>43959</b>

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**DX-120 Component = Nitrate/Nitrite as N Levels Table**  
**Retention Time : 20.00 min**  
**Amount units :**  
**Replicate unit type : Area**  
**Number of levels : 0**  
**Number of replicates : 1**

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**DX-120 XY Data Parameters**

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## Calibration Update Report

Sample Name : 5X STD

Data File Name : C:\PEAKNET\DATA\130814BIC1\130714B\_002.DXD

Method File Name : C:\PeakNet\method\130814ic1.met	System Operator : JFN
Schedule File Name : c:\peaknet\schedule\130814bc1.sch	Datafile Updated : 8/15/13 11:58:10 AM
Date Time Acquired : 8/14/13 7:48:03 PM	Method Comment : Flow rate = 1.2 mL/min,
Calibration Date : 8/15/13 11:57:44 AM	Eluent = 3...

Peak Information : All Components				
Peak #	Analyte	Retention Time (min.)	Concentration	Peak Area
2	Fluoride	2.81	10000	2093421
3	Chloride	3.84	20000	3049748
4	Nitrite as N	4.49	10000	3164288
5	Bromide	5.53	20000	1077502
6	Nitrate as N	6.20	20000	8274240
7	Orthophosphate as P	8.77	20000	2840121
8	Sulfate	10.80	100000	12799653
	Nitrate/Nitrite as N			



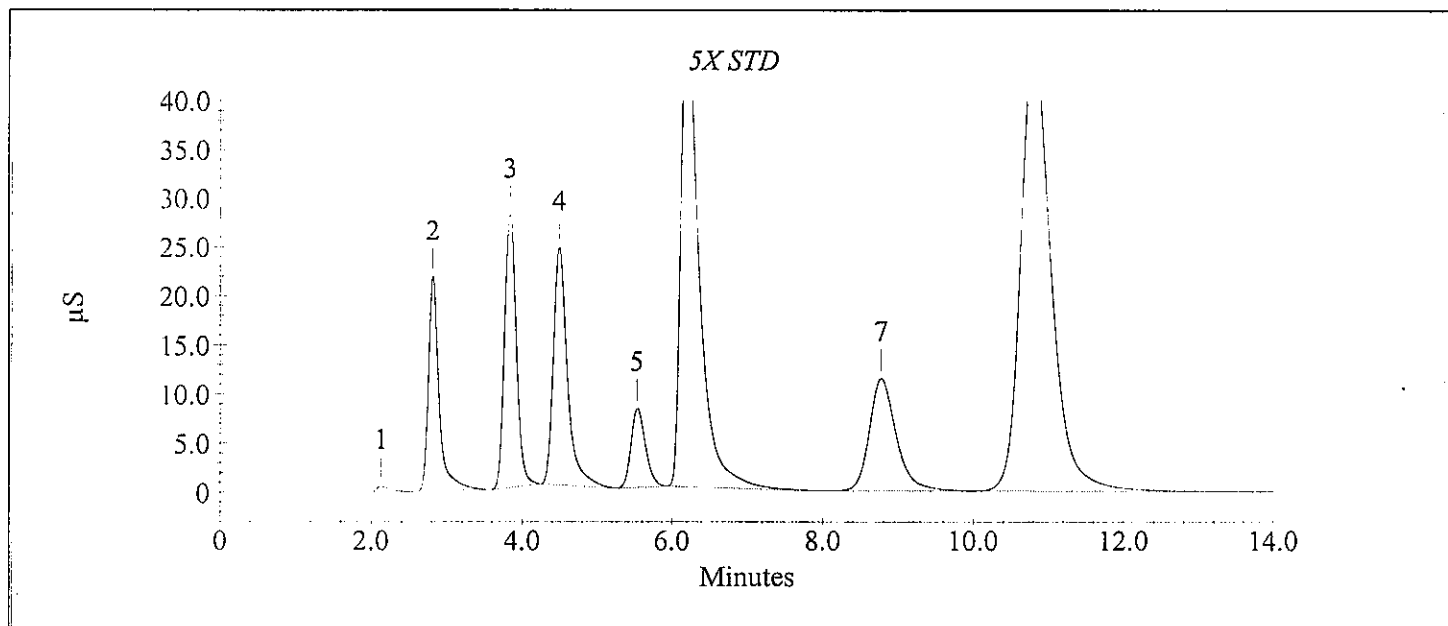
## Calibration Update Report

Sample Name : 5X STD

Data File Name : C:\PEAKNET\DATA\130814BIC1\130714B\_002.DXD

Method File Name : C:\PeakNet\method\130814ic1.met  
Schedule File Name : c:\peaknet\schedule\130814bc1.sch  
Date Time Acquired : 8/14/13 7:48:03 PM  
Calibration Date : 8/15/13 11:57:44 AM

System Operator : JFN  
Datafile Updated : 8/15/13 11:58:10 AM  
Method Comment : Flow rate = 1.2 mL/min,  
Eluent = 3...



## Calibration Update Report

Sample Name : 10X STD

Data File Name : c:\peaknet\data\130814bic1\130714b\_003.DXD

Method File Name : c:\peaknet\method\130814ic1.met	System Operator : JFN
Schedule File Name : c:\peaknet\schedule\130814bc1.sch	Datafile Updated : 8/14/13 8:16:08 PM
Date Time Acquired : 8/14/13 8:02:06 PM	Method Comment : Flow rate = 1.2 mL/min,
Calibration Date : 8/14/13 8:16:08 PM	Eluent = 3...

### Peak Information : All Components

Peak #	Analyte	Retention Time (min.)	Concentration	Peak Area
			ASD 8/10	
2	Fluoride	2.81	10000 5000	1010605
3	Chloride	3.84	20000 10000	1419228
4	Nitrite as N	4.49	10000 5000	1489485
5	Bromide	5.55	20000 10000	518603
6	Nitrate as N	6.24	20000 10000	3778471
7	Orthophosphate as P	8.81	20000 10000	1416094
8	Sulfate	10.85	100000 50000	5924184
	Nitrate/Nitrite as N			

## Calibration Update Report

Sample Name : 10X STD

Data File Name : c:\peaknet\data\130814bic1\130714b\_003.DXD

Method File Name : c:\peaknet\method\130814ic1.met

System Operator : JFN

Schedule File Name : c:\peaknet\schedule\130814bc1.sch

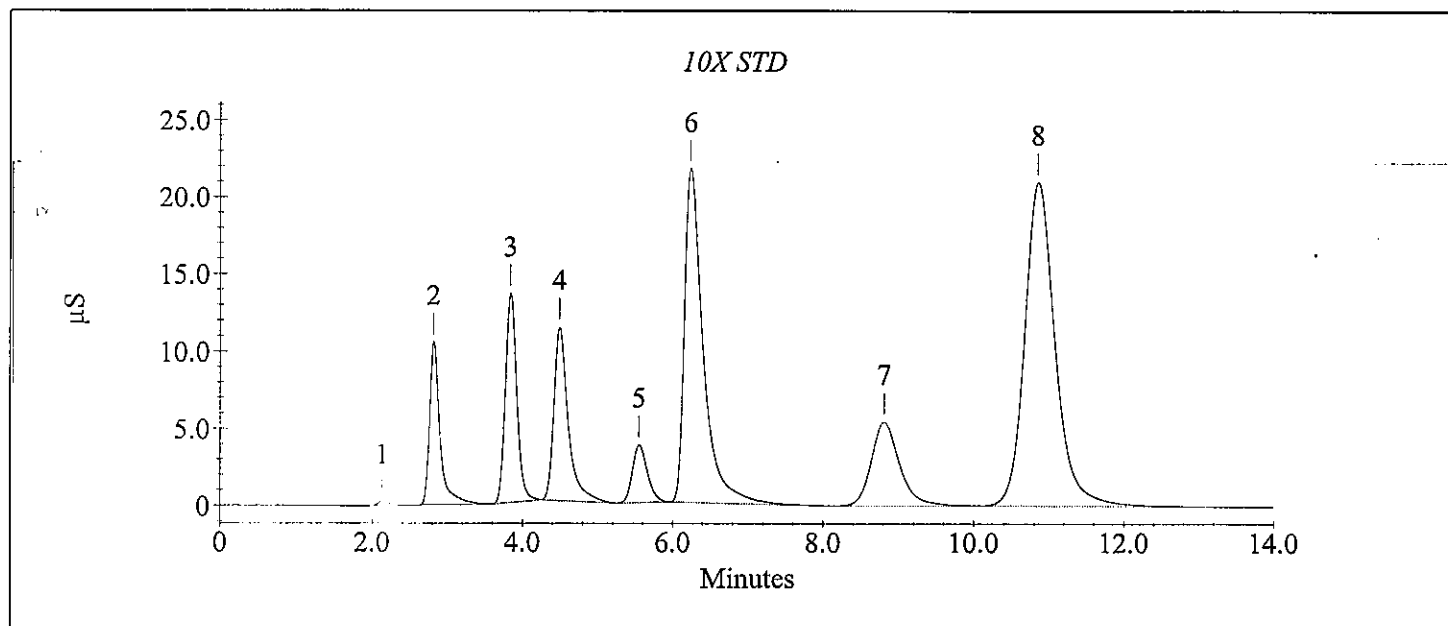
Datafile Updated : 8/14/13 8:16:08 PM

Date Time Acquired : 8/14/13 8:02:06 PM

Method Comment : Flow rate = 1.2 mL/min,

Calibration Date : 8/14/13 8:16:08 PM

Eluent = 3...



# Calibration Update Report

Sample Name : 25X STD

Data File Name : c:\peaknet\data\130814bic1\130714b\_004.DXD

Method File Name : c:\peaknet\method\130814ic1.met	System Operator : JFN
Schedule File Name : c:\peaknet\schedule\130814bc1.sch	Datafile Updated : 8/14/13 8:30:12 PM
Date Time Acquired : 8/14/13 8:16:11 PM	Method Comment : Flow rate = 1.2 mL/min,
Calibration Date : 8/14/13 8:30:12 PM	Eluent = 3...

## Peak Information : All Components

Peak #	Analyte	Retention Time (min.)	Concentration	Peak Area
2	Fluoride	2.81	10000 <del>2000</del>	373139
3	Chloride	3.85	20000 <del>4000</del>	522029
4	Nitrite as N	4.51	10000 <del>2000</del>	566133
5	Bromide	5.57	20000 <del>4000</del>	197556
6	Nitrate as N	6.32	20000 <del>4000</del>	1336430
7	Orthophosphate as P	8.84	20000 <del>4000</del>	551983
8	Sulfate	10.89	100000 <del>20000</del>	2116785
	Nitrate/Nitrite as N			

## Calibration Update Report

Sample Name : 25X STD

Data File Name : c:\peaknet\data\130814bic1\130714b\_004.DXD

Method File Name : c:\peaknet\method\130814ic1.met

Schedule File Name : c:\peaknet\schedule\130814bc1.sch

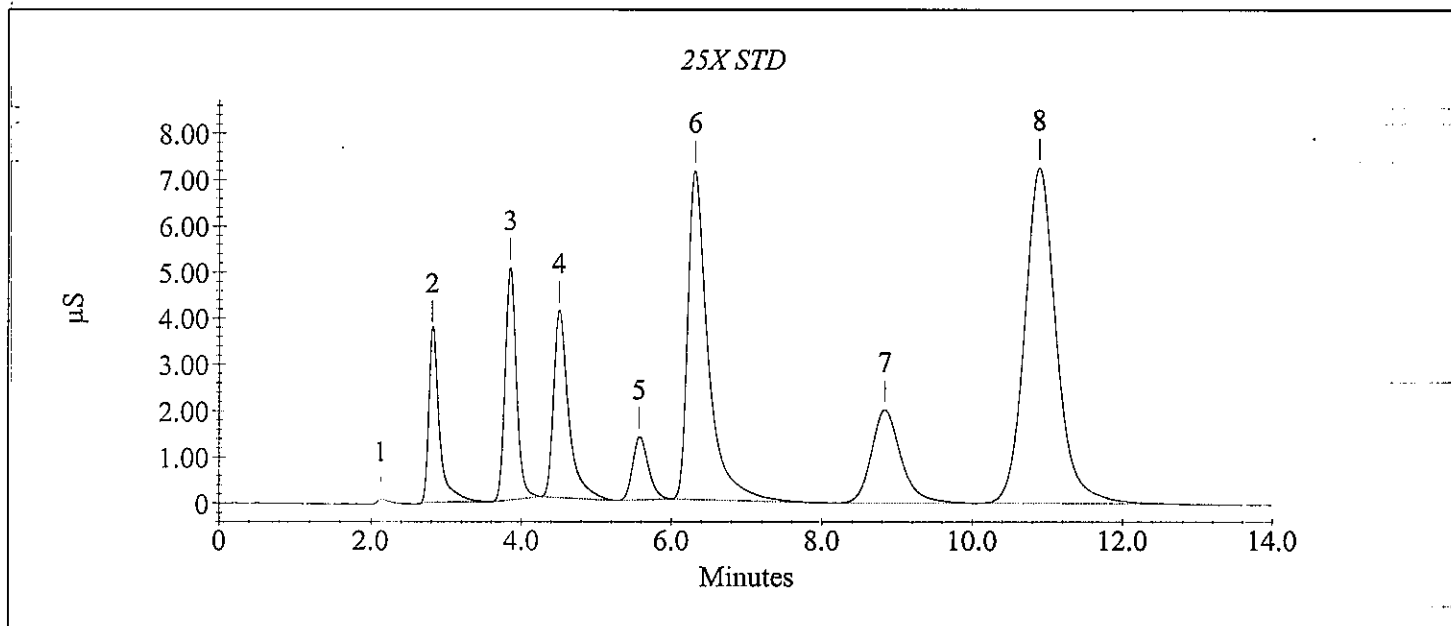
Date Time Acquired : 8/14/13 8:16:11 PM

Calibration Date : 8/14/13 8:30:12 PM

System Operator : JFN

Datafile Updated : 8/14/13 8:30:12 PM

Method Comment : Flow rate = 1.2 mL/min,  
Eluent = 3...



# Calibration Update Report

Sample Name : 100X STD

Data File Name : c:\peaknet\data\130814bic1\130714b\_005.DXD

Method File Name : c:\peaknet\method\130814ic1.met	System Operator : JFN
Schedule File Name : c:\peaknet\schedule\130814bc1.sch	Datafile Updated : 8/14/13 8:44:15 PM
Date Time Acquired : 8/14/13 8:30:14 PM	Method Comment : Flow rate = 1.2 mL/min,
Calibration Date : 8/14/13 8:44:15 PM	Eluent = 3...

## Peak Information : All Components

Peak #	Analyte	Retention Time (min.)	Concentration	Peak Area
2	Fluoride	2.81	10000 500	86811
3	Chloride	3.84	20000 1000	125340
4	Nitrite as N	4.52	10000 500	134230
5	Bromide	5.59	20000 1000	46864
6	Nitrate as N	6.37	20000 1000	300391
7	Orthophosphate as P	8.85	20000 1000	148363
8	Sulfate	10.91	100000 5000	483911
	Nitrate/Nitrite as N			

## Calibration Update Report

Sample Name : 100X STD

Data File Name : c:\peaknet\data\130814bic1\130714b\_005.DXD

Method File Name : c:\peaknet\method\130814ic1.met

Schedule File Name : c:\peaknet\schedule\130814bc1.sch

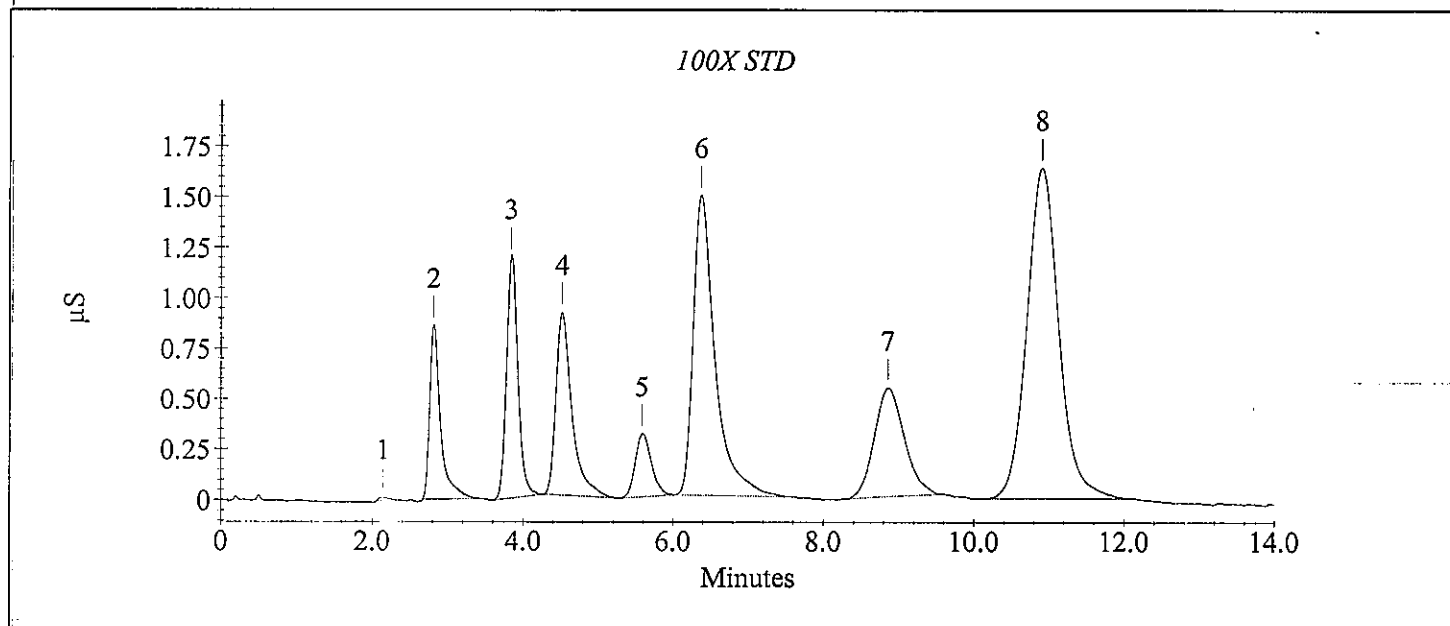
Date Time Acquired : 8/14/13 8:30:14 PM

Calibration Date : 8/14/13 8:44:15 PM

System Operator : JFN

Datafile Updated : 8/14/13 8:44:15 PM

Method Comment : Flow rate = 1.2 mL/min,  
Eluent = 3...



# Calibration Update Report

Sample Name : 500X STD

Data File Name : c:\peaknet\data\130814bic1\130714b\_006.DXD

Method File Name : c:\peaknet\method\130814ic1.met	System Operator : JFN
Schedule File Name : c:\peaknet\schedule\130814bc1.sch	Datafile Updated : 8/14/13 8:58:19 PM
Date Time Acquired : 8/14/13 8:44:18 PM	Method Comment : Flow rate = 1.2 mL/min,
Calibration Date : 8/14/13 8:58:19 PM	Eluent = 3...

## Peak Information : All Components

Peak #	Analyte	Retention Time (min.)	Concentration	Peak Area
1	Fluoride	2.81	10000 100	17291
2	Chloride	3.85	20000 200	27852
3	Nitrite as N	4.53	10000 100	24753
4	Bromide	5.61	20000 200	8352
5	Nitrate as N	6.44	20000 200	55640
6	Orthophosphate as P	8.87	20000 200	43853
7	Sulfate	10.91	100000 1000	88240
	Nitrate/Nitrite as N			



## Calibration Update Report

Sample Name : 500X STD

Data File Name : c:\peaknet\data\130814bic1\130714b\_006.DXD

Method File Name : c:\peaknet\method\130814ic1.met

Schedule File Name : c:\peaknet\schedule\130814bc1.sch

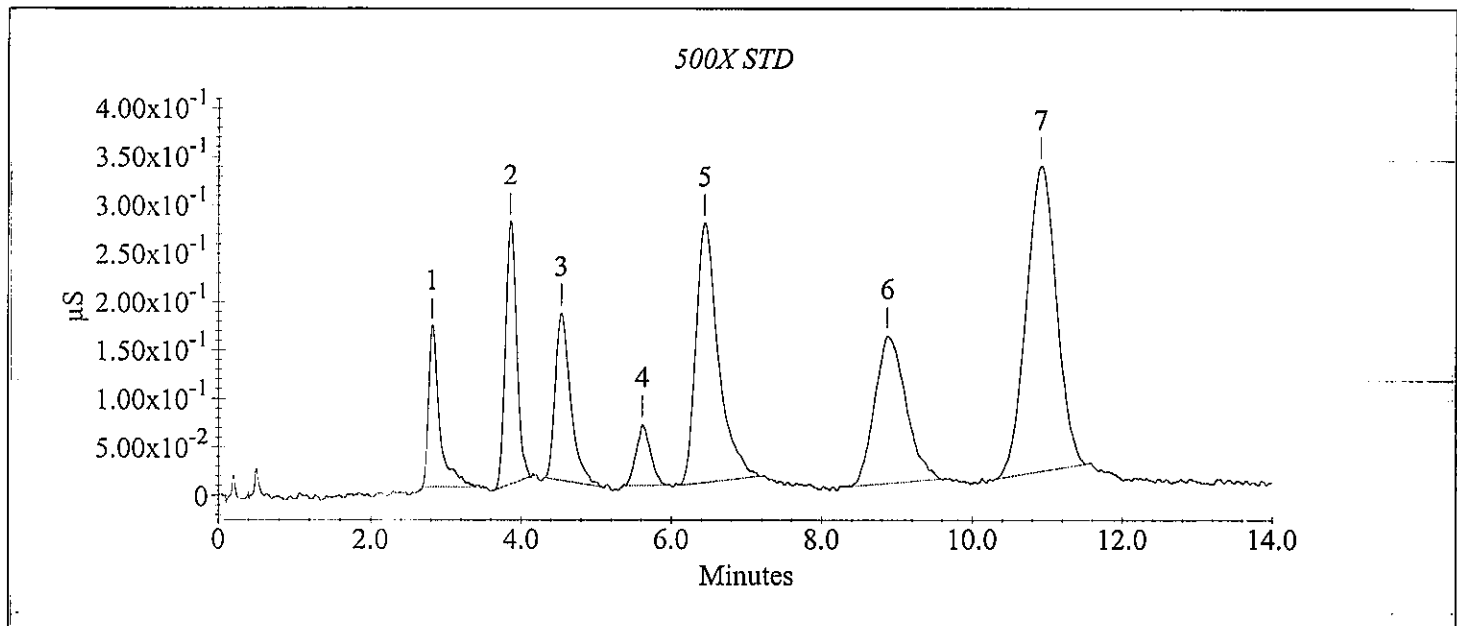
Date Time Acquired : 8/14/13 8:44:18 PM

Calibration Date : 8/14/13 8:58:19 PM

System Operator : JFN

Datafile Updated : 8/14/13 8:58:19 PM

Method Comment : Flow rate = 1.2 mL/min,  
Eluent = 3...



## Calibration Update Report

Sample Name : 1000X STD

Data File Name : c:\peaknet\data\130814bic1\130714b\_007.DXD

Method File Name : c:\peaknet\method\130814ic1.met	System Operator : JFN
Schedule File Name : c:\peaknet\schedule\130814bc1.sch	Datafile Updated : 8/14/13 9:12:22 PM
Date Time Acquired : 8/14/13 8:58:21 PM	Method Comment : Flow rate = 1.2 mL/min,
Calibration Date : 8/14/13 9:12:22 PM	Eluent = 3...

### Peak Information : All Components

Peak #	Analyte	Retention Time (min.)	Concentration	Peak Area
			ASD 9/20	
1	Fluoride	2.83	10000 50	10708
2	Chloride	3.85	20000 100	16655
3	Nitrite as N	4.53	10000 50	10259
4	Bromide	5.60	20000 100	4147
5	Nitrate as N	6.47	20000 100	26319
6	Orthophosphate as P	8.91	20000 100	24583
7	Sulfate	10.93	100000 500	43959
	Nitrate/Nitrite as N			

## Calibration Update Report

Sample Name : 1000X STD

Data File Name : c:\peaknet\data\130814bic1\130714b\_007.DXD

Method File Name : c:\peaknet\method\130814ic1.met

Schedule File Name : c:\peaknet\schedule\130814bc1.sch

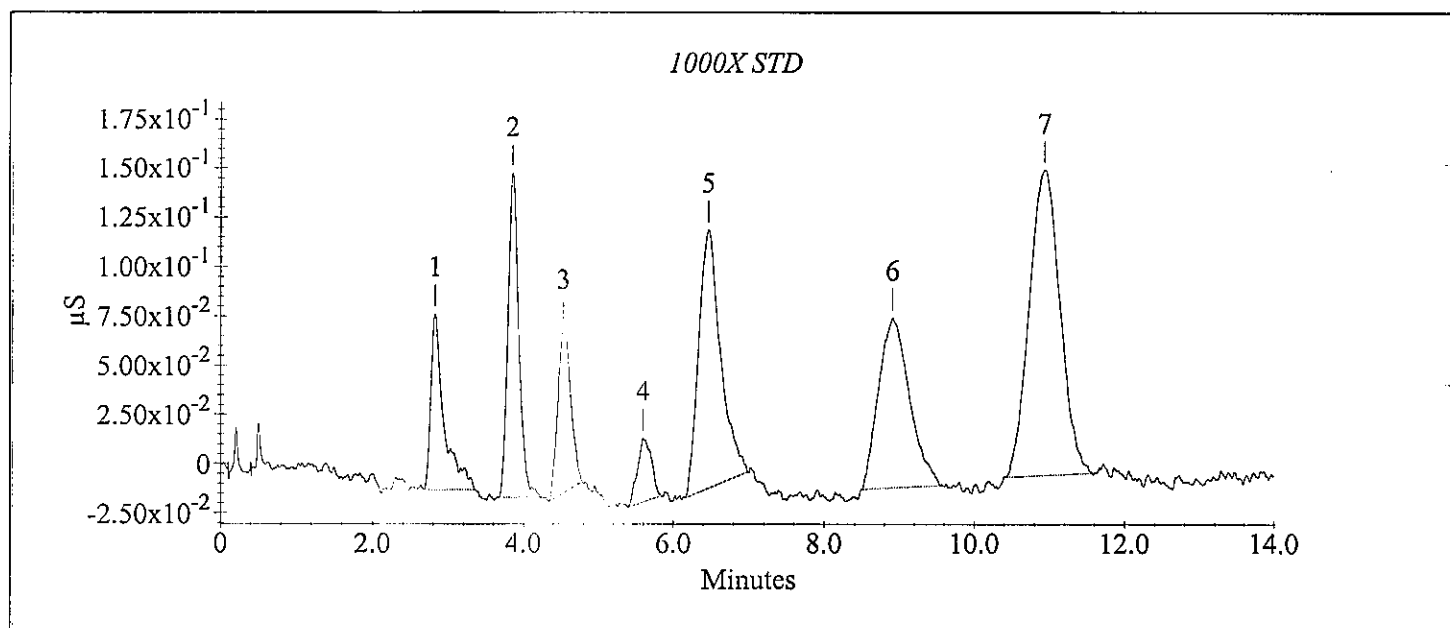
Date Time Acquired : 8/14/13 8:58:21 PM

Calibration Date : 8/14/13 9:12:22 PM

System Operator : JFN

Datafile Updated : 8/14/13 9:12:22 PM

Method Comment : Flow rate = 1.2 mL/min,  
Eluent = 3...



# Calibration Update Report

Sample Name : 0 STD

Data File Name : c:\peaknet\data\130814bcl\130714b\_008.DXD

Method File Name : c:\peaknet\method\130814bcl.met	System Operator : JFN
Schedule File Name : c:\peaknet\schedule\130814bcl.sch	Datafile Updated : 8/14/13 9:26:26 PM
Date Time Acquired : 8/14/13 9:12:24 PM	Method Comment : Flow rate = 1.2 mL/min,
Calibration Date : 8/14/13 9:26:26 PM	Eluent = 3...

Peak Information : All Components					
Peak #	Analyte	Retention Time (min.)	Concentration		Peak Area
			ACTD 4/20		
1	Chloride	3.85	20000	0	2015
1	Chloride	3.85	20000	0	2015
	Nitrite as N			0	
	Bromide			0	
	Nitrate as N			0	
2	Orthophosphate as P	8.97	20000	0	9434
	Sulfate			0	
	Nitrate/Nitrite as N				

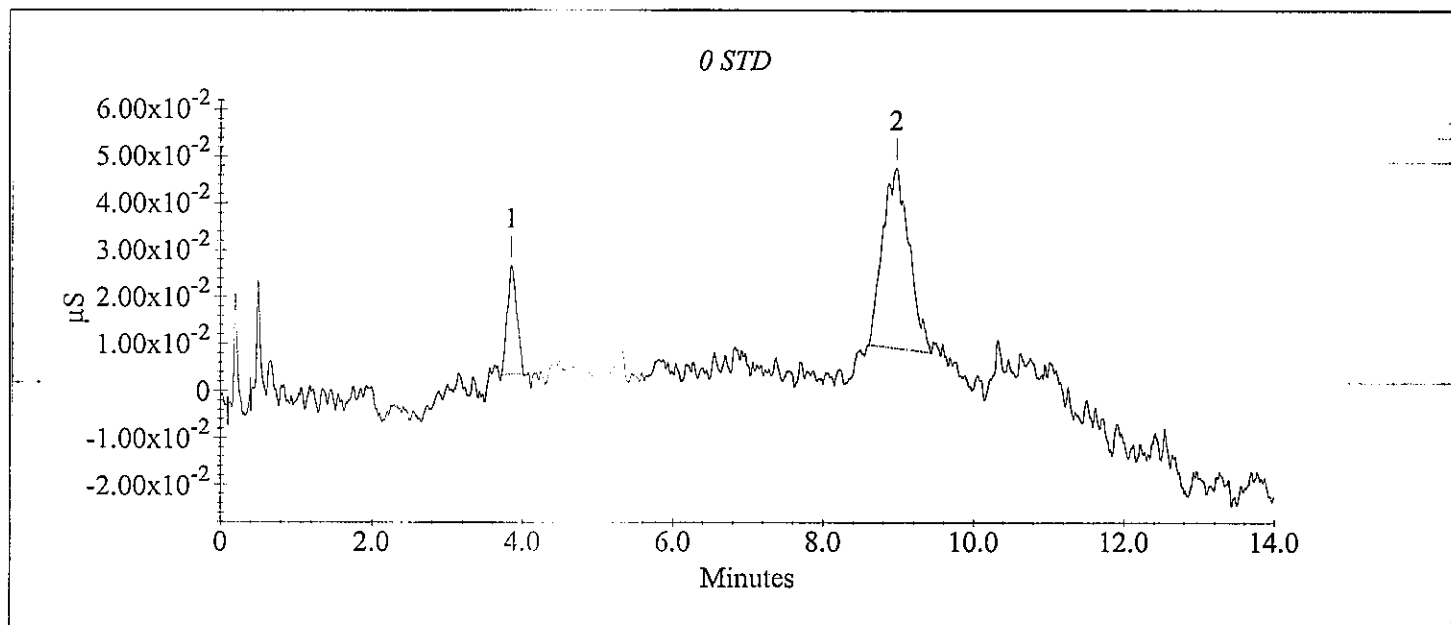
## Calibration Update Report

Sample Name : 0 STD

Data File Name : c:\peaknet\data\130814b1\130714b\_008.DXD

Method File Name : c:\peaknet\method\130814b1.met  
Schedule File Name : c:\peaknet\schedule\130814b1.sch  
Date Time Acquired : 8/14/13 9:12:24 PM  
Calibration Date : 8/14/13 9:26:26 PM

System Operator : JFN  
Datafile Updated : 8/14/13 9:26:26 PM  
Method Comment : Flow rate = 1.2 mL/min,  
Eluent = 3...



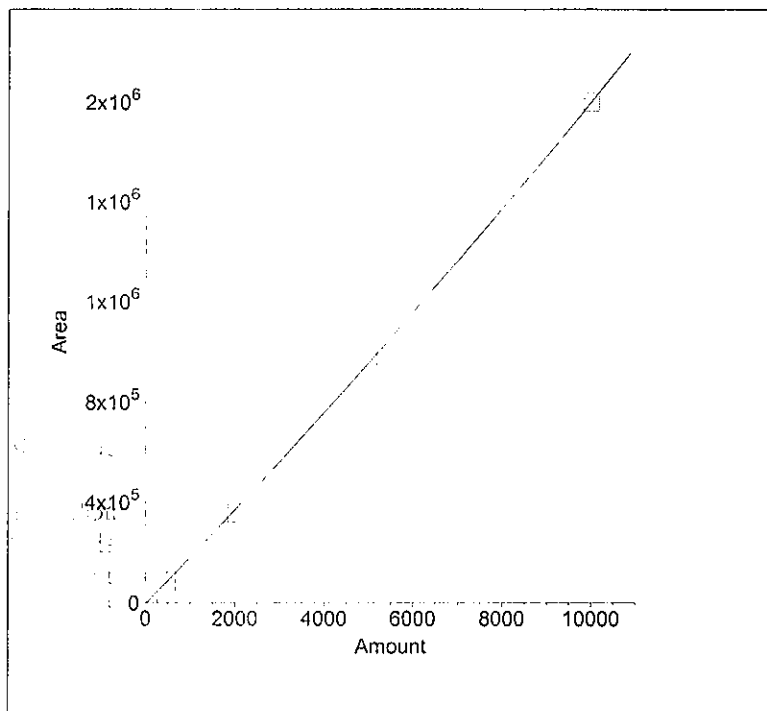
## 1. Component:Fluoride

Standard:External Fit Type:Quadratic

Origin:Ignore Calibration:Area

 $r^2=0.999875$ 

$$\text{Amt} = -1.868592\text{e-}010 \cdot \text{Resp}^2 + 5.148842\text{e-}003 \cdot \text{Resp} + 32.12$$



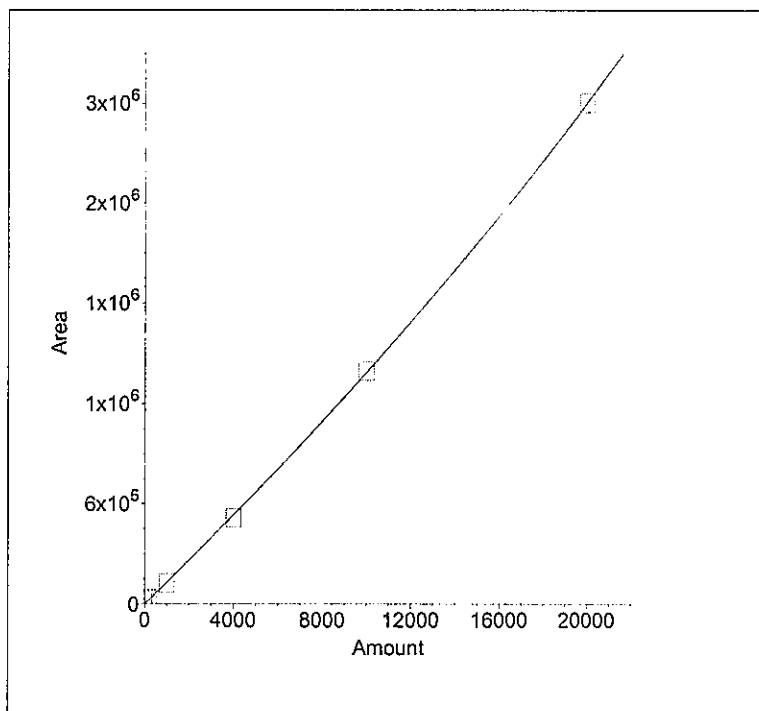
## 2. Component:Chloride

Standard:External Fit Type:Quadratic

Origin:Ignore Calibration:Area

 $r^2=0.999919$ 

$$\text{Amt} = -3.311979\text{e-}010 \cdot \text{Resp}^2 + 7.558046\text{e-}003 \cdot \text{Resp} + 17.45$$



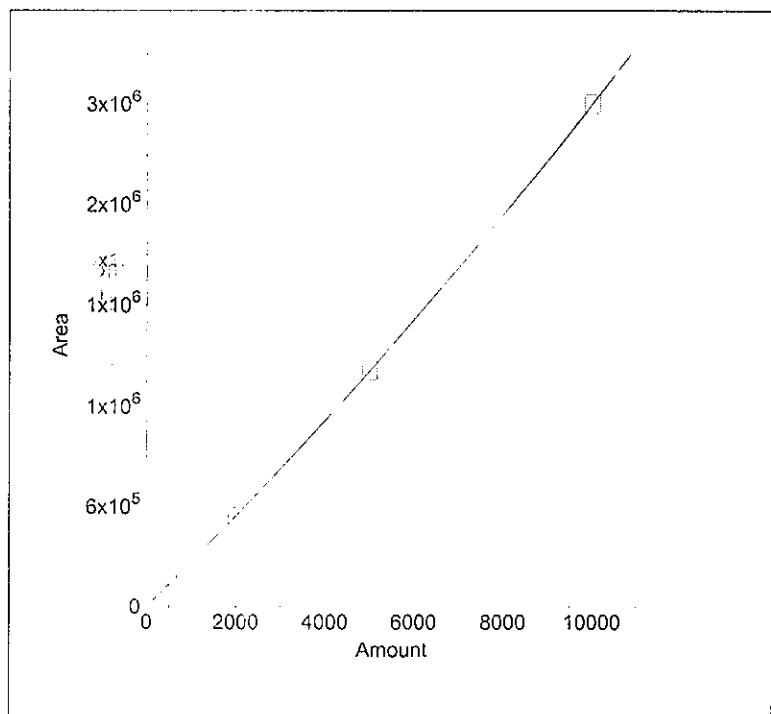
## 3. Component:Nitrite as N

Standard:External Fit Type:Quadratic

Origin:Ignore Calibration:Area

 $r^2=0.999990$ 

$$\text{Amt} = -1.181760\text{e-}010 \cdot \text{Resp}^2 + 3.526729\text{e-}003 \cdot \text{Resp} + 21.58$$



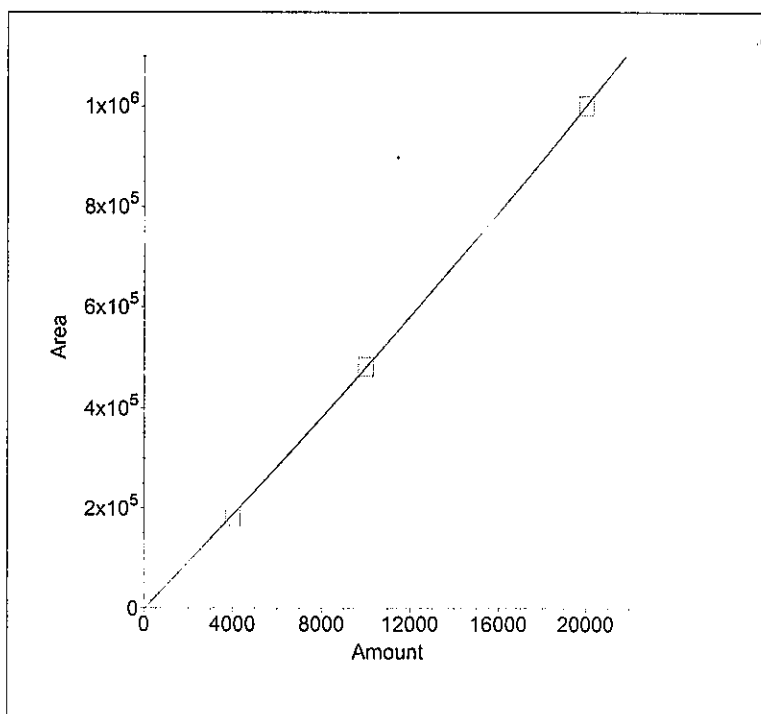
## 4. Component:Bromide

Standard:External Fit Type:Quadratic

Origin:Ignore Calibration:Area

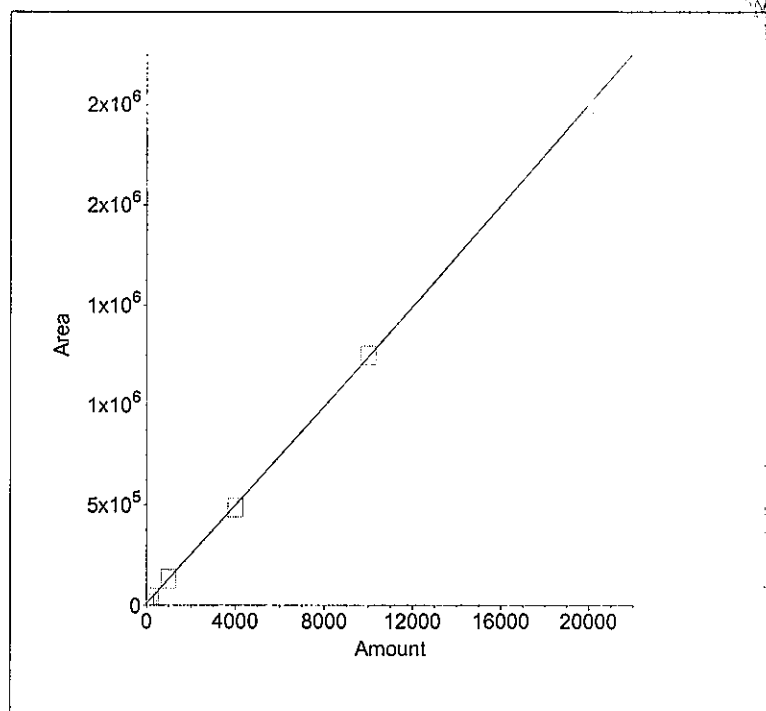
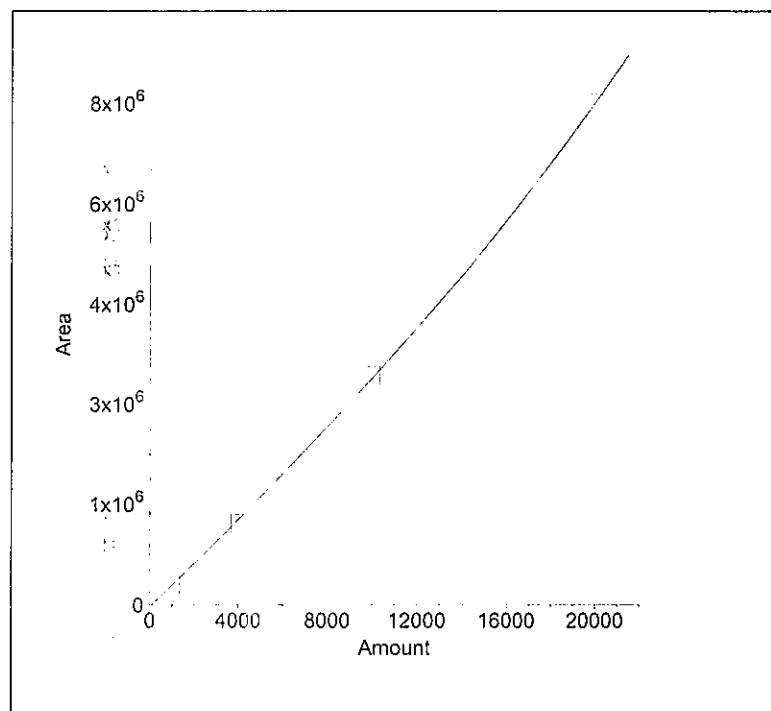
 $r^2=0.999978$ 

$$\text{Amt} = -1.345991\text{e-}009 \cdot \text{Resp}^2 + 1.995996\text{e-}002 \cdot \text{Resp} + 49.01$$



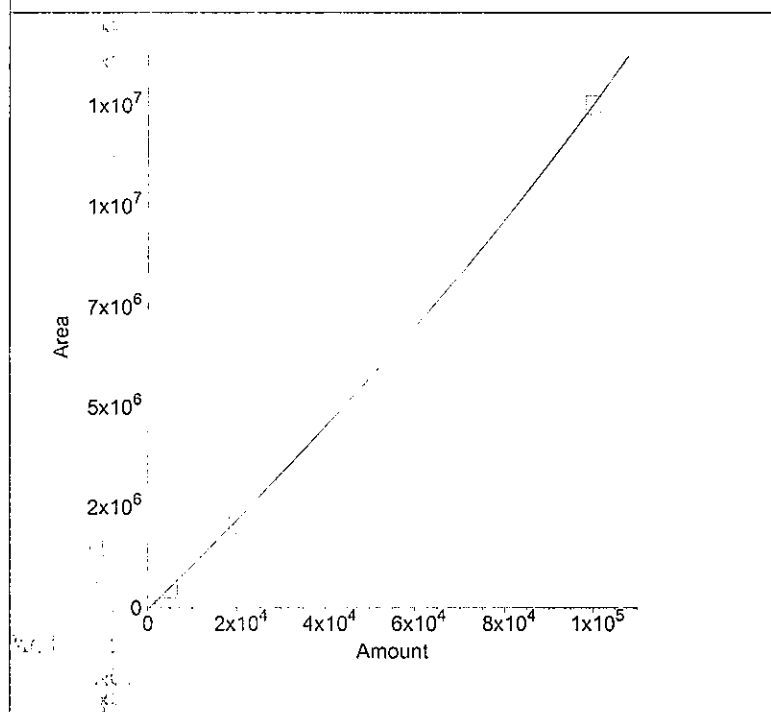
5. Component:Nitrate as N  
Standard:External Fit Type:Quadratic  
Origin:Ignore Calibration:Area  
 $r^2=0.999818$   
 $Amt=-5.424666e-011*Resp^2+$   
 $2.851448e-003*Resp+103.6$

6. Component:Orthophosphate as P  
Standard:External Fit Type:Quadratic  
Origin:Ignore Calibration:Area  
 $r^2=0.999958$   
 $Amt=-6.210229e-011*Resp^2+$   
 $7.239992e-003*Resp+-71.9$



7. Component:Sulfate  
Standard:External Fit Type:Quadratic  
Origin:Ignore Calibration:Area  
 $r^2=0.999840$   
 $Amt=-9.807523e-011*Resp^2+$   
 $9.024771e-003*Resp+471.9$

8. Component:Nitrate/Nitrite as N  
Standard:External Fit Type:Quadratic  
Origin:Ignore Calibration:Area



(No Levels Component)

# **DAILY VERIFICATION FOR ION CHROMATOGRAPH-1** (Used internally for comparative check purposes)

Analysis Date: 08/14/2013

Analyst Name: AJD

Filename for ICV: 130814Bic1/130714B\_011.DXD

Calibration Date: 08/14/2013

Method ID: 130814IC1.met

Updated Method date: NA

## **Calibration Equation Verification (ICV)**

Analyte	calibration type:	1st		2nd		A		B	
		regression coefficient	intercept	regression coefficient	intercept	conc reported by PeakNat ug/L	conc calc by spread-sheet ug/L	observed peak area	A/B *100 agreement %
Ophos	quad. ignore 0,0	2.617353E-10	3.342	7.322904E-03	4810.6	4810.6	4810.6	673604	100.0

## **Retention Time (RT) Verification**

Analyte	RT at		RT in		deviation % (calibration vs. update) 10% tolerance	window width tolerance (NA)
	calibration	updated method (1st ICV or CCV)	calibration	updated method (1st ICV or CCV)		
F	2.81	2.81	2.81	2.81	0.0	5.00 %
Cl	3.85	3.85	3.85	3.85	0.0	5.00 %
NO2-N	4.51	4.51	4.51	4.51	0.0	4.90 %
Br	5.59	5.59	5.59	5.59	0.0	7.30 %
NO3-N	6.32	6.32	6.32	6.32	0.0	10.00 %
PO4-P	8.83	8.83	8.83	8.83	0.0	4.10 %
SO4	10.88	10.88	10.88	10.88	0.0	4.10 %



## Sample Analysis Report

Sample Name : ICV

Data File Name : C:\PEAKNET\DATA\130814BIC1\130714B\_010.DXD

Method File Name : C:\PeakNet\method\130814ic1.met

Current Date : 8/20/13

Date, Time Analyzed : 8/14/13 9:40:32 PM

Current Time : 1:02:56 PM

System Operator : JFN

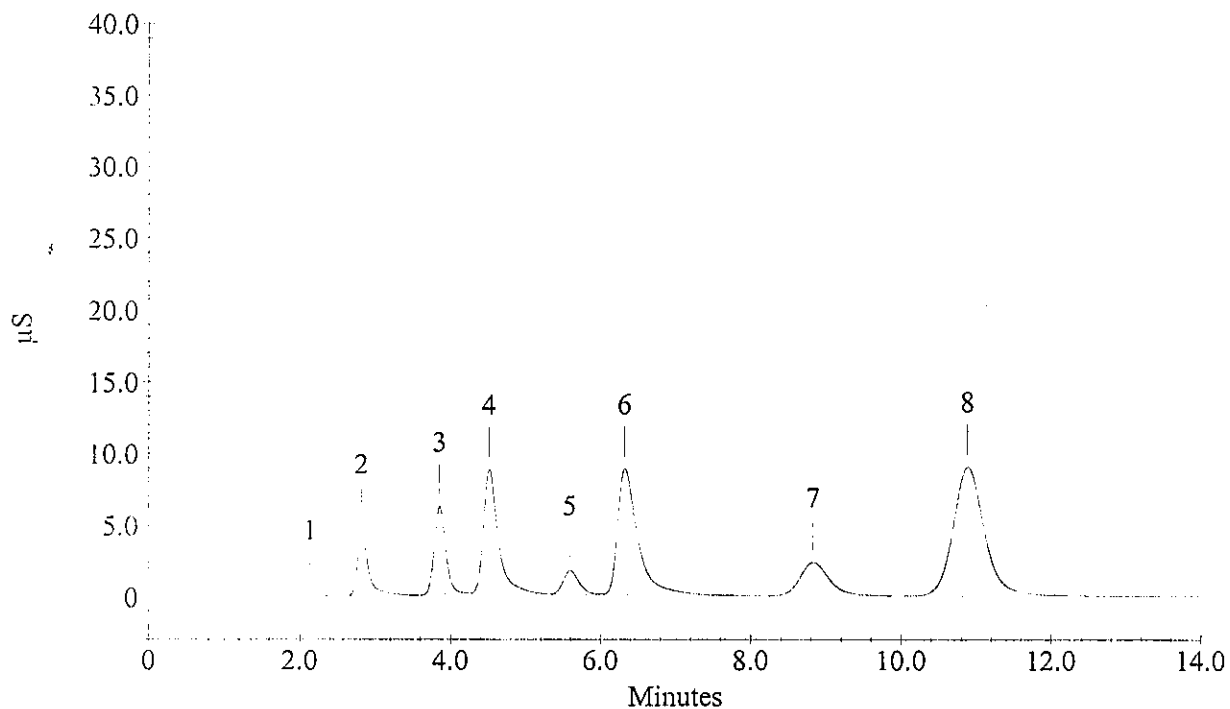
Datafile Updated : 8/15/13 12:08:53 PM

Calibration Updated : 8/15/13 12:05:00 PM

### Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
2	Fluoride	2.81	2357.9 ✓ 94%		459374
3	Chloride	3.85	4695.4 ✓ 94%		636701
4	Nitrite as N	4.51	4036.6 ✓ 100%		1185566
5	Bromide	5.59	4687.6 ✓ 94%		236155
6	Nitrate as N	6.32	4623.6 ✓ 12%		1636071
7	Orthophosphate as P	8.83	4510.5 ✓ 90%		636400
8	Sulfate	10.88	23404.4 ✓ 94%		2615408
	Nitrate/Nitrite as N				

ICV



# Sample Analysis Report

Sample Name : ICB

Data File Name : C:\PEAKNET\DATA\130814BIC1\130714B\_009.DXD

Method File Name : C:\PeakNet\method\130814ic1.met

Current Date : 8/15/13

Date, Time Analyzed : 8/14/13 9:26:28 PM

Current Time : 12:08:23 PM

System Operator : JFN

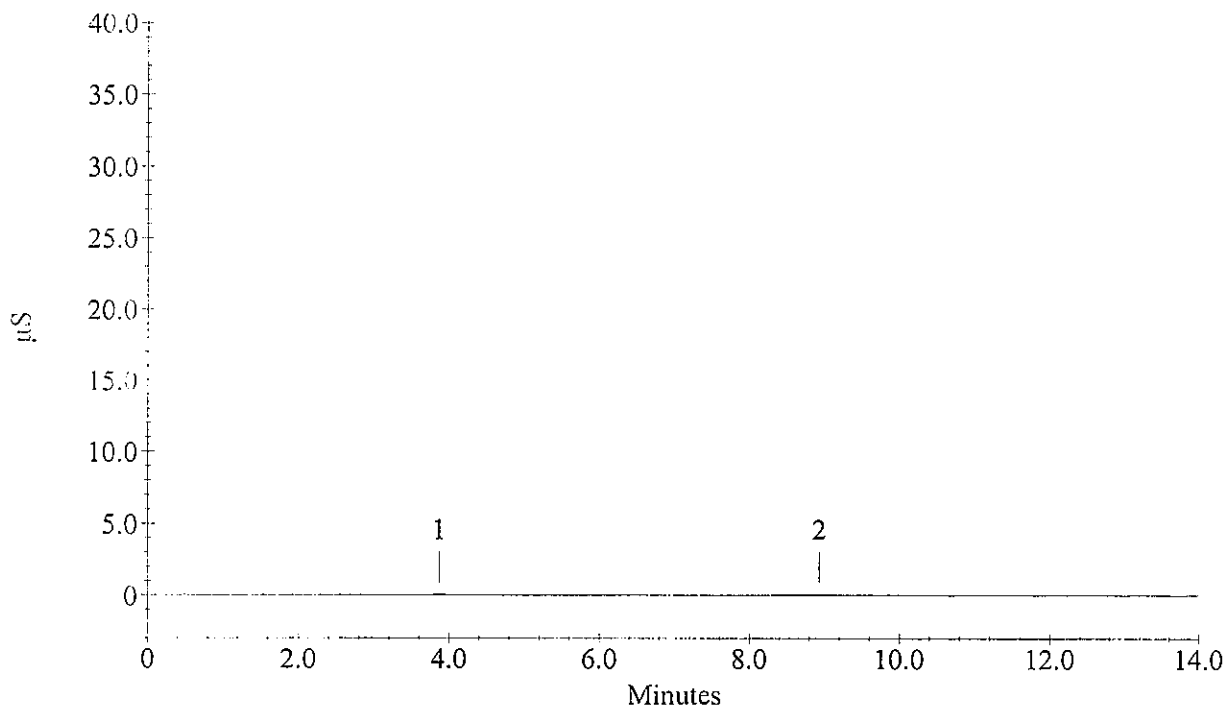
Datafile Updated : 8/14/13 9:40:29 PM

Calibration Updated : 8/15/13 12:05:00 PM

## Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
1	Chloride	3.87	37.6	-	2669
1	Chloride	3.87	37.6	-	2669
	Nitrite as N				
	Bromide				
	Nitrate as N				
2	Orthophosphate as P	8.93	-29.2	-	5897
	Sulfate				
	Nitrate/Nitrite as N				

ICB



# **DAILY VERIFICATION FOR ION CHROMATOGRAPH-1** (Used internally for comparative check purposes)

Analysis Date: 08/29/2013

Analyst Name: AJD

Filename for CCV: 130829|c1/130829\_011.DXD

Calibration Date: 08/14/2013

Method ID: 130814|C1A.met

Updated Method date: NA

## **Calibration Equation Verification (ICV)**

Analyte	calibration type:	1st		2nd		A		B	
		regression coefficient	intercept	regression coefficient	intercept	conc reported by PeakNet ug/L	observed peak area	conc calc by spread- sheet ug/L	A/B *100 agreement %
Ophos	quad. ignore 0,0	2.617353E-10	3.342	7.322904E-03	4810.6	4810.6	673604	4810.6	100.0

## **Retention Time (RT) Verification**

Analyte	RT at		RT in		deviation % (calibration vs. update) 10% tolerance	window width tolerance (NA)
	calibration	updated method (1st ICV or CCV)	calibration	updated method (1st ICV or CCV)		
F	2.81	2.79	2.81	2.79	0.7	5.00 %
Cl	3.85	3.79	3.85	3.79	1.6	5.00 %
NO2-N	4.51	4.44	4.51	4.44	1.6	4.90 %
Br	5.59	5.49	5.59	5.49	1.8	7.30 %
NO3-N	6.32	6.17	6.32	6.17	2.4	10.00 %
PO4-P	8.83	8.47	8.83	8.47	4.1	4.10 %
SO4	10.88	10.40	10.88	10.40	4.4	4.10 %

## Sample Analysis Report

Sample Name : CCV

Data File Name : c:\peaknet\data\130830ic1\130830\_011.DXD

Method File Name : c:\peaknet\method\130814ic1a.met

Current Date : 8/30/13

Date, Time Analyzed : 8/30/13 11:58:08 AM

Current Time : 12:12:10 PM

System Operator : AJD

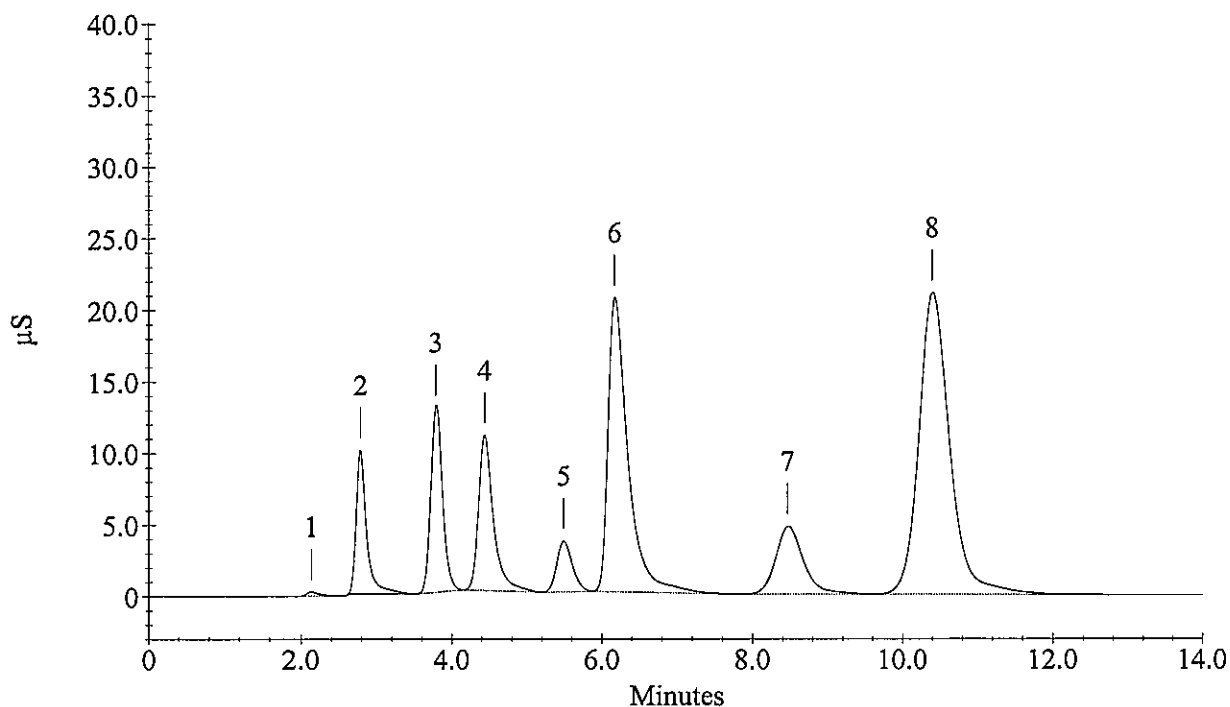
Datafile Updated : 8/30/13 12:12:10 PM

Calibration Updated : 8/29/13 11:55:04 AM

### Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
2	Fluoride	2.79	4834.9✓		966702
3	Chloride	3.79	9962.2✓		1401904
4	Nitrite as N	4.44	5046.9✓		1500364
5	Bromide	5.49	9875.3✓		509828
6	Nitrate as N	6.17	10112.1✓		3782091
7	Orthophosphate as P	8.47	8616.9		1212732
8	Sulfate	10.40	51402.5✓		6039864
	Nitrate/Nitrite as N				

CCV



## Sample Analysis Report

Sample Name : CCB

Data File Name : c:\peaknet\data\130830ic1\130830\_012.DXD

Method File Name : c:\peaknet\method\130814ic1a.met

Current Date : 8/30/13

Date, Time Analyzed : 8/30/13 12:12:12 PM

Current Time : 12:26:13 PM

System Operator : AJD

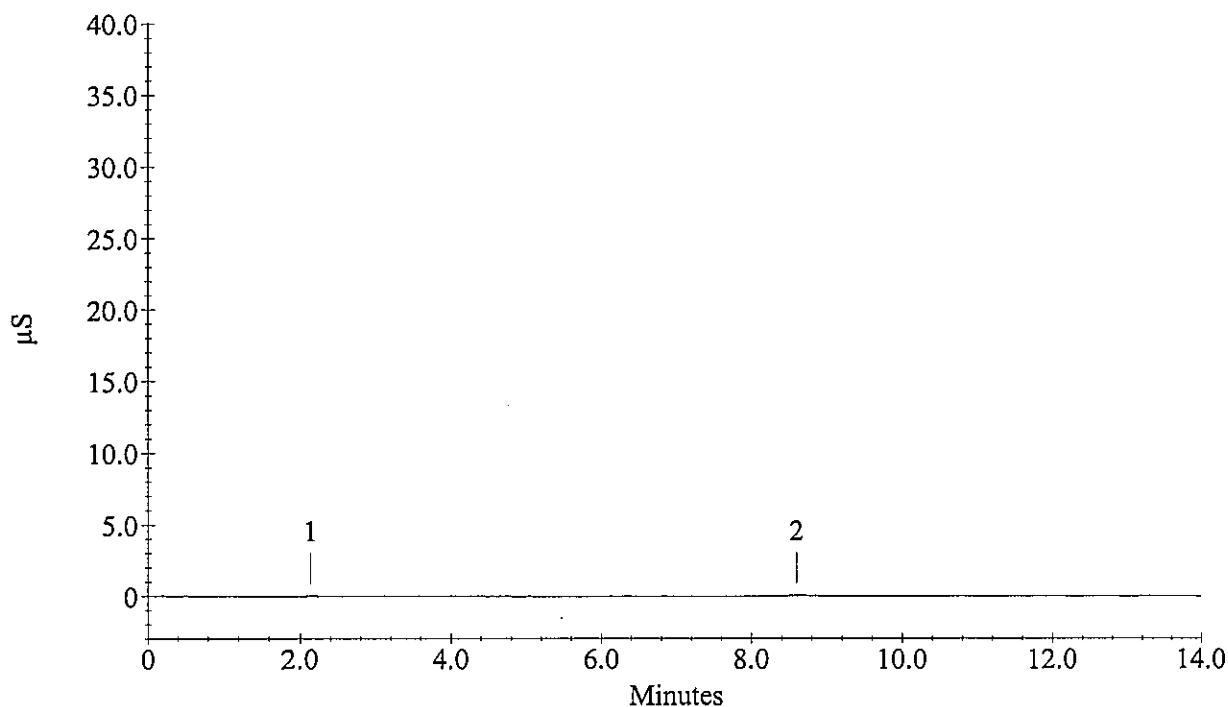
Datafile Updated : 8/30/13 12:26:13 PM

Calibration Updated : 8/29/13 11:55:04 AM

### Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
1	Chloride Nitrite as N Bromide Nitrate as N	2.13	0.0		1594
2	Orthophosphate as P Sulfate Nitrate/Nitrite as N	8.60	0.5	-	9998

CCB



## Sample Analysis Report

Sample Name : IC130830-1LCS

Data File Name : c:\peaknet\data\130830ic1\130830\_013.DXD

Method File Name : c:\peaknet\method\130814ic1a.met

Current Date : 8/30/13

Date, Time Analyzed : 8/30/13 12:26:15 PM

Current Time : 12:40:16 PM

System Operator : AJD

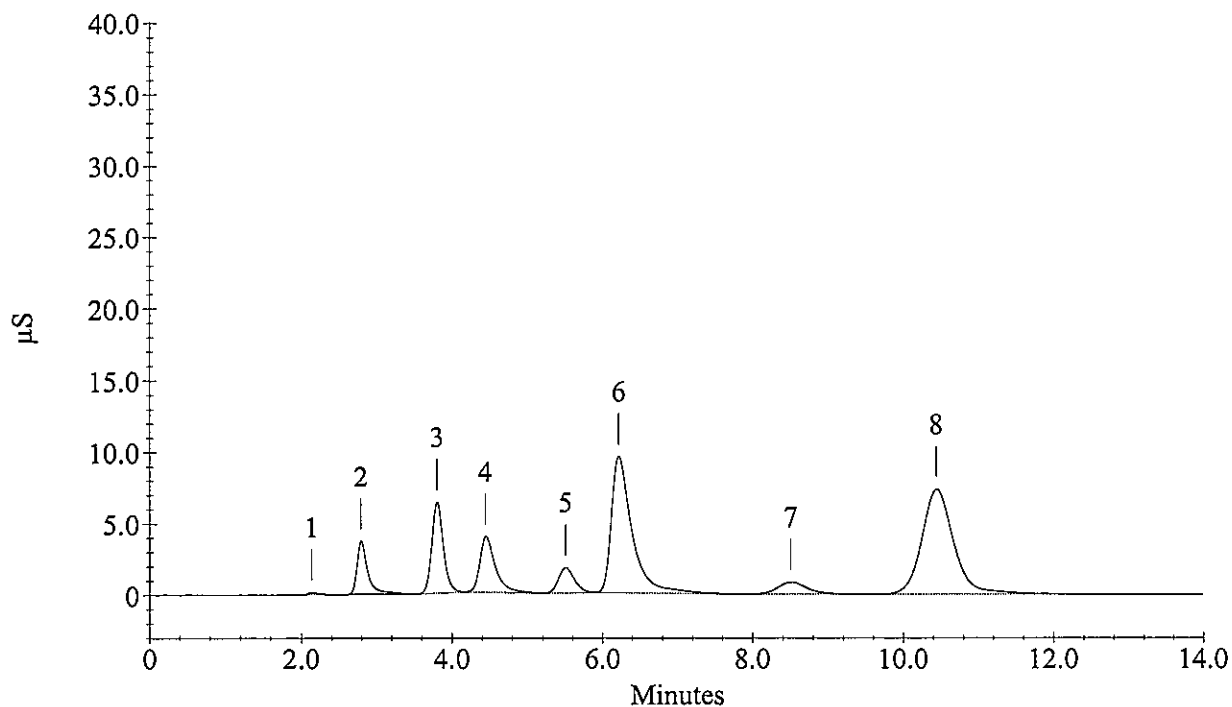
Datafile Updated : 8/30/13 12:40:16 PM

Calibration Updated : 8/29/13 11:55:04 AM

### Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
2	Fluoride	2.79	1900.3✓		367735
3	Chloride	3.80	4979.7 ✓		676614
4	Nitrite as N	4.44	1966.3✓		562002
5	Bromide	5.51	5188.8✓		262141
6	Nitrate as N	6.21	5151.7✓		1834370
7	Orthophosphate as P	8.51	1537.4		222707
8	Sulfate	10.44	19586.2✓		2169121
	Nitrate/Nitrite as N				

### IC130830-1LCS



## Sample Analysis Report

Sample Name : IC130830-1MB

Data File Name : c:\peaknet\data\130830ic1\130830\_014.DXD

Method File Name : c:\peaknet\method\130814ic1a.met

Current Date : 8/30/13

Date, Time Analyzed : 8/30/13 12:40:18 PM

Current Time : 12:54:20 PM

System Operator : AJD

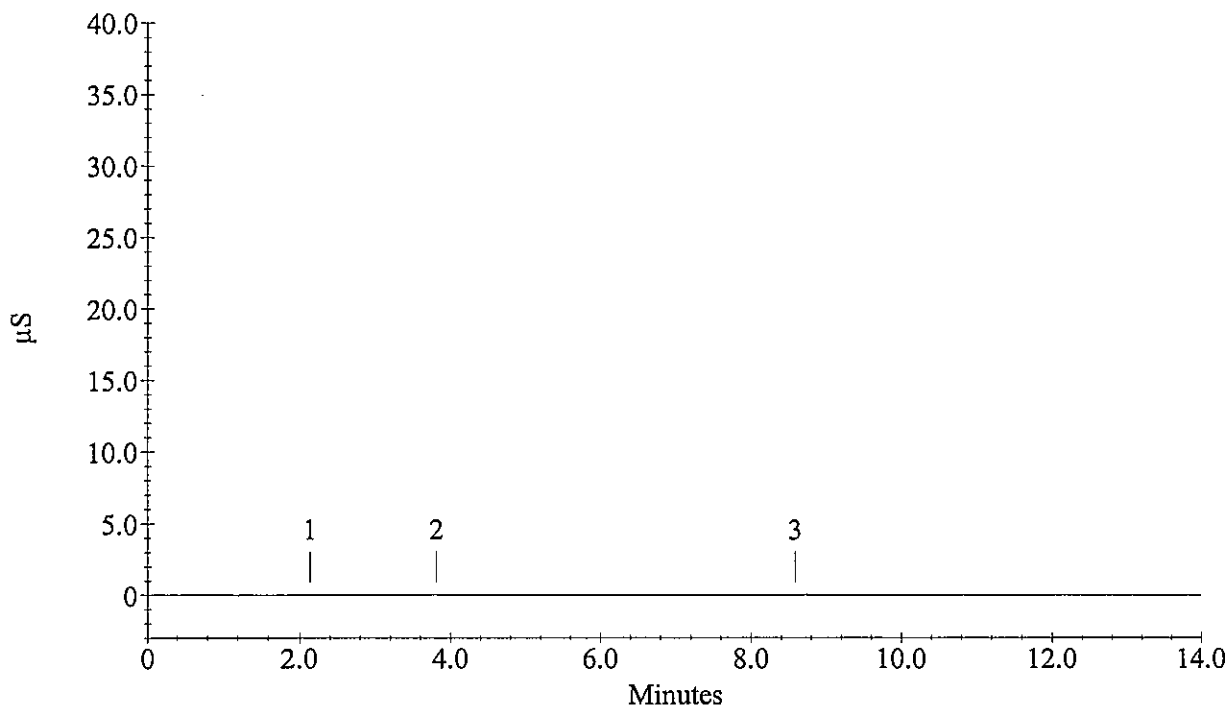
Datafile Updated : 8/30/13 12:54:19 PM

Calibration Updated : 8/29/13 11:55:04 AM

### Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
1		2.13	0.0		534
2	Chloride	3.81	51.9	-	4558
	Nitrite as N				
	Bromide				
	Nitrate as N				
3	Orthophosphate as P	8.59	-38.0	-	4682
	Sulfate				
	Nitrate/Nitrite as N				

### IC130830-1MB



## Sample Analysis Report

Sample Name : 1308545-1

Data File Name : c:\peaknet\data\130830ic1\130830\_021.DXD

Method File Name : c:\peaknet\method\130814ic1a.met

Current Date : 8/30/13

Date, Time Analyzed : 8/30/13 2:18:44 PM

Current Time : 2:32:45 PM

System Operator : AJD

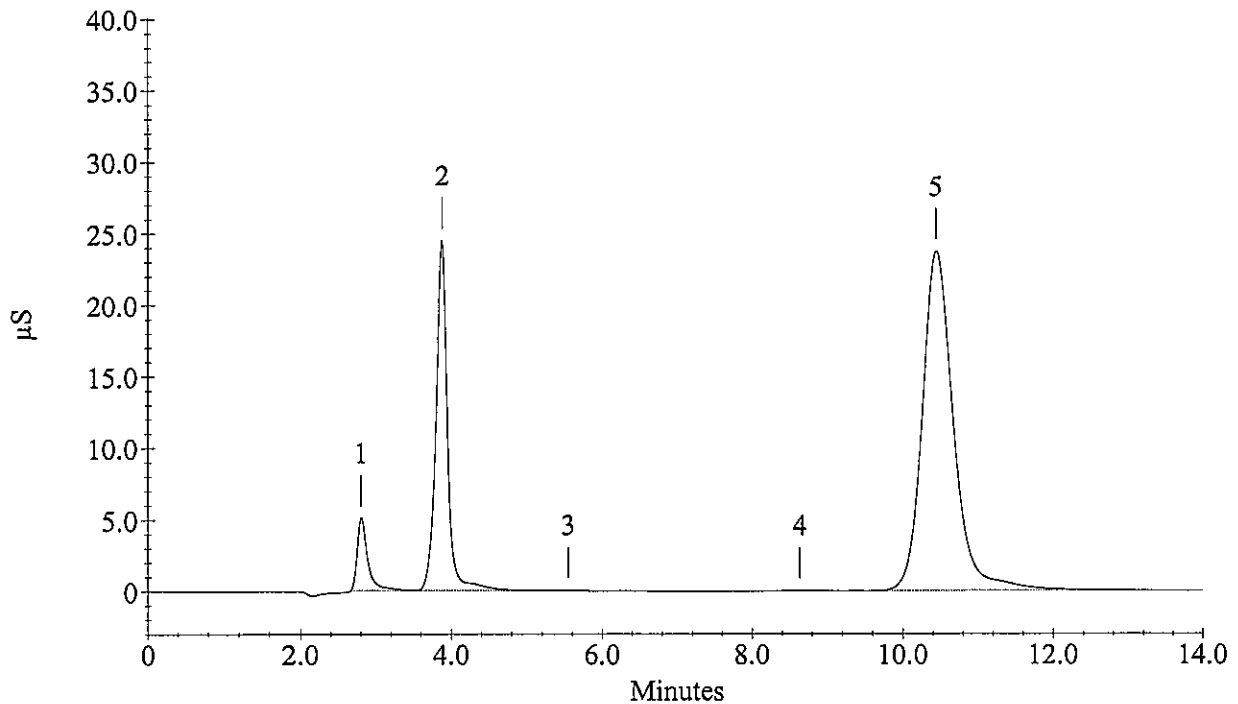
Datafile Updated : 8/30/13 2:32:45 PM

Calibration Updated : 8/29/13 11:55:04 AM

### Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
1	Fluoride	2.80	2511.1		490174
2	Chloride	3.88	17277.8		2574041
3	Nitrite as N	5.55	165.5	-	5837
4	Bromide	8.64	-27.8	-	6099
5	Nitrate as N	10.44	57155.2		6780485
	Orthophosphate as P				
	Sulfate				
	Nitrate/Nitrite as N				

1308545-1





## Sample Analysis Report

Sample Name : CCV

Data File Name : c:\peaknet\data\130830ic1\130830\_023.DXD

Method File Name : c:\peaknet\method\130814ic1a.met

Current Date : 8/30/13

Date, Time Analyzed : 8/30/13 2:46:51 PM

Current Time : 3:00:53 PM

System Operator : AJD

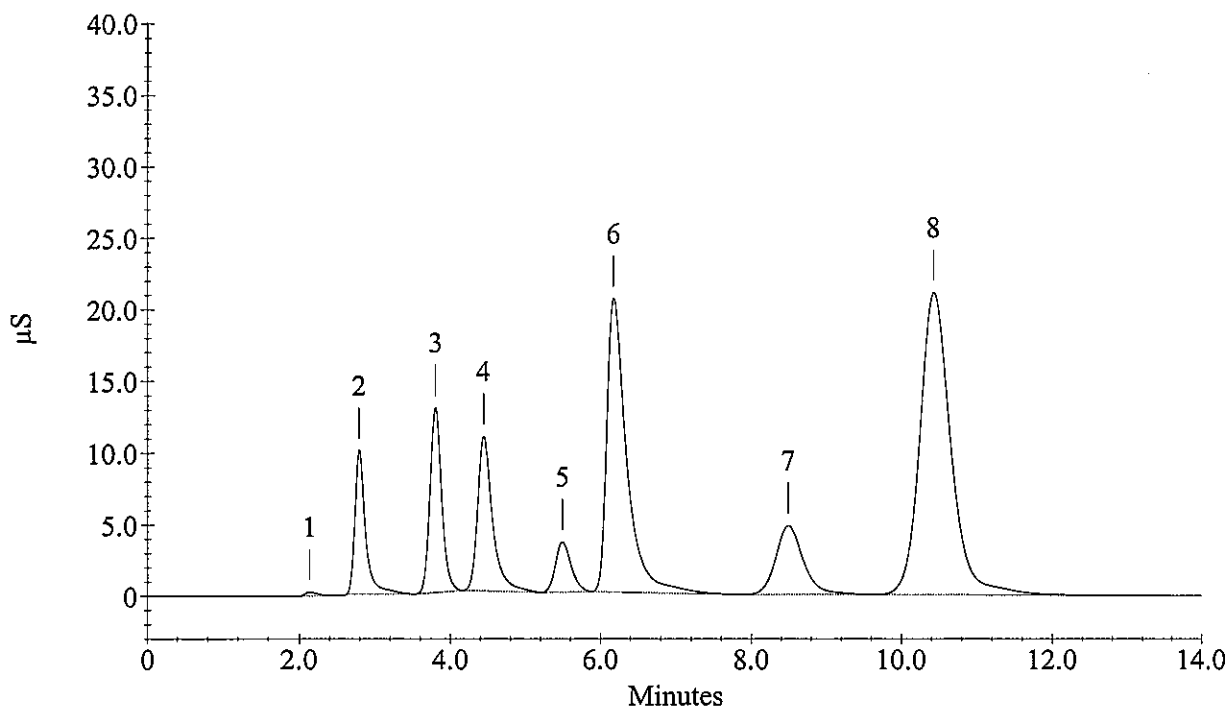
Datafile Updated : 8/30/13 3:00:52 PM

Calibration Updated : 8/29/13 11:55:04 AM

### Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
2	Fluoride	2.79	4910.9 ✓		982587
3	Chloride	3.80	9962.1 ✓		1401894
4	Nitrite as N	4.44	5053.5 ✓		1502420
5	Bromide	5.49	9837.3 ✓		507783
6	Nitrate as N	6.17	10128.7 -		3788895
7	Orthophosphate as P	8.49	8767.6		1233983
8	Sulfate	10.43	51361.2 ✓		6034605
	Nitrate/Nitrite as N				

CCV



## Sample Analysis Report

Sample Name : CCB

Data File Name : c:\peaknet\data\130830ic1\130830\_024.DXD

Method File Name : c:\peaknet\method\130814ic1a.met

Current Date : 8/30/13

Date, Time Analyzed : 8/30/13 3:00:55 PM

Current Time : 3:14:56 PM

System Operator : AJD

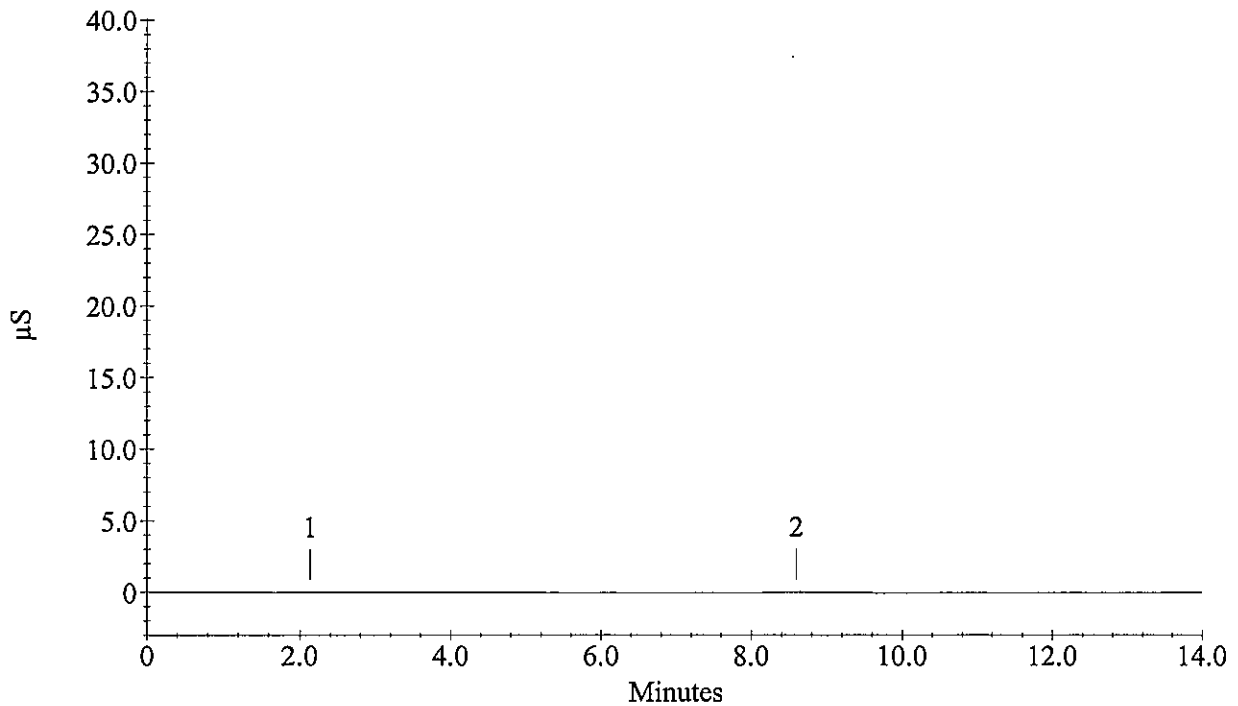
Datafile Updated : 8/30/13 3:14:56 PM

Calibration Updated : 8/29/13 11:55:04 AM

### Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
1	Chloride Nitrite as N Bromide Nitrate as N	2.13	0.0		1111
2	Orthophosphate as P Sulfate Nitrate/Nitrite as N	8.60	0.2	-	9963

CCB



## Sample Analysis Report

Sample Name : 1308545-3

Data File Name : c:\peaknet\data\130830ic1\130830\_025.DXD

Method File Name : c:\peaknet\method\130814ic1a.met

Current Date : 8/30/13

Date, Time Analyzed : 8/30/13 3:14:57 PM

Current Time : 3:29:00 PM

System Operator : AJD

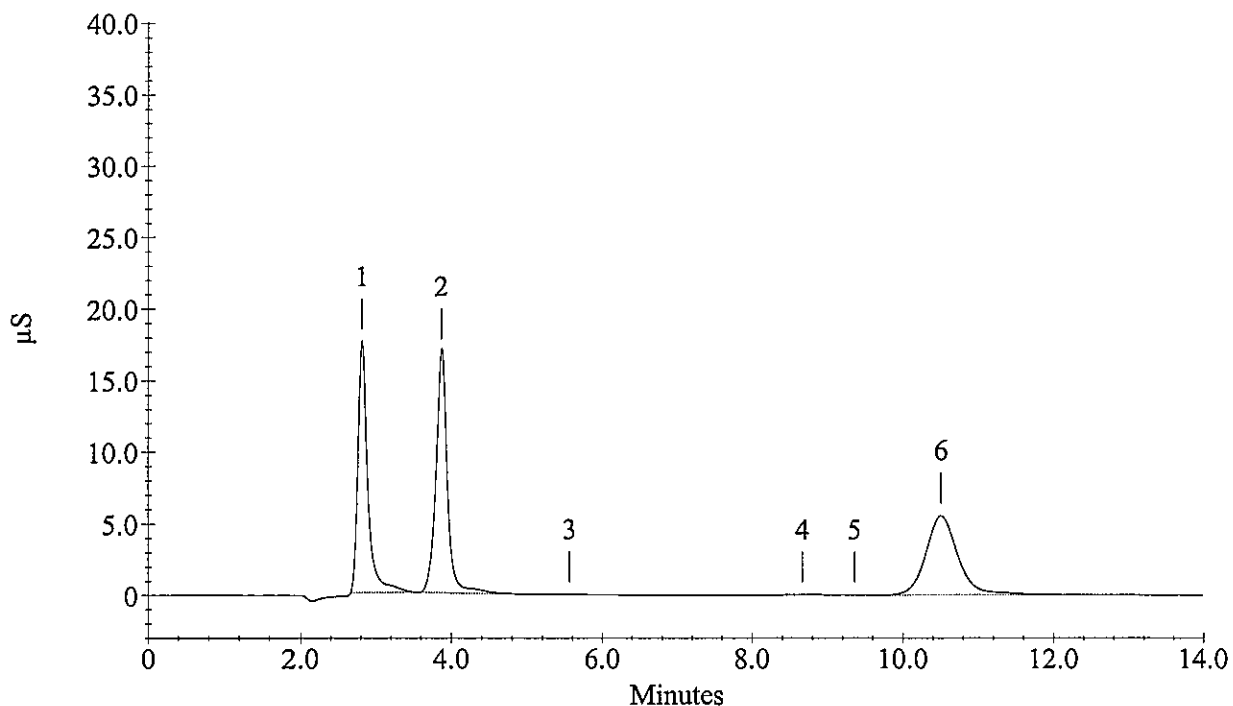
Datafile Updated : 8/30/13 3:28:59 PM

Calibration Updated : 8/29/13 11:55:04 AM

### Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
1	Fluoride	2.81	7816.1		1605314
2	Chloride	3.87	12444.3		1783590
3	Nitrite as N	5.56	134.9	-	4303
4	Bromide	8.67	-10.2	-	8523
6	Nitrate as N	10.51	14939.7		1632077
	Orthophosphate as P				
	Sulfate				
	Nitrate/Nitrite as N				

1308545-3



## Sample Analysis Report

Sample Name : CCV

Data File Name : c:\peaknet\data\130830ic1\130830\_028.DXD

Method File Name : c:\peaknet\method\130814ic1a.met

Current Date : 8/30/13

Date, Time Analyzed : 8/30/13 3:57:09 PM

Current Time : 4:11:11 PM

System Operator : AJD

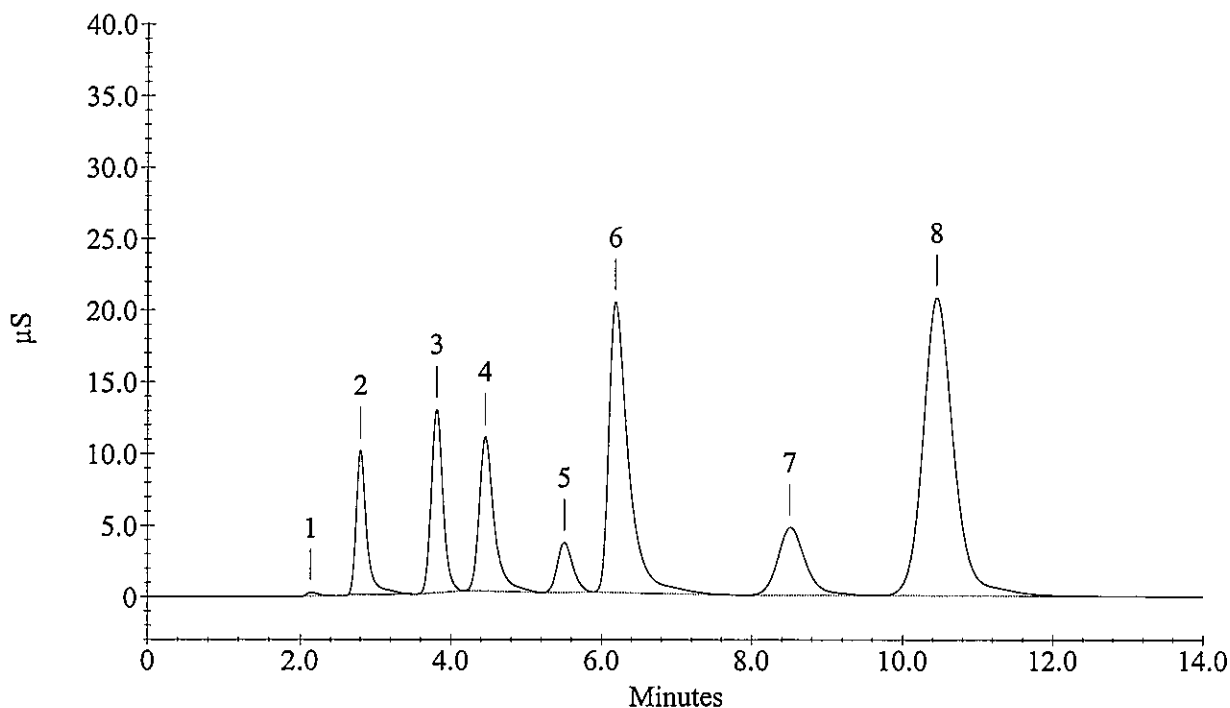
Datafile Updated : 8/30/13 4:11:10 PM

Calibration Updated : 8/29/13 11:55:04 AM

### Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
2	Fluoride	2.80	4849.6✓		969772
3	Chloride	3.81	9840.7✓		1383600
4	Nitrite as N	4.45	5022.8✓		1492759
5	Bromide	5.51	9752.4✓		503217
6	Nitrate as N	6.19	9933.6✓		3709101
7	Orthophosphate as P	8.51	8655.0		1218106
8	Sulfate	10.45	50567.0✓		5933438
	Nitrate/Nitrite as N				

CCV



## Sample Analysis Report

Sample Name : CCB

Data File Name : c:\peaknet\data\130830ic1\130830\_029.DXD

Method File Name : c:\peaknet\method\130814ic1a.met

Current Date : 8/30/13

Date, Time Analyzed : 8/30/13 4:11:13 PM

Current Time : 4:25:15 PM

System Operator : AJD

Datafile Updated : 8/30/13 4:25:14 PM

Calibration Updated : 8/29/13 11:55:04 AM

### Peak Information : All Components

Peak Number	Analyte	Retention Time (min.)	Concentration (ug/L)	Limit Exceeded	Peak Area
1	Chloride Nitrite as N Bromide Nitrate as N	2.13	0.0		1736
2	Orthophosphate as P Sulfate Nitrate/Nitrite as N	8.57	25.9	-	13505

CCB

