ANALYTICAL REPORT

Job Number: 280-111554-2

Job Description: Ravenna, OH

For:
Cardno GS, Inc
2496 Old Ivy Road
Suite 300
Charlottesville, VA 22903

Attention: Mr. Peter Chapman

Approved for release.
Patrick J McEntee
Manager of Project Management
10/4/2018 2:51 PM

Patrick J McEntee, Manager of Project Management
4955 Yarrow Street, Arvada, CO, 80002
(303)736-0107
patrick.mcentee@testamericainc.com
10/04/2018

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

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Qualifiers

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: Cardno GS, Inc

Project: Ravenna, OH

Report Number: 280-111554-2

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 6/30/2018 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 6 coolers at receipt time were 0.8º C, 1.3º C, 1.6º C, 1.9º C, 2.4º C and 3.6º C.

Receipt Exceptions

Two of three HCl preserved VOA vials for the requested 8260B VOCs analysis for RQLmw-008-062818-GW (280-111554-7) were received with a headspace bubble greater than 6 mm in diameter. Sufficient sample volume without headspace was received to perform the requested analysis. Analytical results may be biased low due to headspace if re-analysis is requested or required. The client was notifid on 7/2/2018.

One of one HCl preserved VOA vials for the requested 8260B VOCs analysis for TB-062818-05 (280-111554-5) was received with a headspace bubble greater than 6 mm in diameter. Analytical results may be biased low due to headspace. The laboratory will proceed with the requested analysis unless instructed otherwise. The client was notifid on 7/2/2018.

Sample volume for the requested 8270D_SIM PAHs and 8081B Pesticides using large volume injection (LVI) procedures was not received in the method required unpreserved 250mL amber glass containers for the following samples: RQLmw-007-062818-GW (280-111554-1), RQLmw-007-062818-GW (280-111554-1[MS]), RQLmw-007-062818-GW (280-111554-1[MSD]), RQLmw-008-062818-GW (280-111554-7), RQLmw-009-062818-GW (280-111554-9) and RQLmw-007-D-062818-GW (280-111554-13). The client was notified on 7/2/2018 and instructed the laboratory to proceed with the analyses aliquoting volume from 500mL amber glass bottles of sample volume received for these samples where possible. Any deviations from standard operating procedure and potential data impacts due to receipt of improper containers will be recorded by the responsible analyst(s).

SDG 280-111554-2 was created to report nitrate and nitrite in accordance with method 9056A for samples RQLmw-012-062818-GW (280-111554-4), RQLmw-014-062818-GW (280-111554-10) and RQLmw-013-062818-GW (280-111554-11) as requested by the client on September 26, 2018.

ANIONS (48 HOURS)

Samples RQLmw-012-062818-GW (280-111554-4), RQLmw-014-062818-GW (280-111554-10) and RQLmw-013-062818-GW (280-111554-11) were analyzed for anions (48 hours) in accordance with 9056A. The samples were analyzed on 07/21/2018.

The request to report nitrate and nitrite results for samples RQLmw-012-062818-GW (280-111554-4), RQLmw-014-062818-GW (280-111554-10) and RQLmw-013-062818-GW (280-111554-11) was made after the holding times had expired .

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Cardno GS, Inc
Project/Site: Ravenna, OH

TestAmerica Job ID: 280-111554-2

Client Sample ID: RQLmw-012-062818-GW — Lab Sample ID: 280-111554-4

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	Dil Fac	D	Method	Prep Type
Nitrate as N	1200	H	500	100	42	ug/L	1		9056A	Total/NA

Client Sample ID: RQLmw-014-062818-GW — Lab Sample ID: 280-111554-10

No Detections.

Client Sample ID: RQLmw-013-062818-GW — Lab Sample ID: 280-111554-11

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: RQLmw-012-062818-GW

Lab Sample ID: 280-111554-4

Date Collected: 06/28/18 12:55

Matrix: Water

Date Received: 06/30/18 09:00

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate as N	**1200**	**H**	500	100	42	ug/L		07/21/18 02:15	1
Nitrite as N	100	U H	500	100	49	ug/L		07/21/18 02:15	1

Client Sample ID: RQLmw-014-062818-GW

Lab Sample ID: 280-111554-10

Date Collected: 06/28/18 13:40

Matrix: Water

Date Received: 06/30/18 09:00

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate as N	100	U H	500	100	42	ug/L		07/21/18 02:33	1
Nitrite as N	100	U H	500	100	49	ug/L		07/21/18 02:33	1

Client Sample ID: RQLmw-013-062818-GW

Lab Sample ID: 280-111554-11

Date Collected: 06/28/18 14:14

Matrix: Water

Date Received: 06/30/18 09:00

General Chemistry

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate as N	100	U H	500	100	42	ug/L		07/21/18 03:08	1
Nitrite as N	100	U H	500	100	49	ug/L		07/21/18 03:08	1

Default Detection Limits

Client: Cardno GS, Inc
Project/Site: Ravenna, OH

TestAmerica Job ID: 280-111554-2

General Chemistry

Analyte	LOQ	DL	Units	Method
Nitrate as N	500	42	ug/L	9056A
Nitrite as N	500	49	ug/L	9056A

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 280-422998/13
Matrix: Water
Analysis Batch: 422998

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Nitrate as N	100	U	500	100	42	ug/L		07/20/18 13:47	1
Nitrite as N	100	U	500	100	49	ug/L		07/20/18 13:47	1

Lab Sample ID: LCS 280-422998/11
Matrix: Water
Analysis Batch: 422998

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	5000	4980		ug/L		100	88 - 111
Nitrite as N	5000	5120		ug/L		102	87 - 111

Lab Sample ID: LCSD 280-422998/12
Matrix: Water
Analysis Batch: 422998

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrate as N	5000	4980		ug/L		100	88 - 111	0	10
Nitrite as N	5000	5120		ug/L		102	87 - 111	0	10

Lab Sample ID: MRL 280-422998/16
Matrix: Water
Analysis Batch: 422998

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrate as N	0.200	0.223	J	mg/L		111	50 - 150
Nitrite as N	0.200	0.223	J	mg/L		111	50 - 150

QC Association Summary

Client: Cardno GS, Inc
Project/Site: Ravenna, OH

TestAmerica Job ID: 280-111554-2

General Chemistry

Analysis Batch: 422998

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-111554-4	RQLmw-012-062818-GW	Total/NA	Water	9056A	
280-111554-10	RQLmw-014-062818-GW	Total/NA	Water	9056A	
280-111554-11	RQLmw-013-062818-GW	Total/NA	Water	9056A	
MB 280-422998/13	Method Blank	Total/NA	Water	9056A	
LCS 280-422998/11	Lab Control Sample	Total/NA	Water	9056A	
LCSD 280-422998/12	Lab Control Sample Dup	Total/NA	Water	9056A	
MRL 280-422998/16	Lab Control Sample	Total/NA	Water	9056A	

Client Sample ID: RQLmw-012-062818-GW

Lab Sample ID: 280-111554-4

Date Collected: 06/28/18 12:55

Matrix: Water

Date Received: 06/30/18 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	5 mL	5 mL	422998	07/21/18 02:15	CCJ	TAL DEN

Client Sample ID: RQLmw-014-062818-GW

Lab Sample ID: 280-111554-10

Date Collected: 06/28/18 13:40

Matrix: Water

Date Received: 06/30/18 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	5 mL	5 mL	422998	07/21/18 02:33	CCJ	TAL DEN

Client Sample ID: RQLmw-013-062818-GW

Lab Sample ID: 280-111554-11

Date Collected: 06/28/18 14:14

Matrix: Water

Date Received: 06/30/18 09:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	5 mL	5 mL	422998	07/21/18 03:08	CCJ	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Cardno GS, Inc
Project/Site: Ravenna, OH

TestAmerica Job ID: 280-111554-2

Laboratory: TestAmerica Denver

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19

Method Summary

Client: Cardno GS, Inc
Project/Site: Ravenna, OH

TestAmerica Job ID: 280-111554-2

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL DEN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Cardno GS, Inc
Project/Site: Ravenna, OH

TestAmerica Job ID: 280-111554-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-111554-4	RQLmw-012-062818-GW	Water	06/28/18 12:55	06/30/18 09:00
280-111554-10	RQLmw-014-062818-GW	Water	06/28/18 13:40	06/30/18 09:00
280-111554-11	RQLmw-013-062818-GW	Water	06/28/18 14:14	06/30/18 09:00

GENERAL CHEMISTRY MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Instrument ID: WC_IonChrom7 Analysis Batch Number: 422998

Lab Sample ID: CCV 280-422998/14 Client Sample ID:

Date Analyzed: 07/20/18 14:05 Lab File ID: 14.0000.d GC Column: Ion PAC AS 17 ID:

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Sulfate	8.93	Wrong Peak	jewellc	07/20/18 14:55

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
IC Cal low_00373	06/11/18	06/04/18	Di Water, Lot NA	100 mL	IC N02 CAL_00042	5 mL	Nitrite as N	50 mg/L
					IC N03 cal_00018	5 mL	Nitrate as N	50 mg/L
					IC P04 cal_00018	5 mL	Orthophosphate as P	50 mg/L
.IC N02 CAL_00042	08/31/18		RICCA, Lot 1802e42		(Purchased Reagent)		Nitrite as N	1000 ppm
.IC N03 cal_00018	11/30/18		Ricca, Lot 2705D50		(Purchased Reagent)		Nitrate as N	1000 mg/L
.IC P04 cal_00018	11/30/19		RICCA, Lot 4711L59		(Purchased Reagent)		Orthophosphate as P	1000 mg/L
IC Cal low_00385	07/24/18	07/17/18	Di Water, Lot NA	100 mL	IC N02 CAL_00042	5 mL	Nitrite as N	50 mg/L
					IC N03 cal_00018	5 mL	Nitrate as N	50 mg/L
.IC N02 CAL_00042	08/31/18		RICCA, Lot 1802e42		(Purchased Reagent)		Nitrite as N	1000 ppm
.IC N03 cal_00018	11/30/18		Ricca, Lot 2705D50		(Purchased Reagent)		Nitrate as N	1000 mg/L
IC ICV 5_00201	06/06/18	05/30/18	Di Water, Lot na	10 mL	IC NO2 ICV_00015	0.5 mL	Nitrite as N	50 mg/L
					IC NO3 ICV_00012	0.5 mL	Nitrate as N	50 mg/L
.IC NO2 ICV_00015	06/30/18		ERA, Lot 320616		(Purchased Reagent)		Nitrite as N	1000 mg/L
.IC NO3 ICV_00012	12/31/18		ERA, Lot 140616		(Purchased Reagent)		Nitrate as N	1000 mg/L
IC LCS_01288	07/21/18	07/20/18	Di Water, Lot 27	200 mL	IC Cal low_00386	20 mL	Nitrite as N	5 mg/L
							Nitrate as N	5 mg/L
.IC Cal low_00386	07/25/18	07/18/18	Di Water, Lot NA	100 mL	IC N02 CAL_00042	5 mL	Nitrite as N	50 mg/L
					IC N03 cal_00018	5 mL	Nitrate as N	50 mg/L
..IC N02 CAL_00042	08/31/18		RICCA, Lot 1802e42		(Purchased Reagent)		Nitrite as N	1000 ppm
..IC N03 cal_00018	11/30/18		Ricca, Lot 2705D50		(Purchased Reagent)		Nitrate as N	1000 mg/L

Reagent

IC N02 CAL_00042

RICCA CHEMICAL COMPANY®

448 West Fork Dr
Arlington, TX 76012
http://www.riccachemical.com
1-888-GO-RICCA
customerservice@riccachemical.com

Certificate of Analysis

Nitrite Nitrogen Standard, 1000 ppm N (3285 ppm NO_2^-)

Lot Number: 1802E42 **Product Number:** R5444900

Manufacture Date: FEB 14, 2018
Expiration Date: AUG 2018

Name	CAS#	Grade
Water	7732-18-5	ACS/ASTM/USP/EP
Potassium Nitrite	7758-09-0	ACS

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Assay (vs. Potassium Permanganate)	995-1005 ppm N	1001 ppm N	40

Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

Part Number	Size / Package Type	Shelf Life (Unopened Container)
R5444900-120C	120 mL amber glass	6 months
R5444900-500C	500 mL amber glass	6 months

Recommended Storage: 2°C - 8°C (36°F - 46°F)

Israel Alamudun (02/14/2018)
Quality Control Supervisor
This Certificate of Analysis is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."

Reagent

IC N03 cal_00018

RICCA CHEMICAL COMPANY®

Arlington, TX 76012
Pocomoke City, MD 21851
Batesville, IN 47006
http://www.riccachemical.com
1-888-GO-RICCA
customerservice@riccachemical.com

Certificate of Analysis

Nitrate Nitrogen Standard, 1000 ppm N (4427 ppm NO_3^-)

Lot Number: 2705D50 **Product Number:** 5459

Manufacture Date: MAY 24, 2017
Expiration Date: NOV 2018

The certified value reported is the prepared value based upon the method of preparation of the material. The uncertainty in the prepared value is based upon the volumetric method of preparation.

Name	CAS#	Grade
Water	7732-18-5	ACS/ASTM/USP/EP
Potassium Nitrate	7757-79-1	High Purity
Chloroform	67-66-3	

Test	Specification	Result
Appearance	Colorless liquid	Passed
Nitrogen (N)	995-1005 ppm	1000 ppm

Specification	Reference
Nitrate Solution, Stock (1.0 mL = 1.0 mg NO3-N)	ASTM (D 3867 A)
Nitrate Solution, Stock (1.0 mL = 1.0 mg NO3-N)	ASTM (D 3867 B)
Stock Nitrate Solution: 1 mL = 1.0 mg NO3-N	EPA (353.2)
Stock Nitrate Solution: 1.0 mL = 1.00 mg NO3-N	EPA (353.3)

Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

Part Number	Size / Package Type	Shelf Life (Unopened Container)
5459-16	500 mL natural poly	18 months

Recommended Storage: 15°C - 30°C (59°F - 86°F)

Andy Baumgartner (05/24/2017)
Quality Control Supervisor
This Certificate of Analysis is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."

Reagent

IC NO2 ICV_00015

ERA

A Waters Company

Certificate of Analysis

PRODUCT:	1000 mg/L Nitrite as N (NO_2-N)
CATALOG NUMBER:	053 -125 mL; 990 - 500 mL
LOT NUMBER:	320616
ISSUE DATE:	July 7, 2016
REVISION DATE:	Original
STARTING MATERIAL:	Sodium Nitrite ($NaNO_2$)
CERTIFIED CONCENTRATION[1]:	1000 mg/L
UNCERTAINTY[2]:	0.9%
MATRIX:	18 megohm deionized water
DENSITY:	1.0001 ± 0.0016 g/mL at 20.0°C and 761 mm Hg
TRACEABILITY[3]:	NA
NIST/SRM:	SRM not available
VERIFICATION METHOD:	Ion Chromatography
STORAGE:	Store at 20-25°C

1. The **Certified Concentration** is the actual made-to concentration confirmed by ERA analytical verification.

2. The stated **Uncertainty** is the total propagated uncertainty at the 95% confidence interval. The uncertainty is based on the preparation and internal analytical verification of the product by ERA, multiplied by a coverage factor which is equal to the student t factor at a 95% confidence interval at n-1 degrees of freedom. The uncertainty applies to the product as supplied and does not take into account any required or optional dilutions and/or preparations the laboratory may perform while using this product.

3. Traceability Recovery = ((% Recovery certified standard)/(% Recovery NIST SRM))*100.

   The traceability data shown were compiled by analyzing the ERA standards or their associated stock solutions against the applicable NIST SRMs.

This standard **expires 6/2018**. The certified values are monitored and purchasers will be notified of any significant changes resulting in recertification or withdrawal of this certified reference material during the period of validity of this certificate.

This product is intended to be used as either a calibration standard or a quality control check of the entire analytical process for the analytes/matrix included in the standard.

If you have any questions or need technical assistance, please call ERA technical assistance at 1-800-372-0122 or email to info@eraqc.com

Certifying Officer: Brian Miller

ISO/IEC GUIDE 34:2009

ACCREDITED

REFERENCE MATERIAL PRODUCER
CERTIFICATE NO. 1539.03

ISO/IEC 17025:2005

ACCREDITED

CHEMICAL TESTING LABORATORY
CERTIFICATE NO. 1539.02

16341 Table Mtn Pkwy, Golden, CO 80403 800-372-0122 fax: 303-421-0159 www.eraqc.com

Reagent

IC NO3 ICV_00012

Certificate of Analysis

PRODUCT:	1000 mg/L Nitrate as N (NO_3-N)
CATALOG NUMBER:	052 -125 mL; 991 - 500 mL
LOT NUMBER:	140616
ISSUE DATE:	June 30, 2016
REVISION DATE:	June 26, 2017
STARTING MATERIAL:	Potassium Nitrate (KNO_3)
CERTIFIED CONCENTRATION[1]:	1000 mg/L
UNCERTAINTY[2]:	0.6%
MATRIX:	18 megohm deionized water
DENSITY:	1.0020 ± 0.0008 g/mL at 21.5°C and 762 mm Hg
TRACEABILITY[3]:	102%
NIST/SRM:	3185 Nitrate
VERIFICATION METHOD:	Ion Chromatography
STORAGE:	Store at 20-25°C

1. The **Certified Concentration** is the actual made-to concentration confirmed by ERA analytical verification.

2. The stated **Uncertainty** is the total propagated uncertainty at the 95% confidence interval. The uncertainty is based on the preparation and internal analytical verification of the product by ERA, multiplied by a coverage factor which is equal to the student t factor at a 95% confidence interval at n-1 degrees of freedom. The uncertainty applies to the product as supplied and does not take into account any required or optional dilutions and/or preparations the laboratory may perform while using this product.

3. Traceability Recovery = ((% Recovery certified standard)/(% Recovery NIST SRM))*100.

   The traceability data shown were compiled by analyzing the ERA standards or their associated stock solutions against the applicable NIST SRMs.

This standard **expires 12/2018**. The certified values are monitored and purchasers will be notified of any significant changes resulting in recertification or withdrawal of this certified reference material during the period of validity of this certificate.

This product is intended to be used as either a calibration standard or a quality control check of the entire analytical process for the analytes/matrix included in the standard.

If you have any questions or need technical assistance, please call ERA technical assistance at 1-800-372-0122 or email to info@eraqc.com

Certifying Officer: Brian Miller

ISO/IEC GUIDE 34:2009 — ACCREDITED — REFERENCE MATERIAL PRODUCER CERTIFICATE NO. 1539.03

ISO/IEC 17025:2005 — ACCREDITED — CHEMICAL TESTING LABORATORY CERTIFICATE NO. 1539.02

Reagent

IC P04 cal_00018

RICCA CHEMICAL COMPANY®

Arlington, TX 76012
Pocomoke City, MD 21851
Batesville, IN 47006
http://www.riccachemical.com
1-888-GO-RICCA
customerservice@riccachemical.com

Certificate of Analysis

Phosphorus AA Standard, 1000 ppm P in H_2O

Lot Number: 4711L59 **Product Number:** AP1KW

Manufacture Date: NOV 30, 2017
Expiration Date: NOV 2019

This is a single element solution that was prepared volumetrically to contain the certified value reported. The uncertainty associated with the certifiec value is the sum of the estimated errors due to the purity of the raw material, the volumetric preparation of the solution, and transpiration of the solution through the container wall.
The final solution concentration is confirmed by AA, ICP, or ICP-MS, and is traceable to NIST Standard Reference Material 3139.

Name	CAS#	Grade
Water	7732-18-5	ACS/ASTM/USP/EP
Ammonium Dihydrogen Phosphate	7722-76-1	High Purity

Test	Specification	Result	NIST SRM#
Appearance	Colorless liquid	Passed	
Phosphorus (P)	995-1005 ppm	1000 ppm	3139

Volumetric glassware complies with Class A tolerance requirements of ASTM E 288 and NIST Circular 434; it is calibrated before first use and recalibrated regularly in accordance with ASTM E 542 and NIST Procedure NBSIR 74-461. Balances are calibrated regularly with weights certified traceable to the NIST national mass standard. Thermometers and temperature probes are calibrated before first use and recalibrated regularly with a thermometer traceable to NIST standards. All products are prepared according to master documents that assure manufacture according to validated methods. Batch records document raw material traceability and production and testing history for each lot manufactured.

Part Number	Size / Package Type	Shelf Life (Unopened Container)
AP1KW-500	500 mL natural poly	24 months

Recommended Storage: 15°C - 30°C (59°F - 86°F)

Jim Gibbs (11/30/2017)
Quality Control Supervisor
This Certificate of Analysis is designed to comply with ISO Guide 31 "Reference Materials -- Contents of Certificates and Labels."

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-111554-2

SDG No.:

Project: Ravenna, OH

Client Sample ID	Lab Sample ID
RQLmw-012-062818-GW	280-111554-4
RQLmw-014-062818-GW	280-111554-10
RQLmw-013-062818-GW	280-111554-11

Comments:

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: RQLmw-012-062818-GW
Lab Sample ID: 280-111554-4
Lab Name: TestAmerica Denver
Job No.: 280-111554-2
SDG ID.:
Matrix: Water
Date Sampled: 06/28/2018 12:55
Reporting Basis: WET
Date Received: 06/30/2018 09:00

Analyte	Result	LOQ	LOD	DL	Units	C	Q	DIL	Method
Nitrate as N	1200	500	100	42	ug/L		H	1	9056A
Nitrite as N	100	500	100	49	ug/L	U	H	1	9056A

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: RQLmw-014-062818-GW
Lab Sample ID: 280-111554-10
Lab Name: TestAmerica Denver
Job No.: 280-111554-2
SDG ID.:
Matrix: Water
Date Sampled: 06/28/2018 13:40
Reporting Basis: WET
Date Received: 06/30/2018 09:00

Analyte	Result	LOQ	LOD	DL	Units	C	Q	DIL	Method
Nitrate as N	100	500	100	42	ug/L	U	H	1	9056A
Nitrite as N	100	500	100	49	ug/L	U	H	1	9056A

1B-IN
INORGANIC ANALYSIS DATA SHEET
GENERAL CHEMISTRY

Client Sample ID: RQLmw-013-062818-GW
Lab Sample ID: 280-111554-11
Lab Name: TestAmerica Denver
Job No.: 280-111554-2
SDG ID.:
Matrix: Water
Date Sampled: 06/28/2018 14:14
Reporting Basis: WET
Date Received: 06/30/2018 09:00

Analyte	Result	LOQ	LOD	DL	Units	C	Q	DIL	Method
Nitrate as N	100	500	100	42	ug/L	U	H	1	9056A
Nitrite as N	100	500	100	49	ug/L	U	H	1	9056A

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Analyst: CCJ Batch Start Date: 06/05/2018

Reporting Units: mg/L Analytical Batch No.: 417404

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
8	ICV	12:20	Nitrate as N	4.10	4.00	103	90-110		IC ICV 5_00201
			Nitrite as N	4.15	4.00	104	90-110		IC ICV 5_00201
9	ICB	12:38	Nitrate as N	0.10				U	
			Nitrite as N	0.10				U	

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM II-IN

2-IN
CALIBRATION QUALITY CONTROL
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Analyst: CCJ Batch Start Date: 07/20/2018

Reporting Units: mg/L Analytical Batch No.: 422998

Sample Number	QC Type	Time	Analyte	Result	Spike Amount	(%) Recovery	Limits	Qual	Reagent
1	CCV	10:14	Nitrate as N	5.01	5.00	100	90-110		IC LCS_01288
			Nitrite as N	5.12	5.00	102	90-110		IC LCS_01288
2	CCB	10:32	Nitrate as N	0.10				U	
			Nitrite as N	0.10				U	
14	CCV	14:05	Nitrate as N	4.97	5.00	99	90-110		IC LCS_01288
			Nitrite as N	5.12	5.00	102	90-110		IC LCS_01288
15	CCB	14:23	Nitrate as N	0.10				U	
			Nitrite as N	0.10				U	
38	CCV	00:10	Nitrate as N	5.12	5.00	102	90-110		IC LCS_01288
			Nitrite as N	5.14	5.00	103	90-110		IC LCS_01288
39	CCB	00:28	Nitrate as N	0.10				U	
			Nitrite as N	0.10				U	
50	CCV	03:44	Nitrate as N	5.08	5.00	102	90-110		IC LCS_01288
			Nitrite as N	5.15	5.00	103	90-110		IC LCS_01288
51	CCB	04:02	Nitrate as N	0.10				U	
			Nitrite as N	0.10				U	

Note! Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM II-IN

3-IN
METHOD BLANK
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Method	Lab Sample ID	Analyte	Result	Qual	Units	LOQ	Dil
Batch ID: 422998 Date: 07/20/2018 13:47							
9056A	MB 280-422998/13	Nitrate as N	100	U	ug/L	500	1
9056A	MB 280-422998/13	Nitrite as N	100	U	ug/L	500	1

7A-IN
LAB CONTROL SAMPLE
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 422998 Date: 07/20/2018 13:12											
						LCS Source: IC LCS_01288					
9056A	LCS 280-422998/11	Nitrate as N	4980		ug/L	5000	100	88-111	0	10	
9056A	LCS 280-422998/11	Nitrite as N	5120		ug/L	5000	102	87-111	0	10	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

7A-IN
LAB CONTROL SAMPLE DUPLICATE
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 422998 Date: 07/20/2018 13:30											
						LCSD Source: IC LCS_01288					
9056A	LCSD 280-422998/12	Nitrate as N	4980		ug/L	5000	100	88-111	0	10	
9056A	LCSD 280-422998/12	Nitrite as N	5120		ug/L	5000	102	87-111	0	10	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

7A-IN
METHOD REPORTING LIMIT CHECK
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Matrix: Water

Method	Lab Sample ID	Analyte	Result	C	Unit	Spike Amount	Pct. Rec.	Limits	RPD	RPD Limit	Q
Batch ID: 422998 Date: 07/20/2018 17:38											
						LCS Source: IC Cal low_00385					
9056A	MRL 280-422998/16	Nitrate as N	0.223	J	mg/L	0.200	111	50-150			
9056A	MRL 280-422998/16	Nitrite as N	0.223	J	mg/L	0.200	111	50-150			

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIIA-IN

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-111554-2

SDG Number:

Matrix: Water Instrument ID: WC_IonChrom7

Method: 9056A DL Date: 02/16/2014 00:00

Analyte	Wavelength/ Mass	LOQ (mg/L)	DL (mg/L)
Nitrate as N		0.5	0.042
Nitrite as N		0.5	0.049

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job Number: 280-111554-2

SDG Number:

Matrix: Water Instrument ID: WC_IonChrom7

Method: 9056A XMDL Date: 02/16/2014 00:00

Analyte	Wavelength/ Mass	XRL (mg/L)	XMDL (mg/L)
Nitrate as N		0.5	0.042
Nitrite as N		0.5	0.049

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Instrument ID: WC_IonChrom7 Analysis Method: 9056A

Start Date: 06/05/2018 10:15 End Date: 06/06/2018 08:48

Lab Sample Id	D/F	Type	Time	Analytes																										
				NO2-N	NO3																									
RTC 280-417404/1			10:15																											
STD 280-417404/2 IC	1		10:33	X	X																									
STD 280-417404/3 IC	1		10:51	X	X																									
STD 280-417404/4 IC	1		11:09	X	X																									
STD 280-417404/5 IC	1		11:27	X	X																									
STD 280-417404/6 IC	1		11:44	X	X																									
STD 280-417404/7 IC	1		12:02	X	X																									
ICV 280-417404/8	1		12:20	X	X																									
ICB 280-417404/9	1		12:38	X	X																									
ZZZZZZ			12:56																											
ZZZZZZ			13:13																											
ZZZZZZ			13:31																											
ZZZZZZ			13:49																											
ZZZZZZ			19:08																											
ZZZZZZ			19:26																											
ZZZZZZ			19:44																											
ZZZZZZ			20:01																											
ZZZZZZ			20:19																											
ZZZZZZ			20:37																											
ZZZZZZ			20:55																											
ZZZZZZ			21:13																											
ZZZZZZ			21:30																											
ZZZZZZ			21:48																											
CCV 280-417404/24			22:06																											
CCB 280-417404/25			22:24																											
ZZZZZZ			22:42																											
ZZZZZZ			22:59																											
ZZZZZZ			23:17																											
ZZZZZZ			23:35																											
ZZZZZZ			23:53																											
ZZZZZZ			00:11																											
ZZZZZZ			00:28																											
ZZZZZZ			00:46																											
ZZZZZZ			01:04																											
ZZZZZZ			01:22																											
CCV 280-417404/36			01:40																											
CCB 280-417404/37			01:57																											
ZZZZZZ			02:15																											
ZZZZZZ			02:33																											

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Instrument ID: WC_IonChrom7 Analysis Method: 9056A

Start Date: 06/05/2018 10:15 End Date: 06/06/2018 08:48

Lab Sample Id	D/F	Type	Time	Analytes																									
				NO2-N	NO3																								
ZZZZZZ			02:51																										
ZZZZZZ			03:09																										
CCV 280-417404/48			05:13																										
CCB 280-417404/49			05:31																										
CCV 280-417404/59			08:30																										
CCB 280-417404/60			08:48																										

Prep Types:
=

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Instrument ID: WC_IonChrom7 Analysis Method: 9056A

Start Date: 07/20/2018 10:14 End Date: 07/21/2018 04:02

Lab Sample Id	D/F	Type	Time	Analytes																										
				NO2-N	NO3																									
CCV 280-422998/1	1		10:14	X	X																									
CCB 280-422998/2	1		10:32	X	X																									
ZZZZZZ			10:49																											
ZZZZZZ			11:07																											
ZZZZZZ			11:25																											
ZZZZZZ			11:43																											
ZZZZZZ			12:01																											
ZZZZZZ			12:18																											
ZZZZZZ			12:36																											
ZZZZZZ			12:54																											
LCS 280-422998/11	1	T	13:12	X	X																									
LCSD 280-422998/12	1	T	13:30	X	X																									
MB 280-422998/13	1	T	13:47	X	X																									
CCV 280-422998/14	1		14:05	X	X																									
CCB 280-422998/15	1		14:23	X	X																									
MRL 280-422998/16	1	T	17:38	X	X																									
ZZZZZZ			17:56																											
ZZZZZZ			18:14																											
ZZZZZZ			18:32																											
ZZZZZZ			18:50																											
ZZZZZZ			19:08																											
ZZZZZZ			19:25																											
ZZZZZZ			19:43																											
ZZZZZZ			20:01																											
ZZZZZZ			20:19																											
CCV 280-422998/26			20:37																											
CCB 280-422998/27			20:54																											
ZZZZZZ			21:12																											
ZZZZZZ			21:30																											
ZZZZZZ			21:48																											
ZZZZZZ			22:06																											
ZZZZZZ			22:23																											
ZZZZZZ			22:41																											
ZZZZZZ			22:59																											
ZZZZZZ			23:17																											
ZZZZZZ			23:35																											
ZZZZZZ			23:52																											
CCV 280-422998/38	1		00:10	X	X																									
CCB 280-422998/39	1		00:28	X	X																									

FORM XIII-IN

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Instrument ID: WC_IonChrom7 Analysis Method: 9056A

Start Date: 07/20/2018 10:14 End Date: 07/21/2018 04:02

Lab Sample Id	D/F	Type	Time	Analytes																									
				NO2-N	NO3																								
ZZZZZZ			00:46																										
ZZZZZZ			01:04																										
ZZZZZZ			01:21																										
ZZZZZZ			01:39																										
ZZZZZZ			01:57																										
280-111554-4	1	T	02:15	X	X																								
280-111554-10	1	T	02:33	X	X																								
ZZZZZZ			02:50																										
280-111554-11	1	T	03:08	X	X																								
ZZZZZZ			03:26																										
CCV 280-422998/50	1		03:44	X	X																								
CCB 280-422998/51	1		04:02	X	X																								

Prep Types:
T = Total/NA

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Batch Number: 417404 Batch Start Date: 06/05/18 10:15 Batch Analyst: Jewell, Connie C

Batch Method: 9056A Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	IC CAL cl/so4 00202	IC Cal low 00373	IC CL ICV 00014	IC ICV 5 00201
STD 280-417404/2 IC		9056A		5 mL	5 mL	0.02 mL	0.02 mL		
STD 280-417404/3 IC		9056A		5 mL	5 mL	0.05 mL	0.05 mL		
STD 280-417404/4 IC		9056A		5 mL	5 mL	0.1 mL	0.1 mL		
STD 280-417404/5 IC		9056A		5 mL	5 mL	1.2 mL	0.4 mL		
STD 280-417404/6 IC		9056A		5 mL	5 mL	2.4 mL	0.8 mL		
STD 280-417404/7 IC		9056A		5 mL	5 mL	4 mL	1 mL		
ICV 280-417404/8		9056A		5 mL	5 mL			0.4 mL	0.4 mL
ICB 280-417404/9		9056A		5 mL	5 mL				

Lab Sample ID	Client Sample ID	Method Chain	Basis	IC SO4 ICV 00017					
STD 280-417404/2 IC		9056A							
STD 280-417404/3 IC		9056A							
STD 280-417404/4 IC		9056A							
STD 280-417404/5 IC		9056A							
STD 280-417404/6 IC		9056A							
STD 280-417404/7 IC		9056A							
ICV 280-417404/8		9056A		0.4 mL					
ICB 280-417404/9		9056A							

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Batch Number: 417404 Batch Start Date: 06/05/18 10:15 Batch Analyst: Jewell, Connie C

Batch Method: 9056A Batch End Date:

Batch Notes	
Pipette/Syringe/Dispenser ID	wc5000ccj, wc1000cj, wc200cj
Regeneration Solution ID	171210701013
Sufficient Volume for Batch QC	yes

Basis	Basis Description

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Batch Number: 422998 Batch Start Date: 07/20/18 10:14 Batch Analyst: Jewell, Connie C

Batch Method: 9056A Batch End Date:

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	IC CAL cl/so4 00208	IC Cal low 00385	IC LCS 01288	
CCV 280-422998/1		9056A		5 mL	5 mL			5 mL	
CCB 280-422998/2		9056A		5 mL	5 mL				
MRL 280-422998/10		9056A		5 mL	5 mL	0.05 mL	0.02 mL		
LCS 280-422998/11		9056A		5 mL	5 mL			5 mL	
LCSD 280-422998/12		9056A		5 mL	5 mL			5 mL	
MB 280-422998/13		9056A		5 mL	5 mL				
CCV 280-422998/14		9056A		5 mL	5 mL			5 mL	
CCB 280-422998/15		9056A		5 mL	5 mL				
MRL 280-422998/16		9056A		5 mL	5 mL	0.05 mL	0.02 mL		
CCV 280-422998/38		9056A		5 mL	5 mL			5 mL	
CCB 280-422998/39		9056A		5 mL	5 mL				
280-111554-D-4	RQLmw-012-062818-GW	9056A	T	5 mL	5 mL				
280-111554-E-10	RQLmw-014-062818-GW	9056A	T	5 mL	5 mL				
280-111554-E-10	RQLmw-014-062818-GW	9056A	T	5 mL	5 mL				
280-111554-B-11	RQLmw-013-062818-GW	9056A	T	5 mL	5 mL				
280-111554-B-11	RQLmw-013-062818-GW	9056A	T	5 mL	5 mL				
CCV 280-422998/50		9056A		5 mL	5 mL			5 mL	
CCB 280-422998/51		9056A		5 mL	5 mL				

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-111554-2

SDG No.:

Batch Number: 422998 Batch Start Date: 07/20/18 10:14 Batch Analyst: Jewell, Connie C

Batch Method: 9056A Batch End Date:

Batch Notes	
Pipette/Syringe/Dispenser ID	wc5000ccj, wc1000cj, wc200cj
Regeneration Solution ID	180501699012
Sufficient Volume for Batch QC	yes

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\02.0000.d
Lims ID: std L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 05-Jun-2018 10:33:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0070676-002
Operator ID: Instrument ID: WC_IonChrom7
Sublist: chrom-Anions_IC7*sub1

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 05-Jun-2018 12:36:27 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0302

First Level Reviewer: jewellc Date: 05-Jun-2018 12:34:11

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.000	2.017	-0.017	6350951	0.2000	0.1911	
2 Chloride	3.233	3.208	0.025	17204213	1.00	0.9821	
3 Nitrite as N	3.725	3.717	0.008	8547902	0.2000	0.1933	
4 Bromide	5.917	5.808	0.109	1282303	0.2000	0.2100	
5 Nitrate as N	6.467	6.200	0.267	8707426	0.2000	0.2019	
6 Sulfate	9.300	8.850	0.450	14285710	1.00	0.9474	
7 Orthophosphate as P		11.492			ND	ND	

QC Flag Legend

Processing Flags
ND - Not Detected or Marked ND

Reagents:

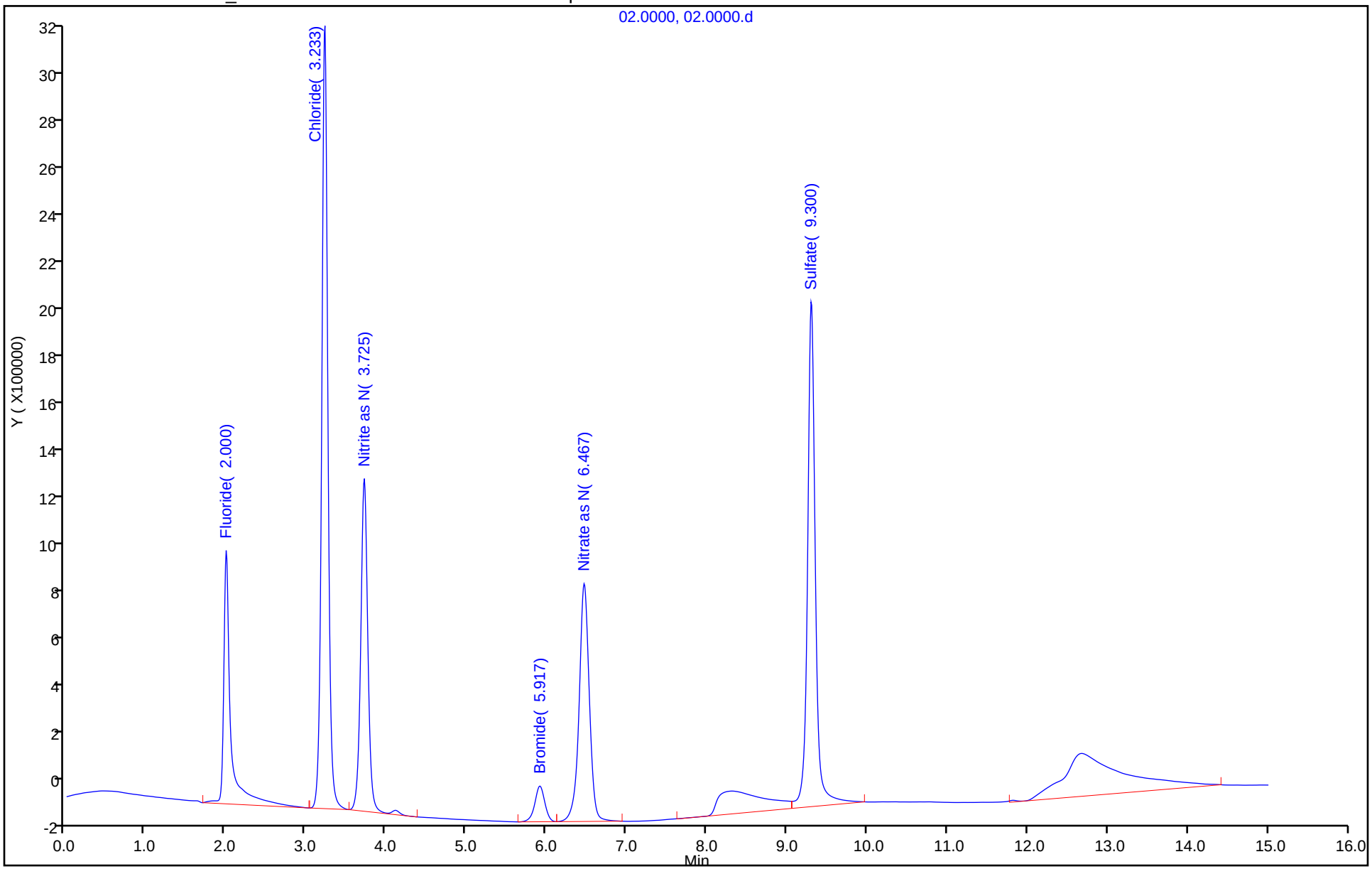
IC Cal low_00373 Amount Added: 0.02 Units: mL
IC CAL cl/so4_00202 Amount Added: 0.02 Units: mL

Report Date: 05-Jun-2018 12:36:27 Chrom Revision: 2.2 11-May-2018 08:54:46

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\02.0000.d

Injection Date:	05-Jun-2018 10:33:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	std L1			Worklist Smp#:	2
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\03.0000.d
Lims ID: std L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 05-Jun-2018 10:51:00 ALS Bottle#: 0 Worklist Smp#: 3
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0070676-003
Operator ID: Instrument ID: WC_IonChrom7
Sublist: chrom-Anions_IC7*sub1

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 05-Jun-2018 12:36:27 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0302

First Level Reviewer: jewellc Date: 05-Jun-2018 12:35:00

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.000	2.017	-0.017	14729157	0.5000	0.4955	
2 Chloride	3.225	3.208	0.017	42893961	2.50	2.49	
3 Nitrite as N	3.725	3.717	0.008	21664939	0.5000	0.5073	
4 Bromide	5.908	5.808	0.100	3452047	0.5000	0.4958	
5 Nitrate as N	6.450	6.200	0.250	22099291	0.5000	0.5037	
6 Sulfate	9.292	8.850	0.442	34173739	2.50	2.52	
7 Orthophosphate as P		11.492			ND	ND	

QC Flag Legend

Processing Flags
ND - Not Detected or Marked ND

Reagents:

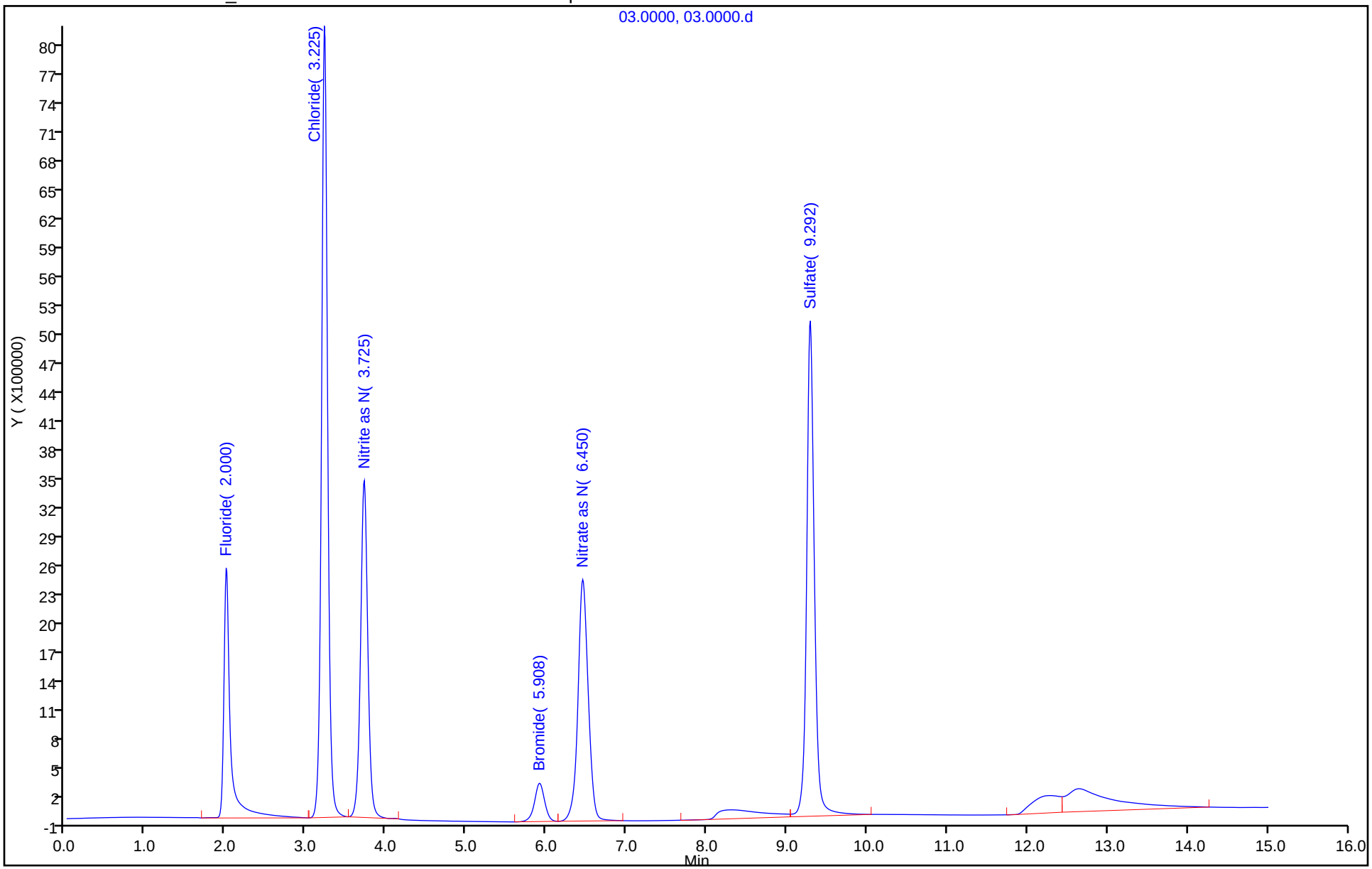
IC Cal low_00373 Amount Added: 0.05 Units: mL
IC CAL cl/so4_00202 Amount Added: 0.05 Units: mL

Report Date: 05-Jun-2018 12:36:27 Chrom Revision: 2.2 11-May-2018 08:54:46

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\03.0000.d

Injection Date:	05-Jun-2018 10:51:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	std L2			Worklist Smp#:	3
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\04.0000.d
Lims ID: std L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 05-Jun-2018 11:09:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0070676-004
Misc. Info.: 4 F
Operator ID: Instrument ID: WC_IonChrom7
Sublist: chrom-Anions_IC7*sub1

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 05-Jun-2018 12:36:28 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0302

First Level Reviewer: jewellc Date: 05-Jun-2018 12:35:12

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.008	2.017	-0.009	29570255	1.00	1.03	
2 Chloride	3.225	3.208	0.017	86729334	5.00	5.07	
3 Nitrite as N	3.725	3.717	0.008	42498019	1.00	1.01	
4 Bromide	5.908	5.808	0.100	6969044	1.00	0.9592	
5 Nitrate as N	6.425	6.200	0.225	43441006	1.00	0.9845	
6 Sulfate	9.275	8.850	0.425	67795829	5.00	5.17	
7 Orthophosphate as P	12.025	11.492	0.533	12515848	1.00	1.01	

Reagents:

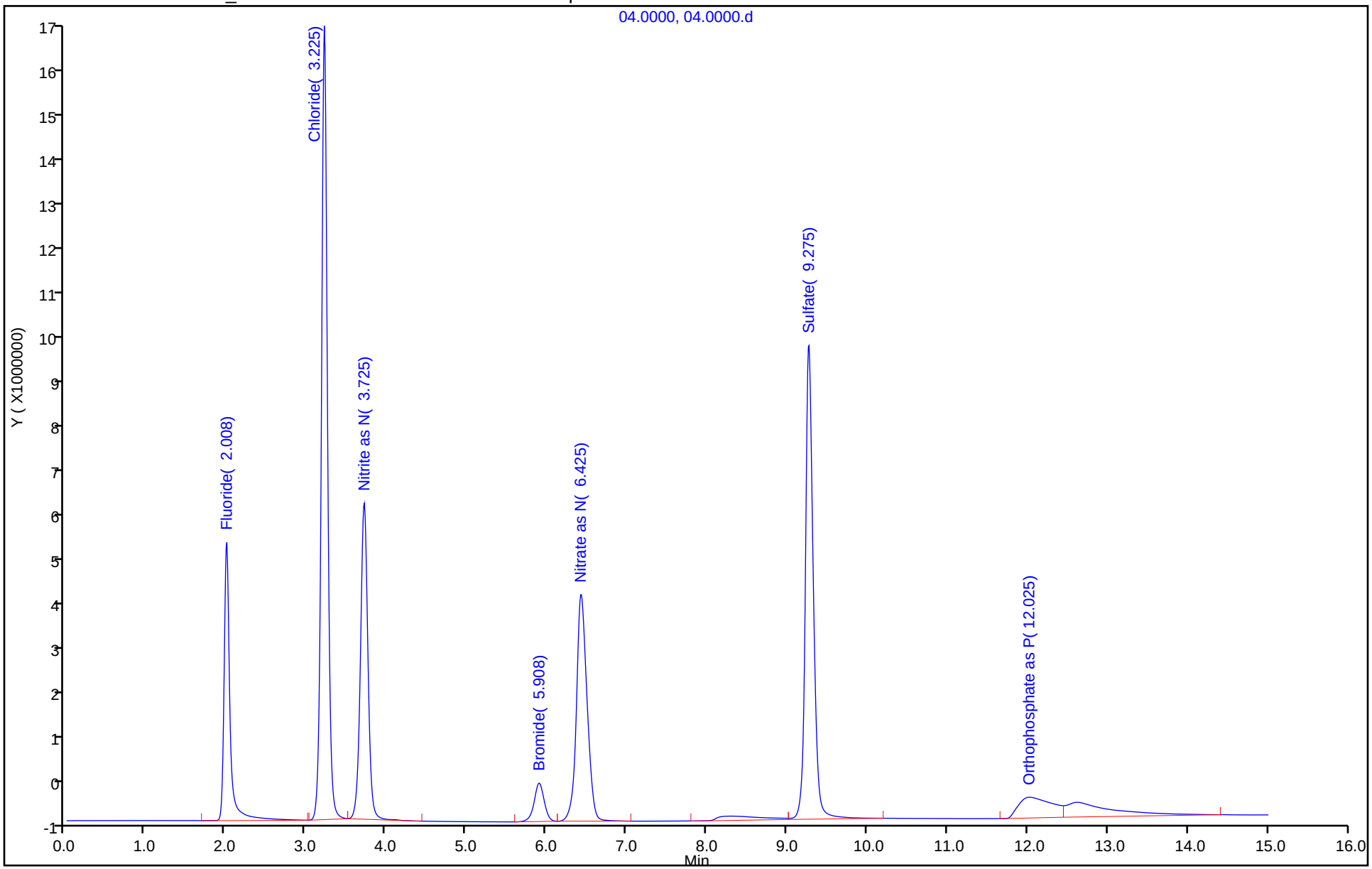
IC Cal low_00373 Amount Added: 0.10 Units: mL
IC CAL cl/so4_00202 Amount Added: 0.10 Units: mL

Report Date: 05-Jun-2018 12:36:28 Chrom Revision: 2.2 11-May-2018 08:54:46

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\04.0000.d

Injection Date:	05-Jun-2018 11:09:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	std L3			Worklist Smp#:	4
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\05.0000.d
Lims ID: std L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 05-Jun-2018 11:27:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0070676-005
Misc. Info.: 5 F
Operator ID: Instrument ID: WC_IonChrom7
Sublist: chrom-Anions_IC7*sub1

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 05-Jun-2018 12:36:28 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0302

First Level Reviewer: jewellc Date: 05-Jun-2018 12:35:23

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.008	2.008	0.000	114940420	4.00	4.14	
2 Chloride	3.208	3.208	0.000	1031096518	60.0	60.6	
3 Nitrite as N	3.725	3.725	0.000	171553985	4.00	4.10	
4 Bromide	5.875	5.875	0.000	29791673	4.00	3.97	
5 Nitrate as N	6.342	6.342	0.000	176382525	4.00	3.98	
6 Sulfate	9.083	9.083	0.000	772995817	60.0	60.9	
7 Orthophosphate as P	11.667	11.667	0.000	65509655	4.00	3.94	

Reagents:

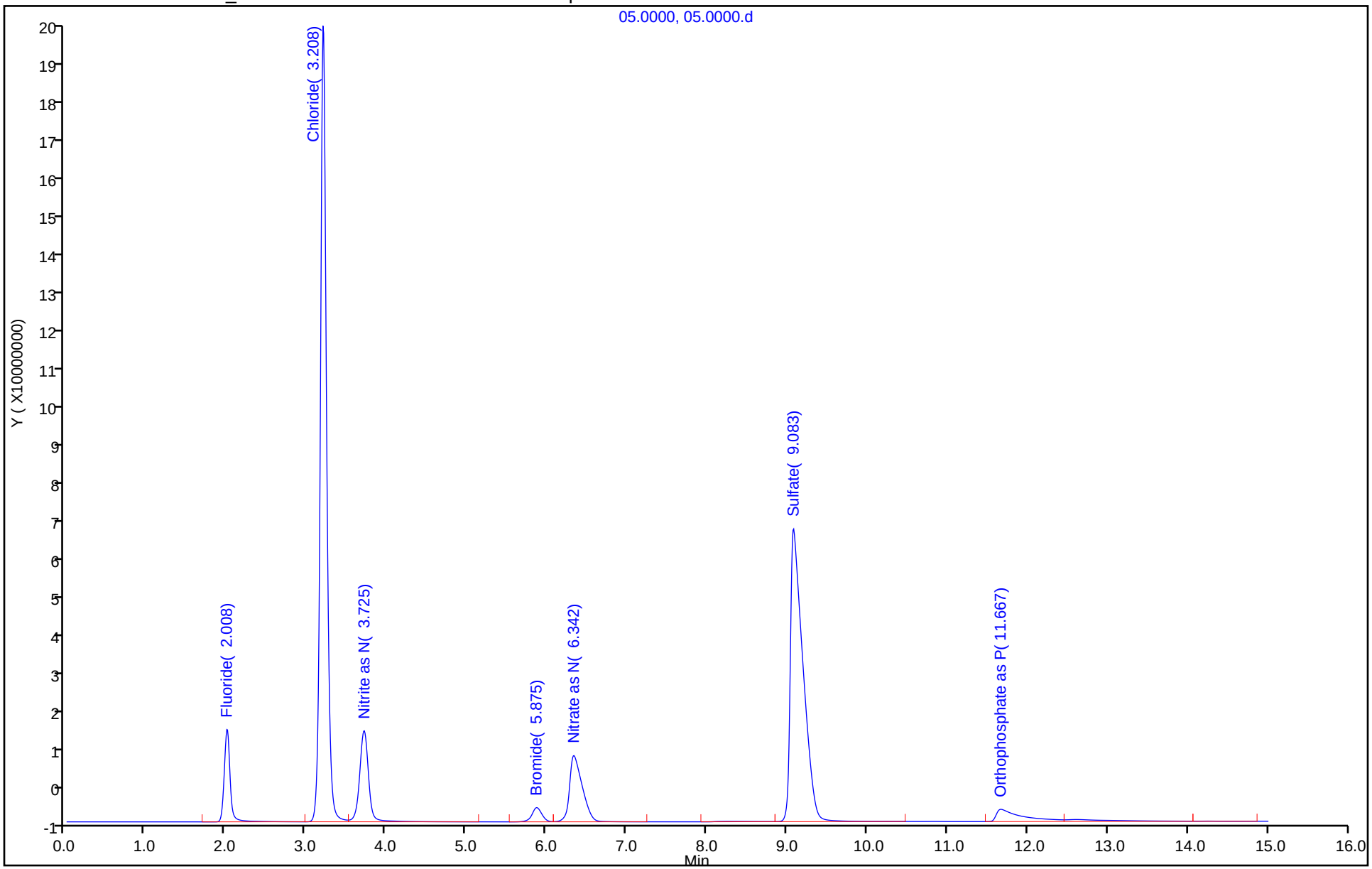
IC Cal low_00373 Amount Added: 0.40 Units: mL
IC CAL cl/so4_00202 Amount Added: 1.20 Units: mL

Report Date: 05-Jun-2018 12:36:28 Chrom Revision: 2.2 11-May-2018 08:54:46

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\05.0000.d

Injection Date:	05-Jun-2018 11:27:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	std L4			Worklist Smp#:	5
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\06.0000.d
Lims ID: std L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 05-Jun-2018 11:44:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0070676-006
Misc. Info.: 6 F
Operator ID: Instrument ID: WC_IonChrom7
Sublist: chrom-Anions_IC7*sub1

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 05-Jun-2018 12:36:26 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0302

First Level Reviewer: jewellc Date: 05-Jun-2018 12:36:26

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.017	2.017	0.000	221467033	8.00	8.01	
2 Chloride	3.208	3.208	0.000	2047237442	120.0	120.3	
3 Nitrite as N	3.725	3.717	0.008	333142558	8.00	7.96	
4 Bromide	5.833	5.808	0.025	60688987	8.00	8.04	
5 Nitrate as N	6.250	6.200	0.050	355903515	8.00	8.02	
6 Sulfate	8.967	8.850	0.117	1523157981	120.0	120.2	
7 Orthophosphate as P	11.550	11.492	0.058	139065974	8.00	8.00	

Reagents:

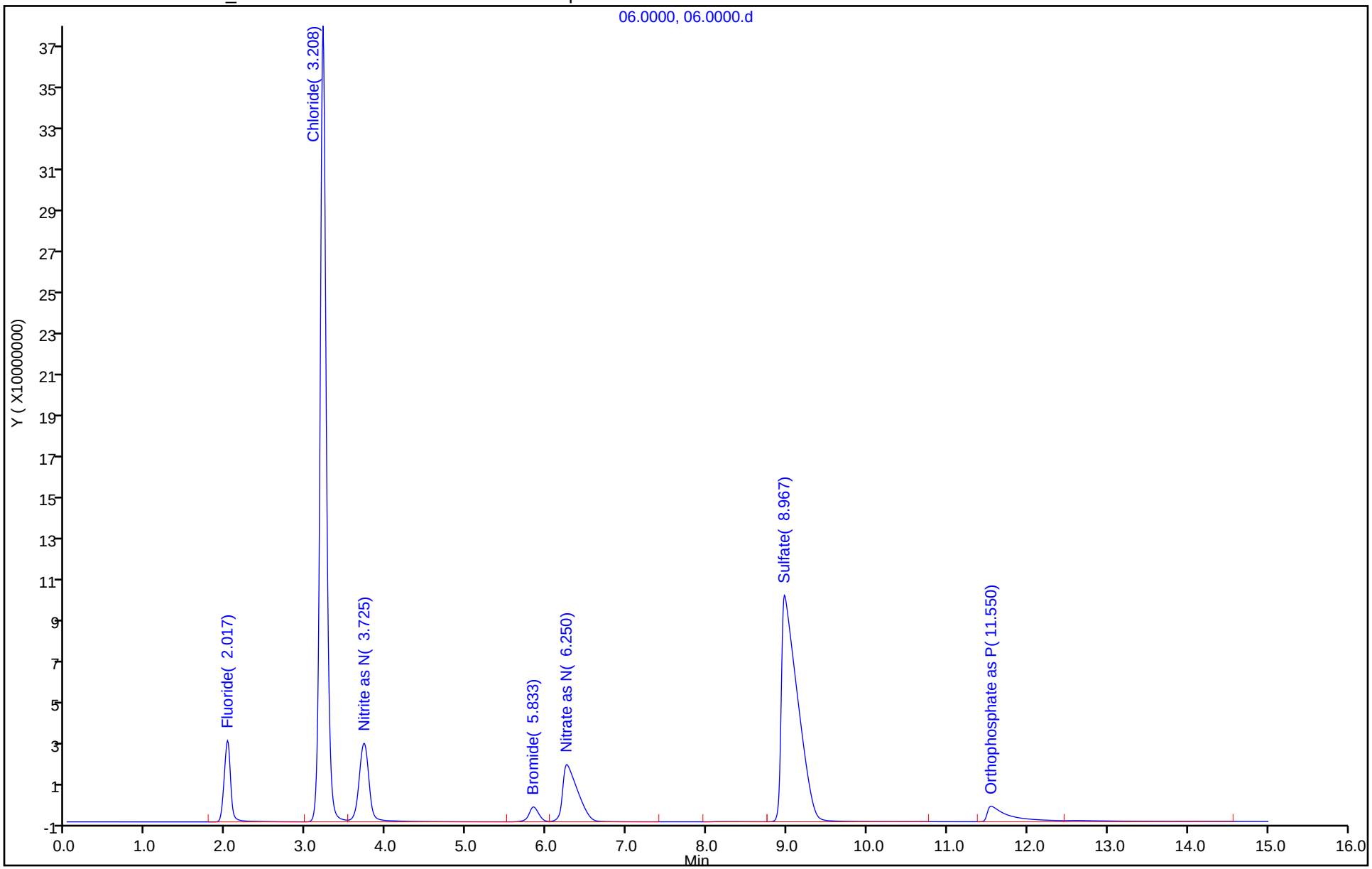
IC Cal low_00373 Amount Added: 0.80 Units: mL
IC CAL cl/so4_00202 Amount Added: 2.40 Units: mL

Report Date: 05-Jun-2018 12:36:26 Chrom Revision: 2.2 11-May-2018 08:54:46

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\06.0000.d

Injection Date:	05-Jun-2018 11:44:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	std L5			Worklist Smp#:	6
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d
Lims ID: std L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 05-Jun-2018 12:02:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0070676-007
Misc. Info.: 7 F
Operator ID: Instrument ID: WC_IonChrom7
Sublist: chrom-Anions_IC7*sub1

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 05-Jun-2018 12:36:29 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0302

First Level Reviewer: jewellc Date: 05-Jun-2018 12:35:56

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.017	2.008	0.009	271729025	10.0	9.83	
2 Chloride	3.208	3.208	0.000	3388060477	200.0	199.1	
3 Nitrite as N	3.717	3.725	-0.008	415327633	10.0	9.93	
4 Bromide	5.808	5.875	-0.067	75830729	10.0	10.0	
5 Nitrate as N	6.200	6.342	-0.142	443857326	10.0	10.0	
6 Sulfate	8.850	9.083	-0.233	2518985817	200.0	198.8	
7 Orthophosphate as P	11.492	11.667	-0.175	176332183	10.0	10.1	

Reagents:

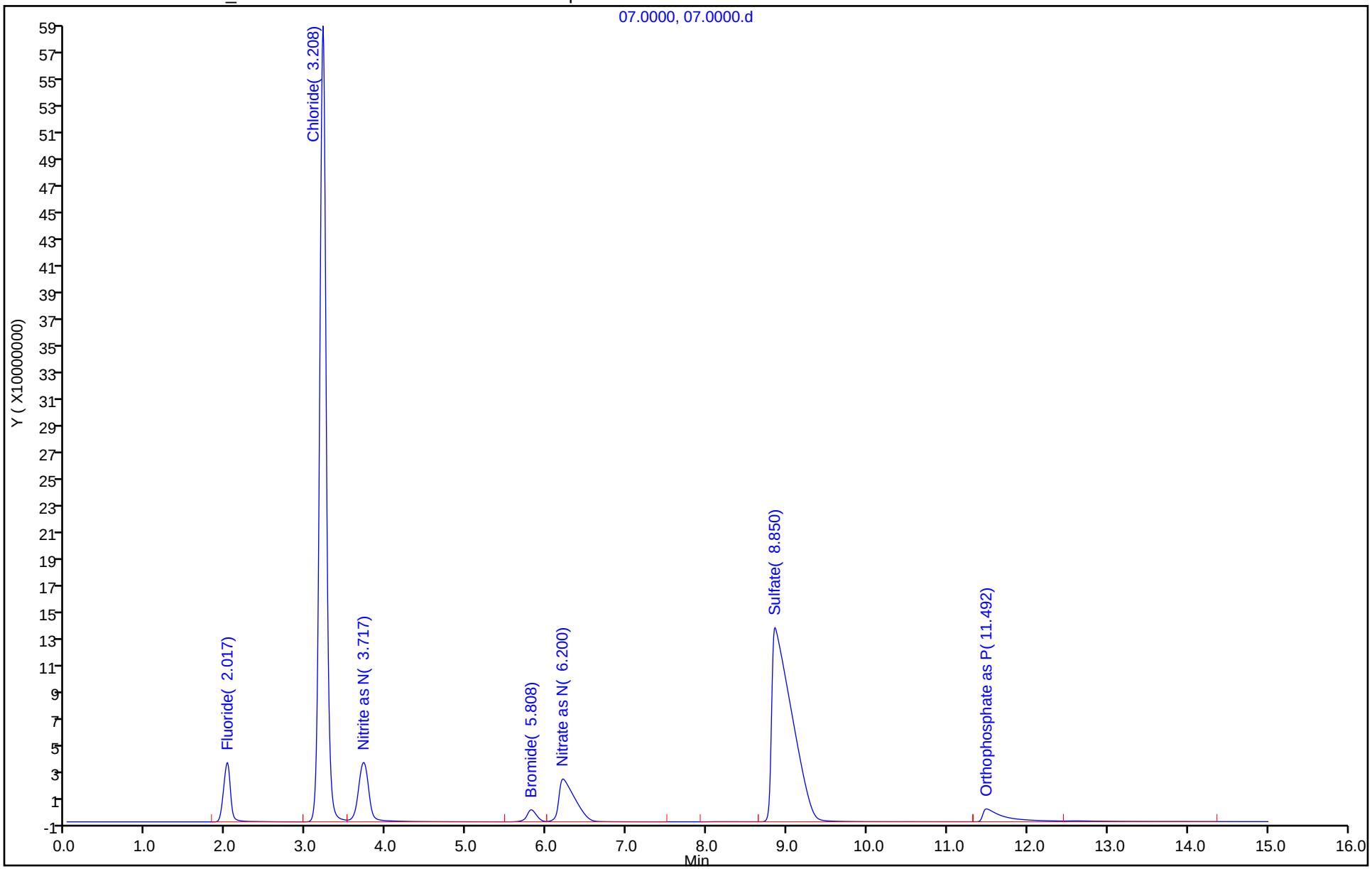
IC Cal low_00373 Amount Added: 1.00 Units: mL
IC CAL cl/so4_00202 Amount Added: 4.00 Units: mL

Report Date: 05-Jun-2018 12:36:29 Chrom Revision: 2.2 11-May-2018 08:54:46

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Injection Date:	05-Jun-2018 12:02:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	std L6			Worklist Smp#:	7
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver

TestAmerica

419404 / 419405

IC Instrument Information

WL: 70676 **Inst ID:** 7 **Analysis Date:** 06/05/18 **Analyst:** TT

Rush	Job No.	Samples	Anions	QC Req	HT Exp
☐	110516 ✓	5	F (Cl) NO2 Br (NO3) PO4 (SO4)	MS/D	15
☐	550-103735 ✓	1	F Cl NO2 Br (NO3) PO4 (SO4)	MS/D	
☐	110464 ✓	1	F (Cl) NO2 Br (NO3) PO4 (SO4)	MS/D	
☐	110474	2	F (Cl) NO2 Br (NO3) PO4 SO4	MS/D	
☐	109875-7	1	F Cl NO2 Br NO3 PO4 (SO4)	MS/D	confirm per Thu
☐	109813	1	F Cl NO2 Br NO3 PO4 (SO4)	MS/D	
☐	109962	7	F (Cl) NO2 (Br) NO3 PO4 (SO4)	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	

Dilutions

Job No.	Samples	Anions	Dilution	Reason
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		

Phuriya 6/7/18

25

IC Instrument Information

WL: 70676 **Inst ID:** 7 **Analysis Date:** 06/05/18 **Analyst:** TP

Rush	Job No.	Samples	Anions	QC Req	HT Exp
☐	110516 ✓	5	F (Cl) (NO2) Br (NO3) PO4 (SO4)	MS/D	15
☒	550-103735 ✓	1	F Cl NO2 Br (NO3) PO4 (SO4)	MS/D	
☐	110464 ✓	1	F (Cl) NO2 Br (NO3) PO4 (SO4)	MS/D	
☐	110474	2	F (Cl) (NO2) Br (NO3) PO4 SO4	MS/D	
☐	109875-7	1	F (Cl) NO2 Br NO3 PO4 (SO4)	MS/D	confirm per Thu
☐	109813	1	F Cl NO2 Br NO3 PO4 (SO4)	MS/D	
☐	109962	7	F (Cl) NO2 (Br) NO3 PO4 (SO4)	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	

Dilutions

Job No.	Samples	Anions	Dilution	Reason
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		

TestAmerica Laboratories
Initial Calibration Summary Report

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\Anions_IC7.m

Instrument:	WC_IonChrom7	Lims Location:	280
Lock State:	Initial Calib Locked	Cpnd Order:	Retention Time
Integrator:	Falcon	Last Modified:	05-Jun-2018 12:36:26

No.Compounds:7

Initial Calibration Batches

Ical Batch: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b
Inj Date : 05-Jun-2018 10:33:00, Sublist: chrom-Anions_IC7*sub1

Detector 1: 0005

	Wet - Anions				Wet - Anions 28D			
Compound	b	M1	M2	Err	b	M1	M2	Err
1 Fluoride	1091607	2752055		1.000	1091607	2752055		1.000
2 Chloride	493398	1701483		1.000	493398	1701483		1.000
3 Nitrite as N	475295	4176722		1.000	475295	4176722		1.000
4 Bromide	-311280	7589977		1.000	-311280	7589977		1.000
5 Nitrate as N	-255286	4438492		1.000	-255286	4438492		1.000
6 Sulfate	2292933	1265801		1.000	2292933	1265801		1.000
7 Orthophosphate as P	-578917	1811218	R2, R4	1.000*	-578917	1811218	R2, R4	1.000*

ICalib Error Legend
R2, Missing the Required Number of Calibration Points
R4, Curve Zero Intercept is > Reporting Limit

Phuriya
6/7/18

TestAmerica Laboratories
Initial Calibration Summary Report

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\Anions_IC7.m

Instrument:	WC_IonChrom7	Lims Location:	280
Lock State:	Initial Calib Locked	Cpnd Order:	Retention Time
Integrator:	Falcon	Last Modified:	05-Jun-2018 12:36:26

No.Compounds:7

Initial Calibration Batches

Ical Batch: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b
Inj Date : 05-Jun-2018 10:33:00, Sublist: chrom-Anions_IC7*sub1

Detector 1: 0005

	Wet - Anions				Wet - Anions 28D			
Compound	b	M1	M2	Err	b	M1	M2	Err
1 Fluoride	1091607	2752055		1.000	1091607	2752055		1.000
2 Chloride	493398	1701483		1.000	493398	1701483		1.000
3 Nitrite as N	475295	4176722		1.000	475295	4176722		1.000
4 Bromide	-311280	7589977		1.000	-311280	7589977		1.000
5 Nitrate as N	-255286	4438492		1.000	-255286	4438492		1.000
6 Sulfate	2292933	1265801		1.000	2292933	1265801		1.000
7 Orthophosphate as P	-578917	1811218	R2, R4	1.000*	-578917	1811218	R2, R4	1.000*

ICalib Error Legend

R2, Missing the Required Number of Calibration Points
R4, Curve Zero Intercept is > Reporting Limit

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\08.0000.d
Lims ID: icv
Client ID:
Sample Type: ICV
Inject. Date: 05-Jun-2018 12:20:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0070676-008
Misc. Info.: 8 F
Operator ID: Instrument ID: WC_IonChrom7
Sublist:

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 06-Jun-2018 10:01:58 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0303

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.008	2.008	0.000	115146856	4.00	4.14	
2 Chloride	3.208	3.208	0.000	1399306524	80.0	82.2	
3 Nitrite as N	3.717	3.717	0.000	173786735	4.00	4.15	
4 Bromide	5.867	5.867	0.000	30184915	4.00	4.02	
5 Nitrate as N	6.333	6.333	0.000	181727518	4.00	4.10	
6 Sulfate	9.033	9.033	0.000	1045532426	80.0	82.4	
7 Orthophosphate as P	11.658	11.658	0.000	68190758	4.00	4.08	

Reagents:

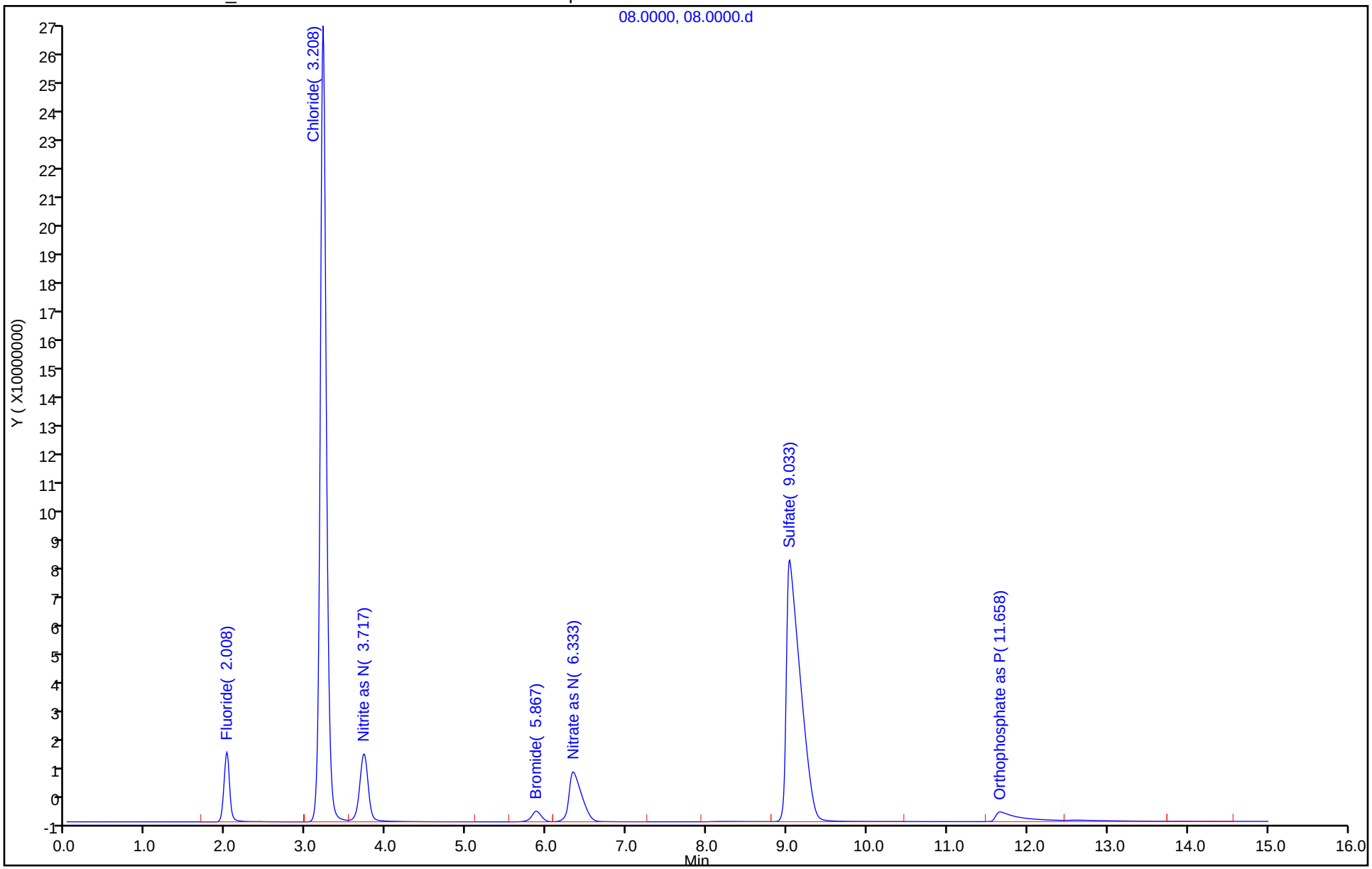
IC CL ICV_00014	Amount Added:	0.40	Units: mL
IC ICV 5_00201	Amount Added:	0.40	Units: mL
IC SO4 ICV_00017	Amount Added:	0.40	Units: mL

Report Date: 06-Jun-2018 10:01:59 Chrom Revision: 2.2 11-May-2018 08:54:46

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\08.0000.d

Injection Date:	05-Jun-2018 12:20:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	icv			Worklist Smp#:	8
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\09.0000.d
Lims ID: icb
Client ID:
Sample Type: ICB
Inject. Date: 05-Jun-2018 12:38:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0070676-009
Misc. Info.: 9 F
Operator ID: Instrument ID: WC_IonChrom7

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 06-Jun-2018 10:01:58 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0303

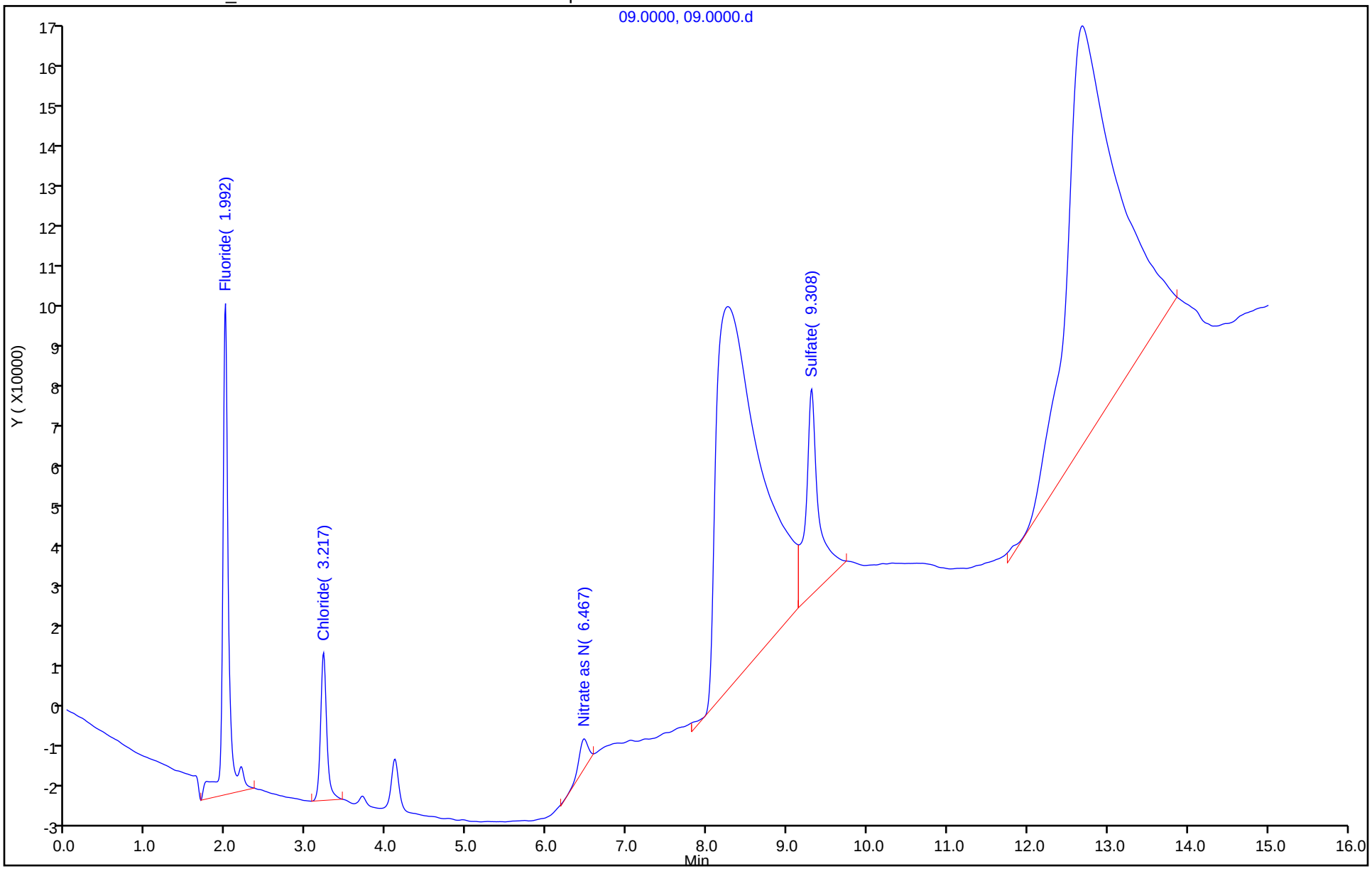
Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	1.992	2.008	-0.016	586550		-0.0184	
2 Chloride	3.217	3.208	0.009	186324		-0.0180	
3 Nitrite as N		3.717				ND	
4 Bromide		5.867				ND	
5 Nitrate as N	6.467	6.333	0.134	57287		0.007042	
6 Sulfate	9.308	9.033	0.275	538489		-0.1386	
7 Orthophosphate as P		11.658				ND	

Report Date: 06-Jun-2018 10:02:01 Chrom Revision: 2.2 11-May-2018 08:54:46

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\09.0000.d

Injection Date:	05-Jun-2018 12:38:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	icb			Worklist Smp#:	9
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



422998 / 422999

IC Instrument Information

WL: 72165 **Inst ID:** 7 **Analysis Date:** 07/20/18 **Analyst:** CJ

Rush	Job No.	Samples	Anions	QC Req	HT Exp
☐	112132	2	F Cl NO2 Br [✓ NO3] PO4 SO4	[✓ MS/D] 2	
☐	112220	4	F Cl [✓ NO2] Br [✓ NO3] PO4 SO4	MS/D	
☐	112214	5	[✓ F] Cl NO2 Br [✓ NO3] PO4 SO4	MS/D	
☐	112225	4	F [✓ Cl] NO2 Br [✓ NO3] PO4 [✓ SO4]	MS/D	
☐	111519 x	2	F [✓ Cl] NO2 Br NO3 PO4 [✓ SO4]	[✓ MS/D] 16	
☐	~~111469~~	~~1~~	~~F Cl NO2 Br NO3 PO4 SO4~~	~~MS/D~~	07/20/18
☐	111554	3	F [✓ Cl] NO2 Br NO3 PO4 [✓ SO4]	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	

Dilutions

Job No.	Samples	Anions	Dilution	Reason
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		

37
~~25~~

Panida R.
7/24/18

IC Instrument Information

WL: 72165 **Inst ID:** 7 **Analysis Date:** 07/20/18 **Analyst:** CJ

Rush	Job No.	Samples	Anions	QC Req	HT Exp
☐	112132	2	F Cl NO2 Br (NO3) PO4 SO4	MS/D 2	
☐	112220	4	F Cl (NO2) Br (NO3) PO4 SO4	MS/D	
☐	112214	5	(F) Cl NO2 Br (NO3) PO4 SO4	MS/D	
☐	112225	4	F (Cl) NO2 Br (NO3) PO4 (SO4)	MS/D	
☐	111519 x	2	F (Cl) NO2 Br NO3 PO4 (SO4)	MS/D 16	
☐	~~111469~~	~~1~~	~~F (Cl) NO2 Br NO3 PO4 (SO4)~~	~~MS/D~~	07/20/18
☐	111554	3	F (Cl) NO2 Br NO3 PO4 (SO4)	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	
☐			F Cl NO2 Br NO3 PO4 SO4	MS/D	

Dilutions

Job No.	Samples	Anions	Dilution	Reason
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		
		F Cl NO2 Br NO3 PO4 SO4		

TestAmerica Laboratories
Initial Calibration Summary Report

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180714-71975.b\Anions_IC7.m
Instrument: WC_IonChrom7 Lims Location: 280
Lock State: Initial Calib Locked Cpnd Order: Retention Time
Integrator: Falcon Last Modified: 16-Jul-2018 23:38:47
No.Compounds:7

Initial Calibration Batches

Ical Batch: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b
Inj Date : 05-Jun-2018 10:33:00, Sublist: chrom-Anions_IC7*sub1

Detector 1: 0005

	Wet - Anions				Wet - Anions 28D			
Compound	b	M1	M2	Err	b	M1	M2	Err
1 Fluoride	1091607	2752055		1.000	1091607	2752055		1.000
2 Chloride	493398	1701483		1.000	493398	1701483		1.000
3 Nitrite as N	475295	4176722		1.000	475295	4176722		1.000
4 Bromide	-311280	7589977		1.000	-311280	7589977		1.000
5 Nitrate as N	-255286	4438492		1.000	-255286	4438492		1.000
6 Sulfate	2292933	1265801		1.000	2292933	1265801		1.000
7 Orthophosphate as P	-578917	1811218	R2, R4	1.000*	-578917	1811218	R2, R4	1.000*

ICalib Error Legend
R2, Missing the Required Number of Calibration Points
R4, Curve Zero Intercept is > Reporting Limit

TestAmerica Laboratories
Initial Calibration Summary Report

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180714-71975.b\Anions_IC7.m

Instrument:	WC_IonChrom7	Lims Location:	280
Lock State:	Initial Calib Locked	Cpnd Order:	Retention Time
Integrator:	Falcon	Last Modified:	16-Jul-2018 23:38:47

No.Compounds:7

Initial Calibration Batches

Ical Batch: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b
Inj Date : 05-Jun-2018 10:33:00, Sublist: chrom-Anions_IC7*sub1

Detector 1: 0005

	Wet - Anions				Wet - Anions 28D			
Compound	b	M1	M2	Err	b	M1	M2	Err
1 Fluoride	1091607	2752055		1.000	1091607	2752055		1.000
2 Chloride	493398	1701483		1.000	493398	1701483		1.000
3 Nitrite as N	475295	4176722		1.000	475295	4176722		1.000
4 Bromide	-311280	7589977		1.000	-311280	7589977		1.000
5 Nitrate as N	-255286	4438492		1.000	-255286	4438492		1.000
6 Sulfate	2292933	1265801		1.000	2292933	1265801		1.000
7 Orthophosphate as P	-578917	1811218	R2, R4	1.000*	-578917	1811218	R2, R4	1.000*

ICalib Error Legend
R2, Missing the Required Number of Calibration Points
R4, Curve Zero Intercept is > Reporting Limit

Panida R.
7/24/18

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\01.0000.d
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 20-Jul-2018 10:14:00 ALS Bottle#: 0 Worklist Smp#: 1
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-001
Operator ID: Instrument ID: WC_IonChrom7
Sublist: chrom-Anions_IC7*sub1

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 09:24:33 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0306

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.000	2.000	0.000	141928588	5.00	5.12	
2 Chloride	3.167	3.167	0.000	1666988912	100.0	97.9	
3 Nitrite as N	3.667	3.667	0.000	214207965	5.00	5.12	
4 Bromide	5.775	5.775	0.000	36476795	5.00	4.85	
5 Nitrate as N	6.217	6.217	0.000	222322777	5.00	5.01	
6 Sulfate	8.900	8.900	0.000	1315231902	100.0	103.7	
7 Orthophosphate as P	11.625	11.625	0.000	86871617	5.00	5.12	

Reagents:

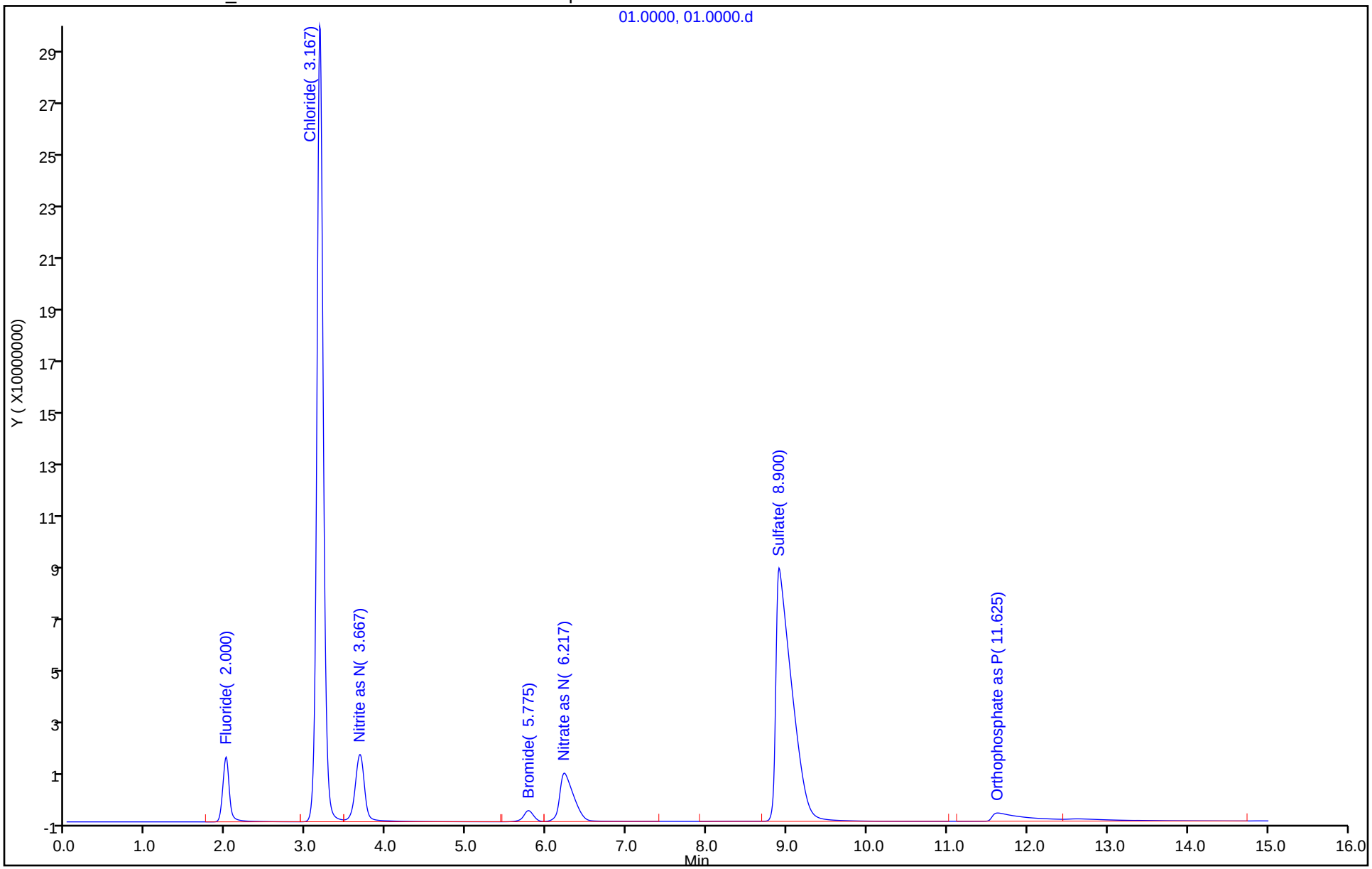
IC LCS_01288 Amount Added: 5.00 Units: mL

Report Date: 23-Jul-2018 09:24:34 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\01.0000.d

Injection Date:	20-Jul-2018 10:14:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	ccv			Worklist Smp#:	1
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\02.0000.d
Lims ID: ccb
Client ID:
Sample Type: CCB
Inject. Date: 20-Jul-2018 10:32:00 ALS Bottle#: 0 Worklist Smp#: 2
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-002
Operator ID: Instrument ID: WC_IonChrom7

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 09:24:33 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0306

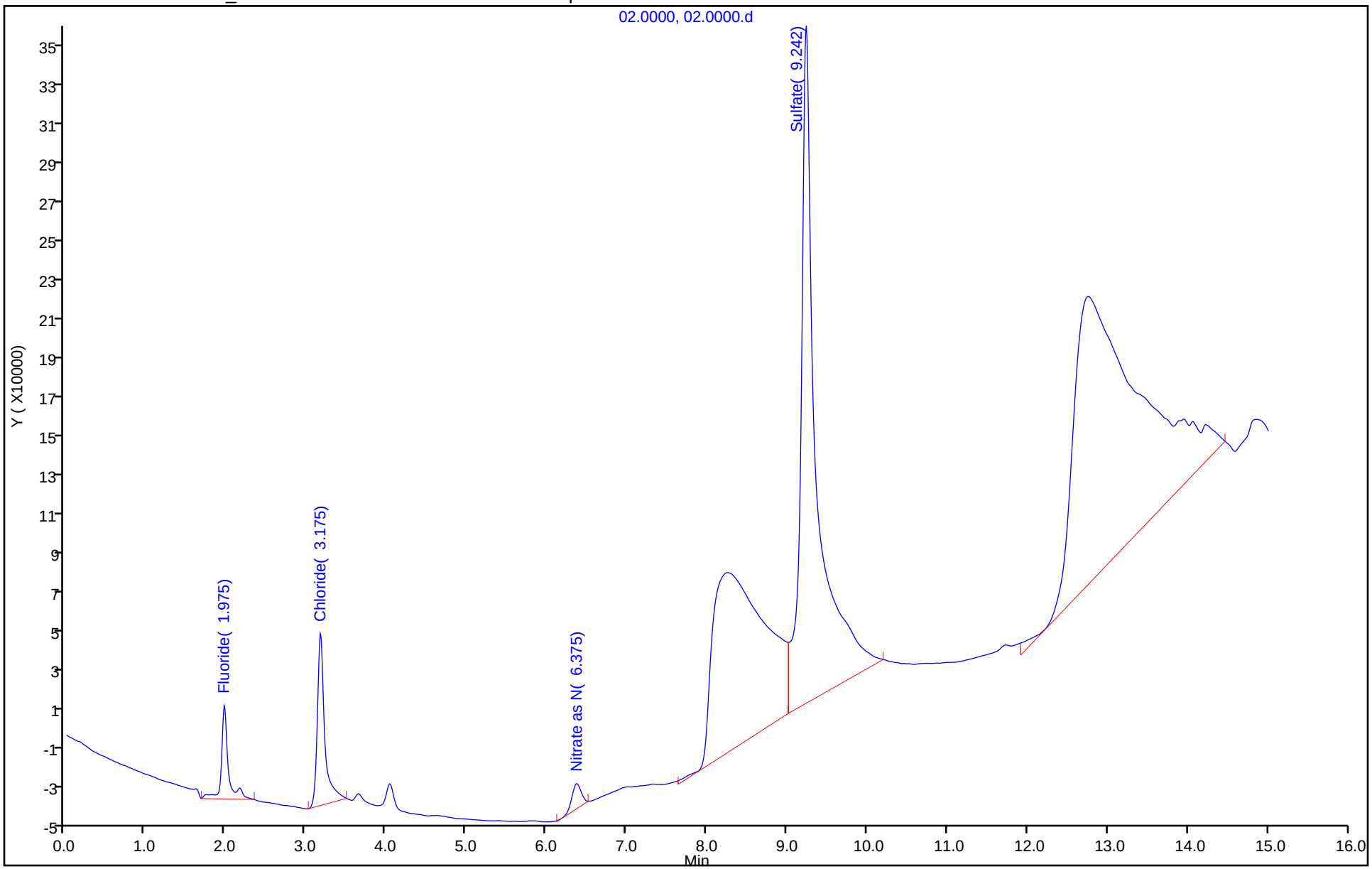
Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	1.975	2.000	-0.025	282638		-0.0294	
2 Chloride	3.175	3.158	0.017	556331		0.003699	
3 Nitrite as N		3.658				ND	
4 Bromide		5.742				ND	
5 Nitrate as N	6.375	6.183	0.192	104080		0.008097	
6 Sulfate	9.242	8.933	0.309	4655434		0.1866	
7 Orthophosphate as P		11.775				ND	

Report Date: 23-Jul-2018 09:24:36 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\02.0000.d

Injection Date:	20-Jul-2018 10:32:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	ccb			Worklist Smp#:	2
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\11.0000.d
Lims ID: lcs
Client ID:
Sample Type: LCS
Inject. Date: 20-Jul-2018 13:12:00 ALS Bottle#: 0 Worklist Smp#: 11
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-011
Misc. Info.: 11 1749
Operator ID: Instrument ID: WC_IonChrom7

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 09:24:33 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0306

First Level Reviewer: jewellc Date: 20-Jul-2018 13:46:34

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.008	2.000	0.008	144408735	5.00	5.21	
2 Chloride	3.167	3.158	0.009	1664620997	100.0	97.8	
3 Nitrite as N	3.667	3.658	0.009	214431473	5.00	5.12	
4 Bromide	5.750	5.742	0.008	37207262	5.00	4.94	
5 Nitrate as N	6.192	6.183	0.009	220923785	5.00	4.98	
6 Sulfate	8.933	8.933	0.000	1316470664	100.0	103.8	a
7 Orthophosphate as P	11.817	11.775	0.042	70059071	5.00	4.19	

QC Flag Legend

Review Flags
a - User Assigned ID

Reagents:

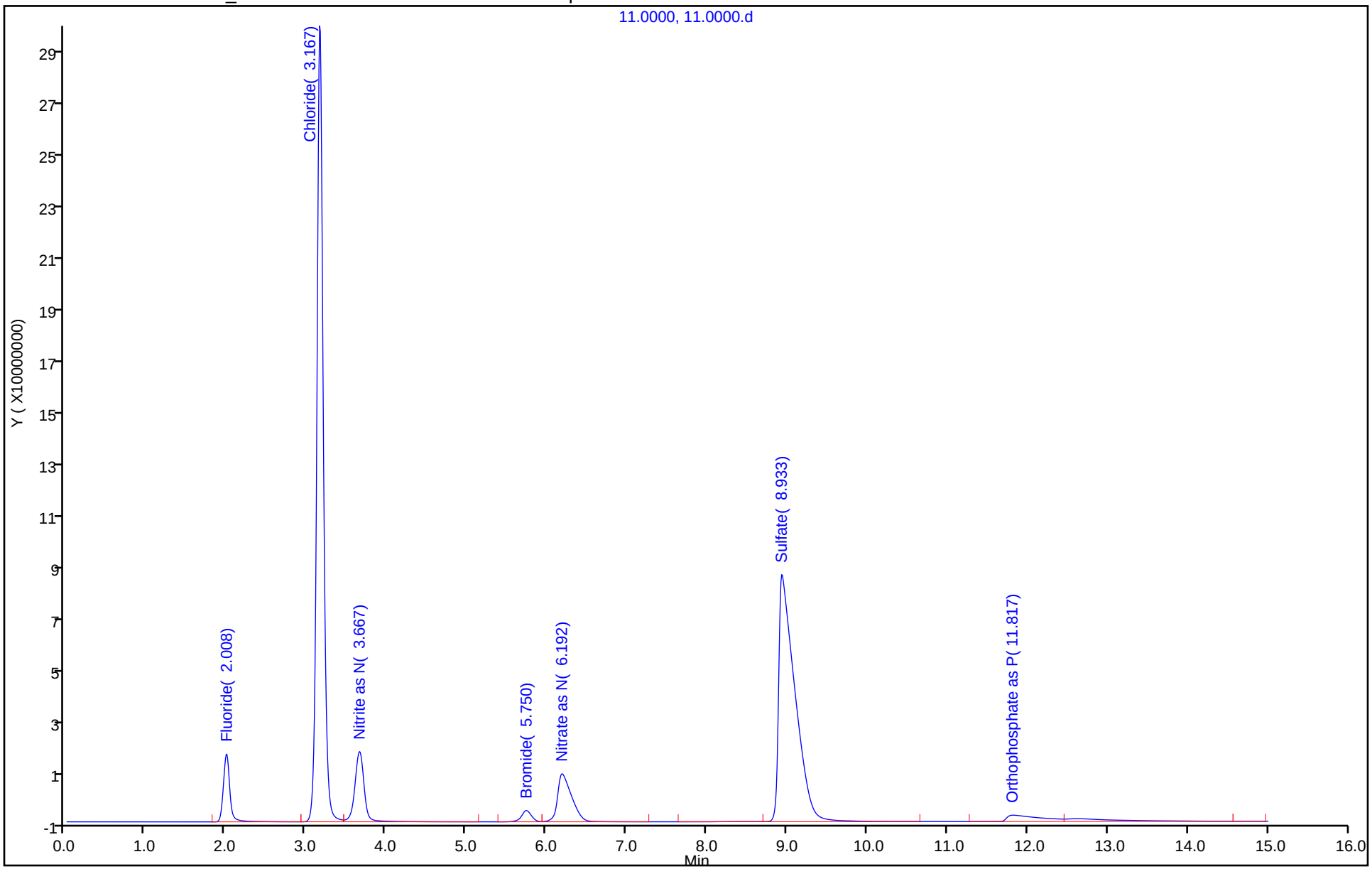
IC LCS_01288 Amount Added: 5.00 Units: mL

Report Date: 23-Jul-2018 09:24:52 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\11.0000.d

Injection Date:	20-Jul-2018 13:12:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	lcs			Worklist Smp#:	11
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\12.0000.d
Lims ID: lcsd
Client ID:
Sample Type: LCSD
Inject. Date: 20-Jul-2018 13:30:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-012
Misc. Info.: 12
Operator ID: Instrument ID: WC_IonChrom7

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 09:24:33 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0306

First Level Reviewer: jewellc Date: 20-Jul-2018 14:54:44

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.000	2.000	0.000	143945092	5.00	5.19	
2 Chloride	3.167	3.158	0.009	1664030202	100.0	97.8	
3 Nitrite as N	3.658	3.658	0.000	214155613	5.00	5.12	
4 Bromide	5.742	5.742	0.000	37152893	5.00	4.94	
5 Nitrate as N	6.183	6.183	0.000	220670642	5.00	4.98	
6 Sulfate	8.933	8.933	0.000	1308255599	100.0	103.2	a
7 Orthophosphate as P	11.783	11.775	0.008	76147924	5.00	4.52	

QC Flag Legend

Review Flags
a - User Assigned ID

Reagents:

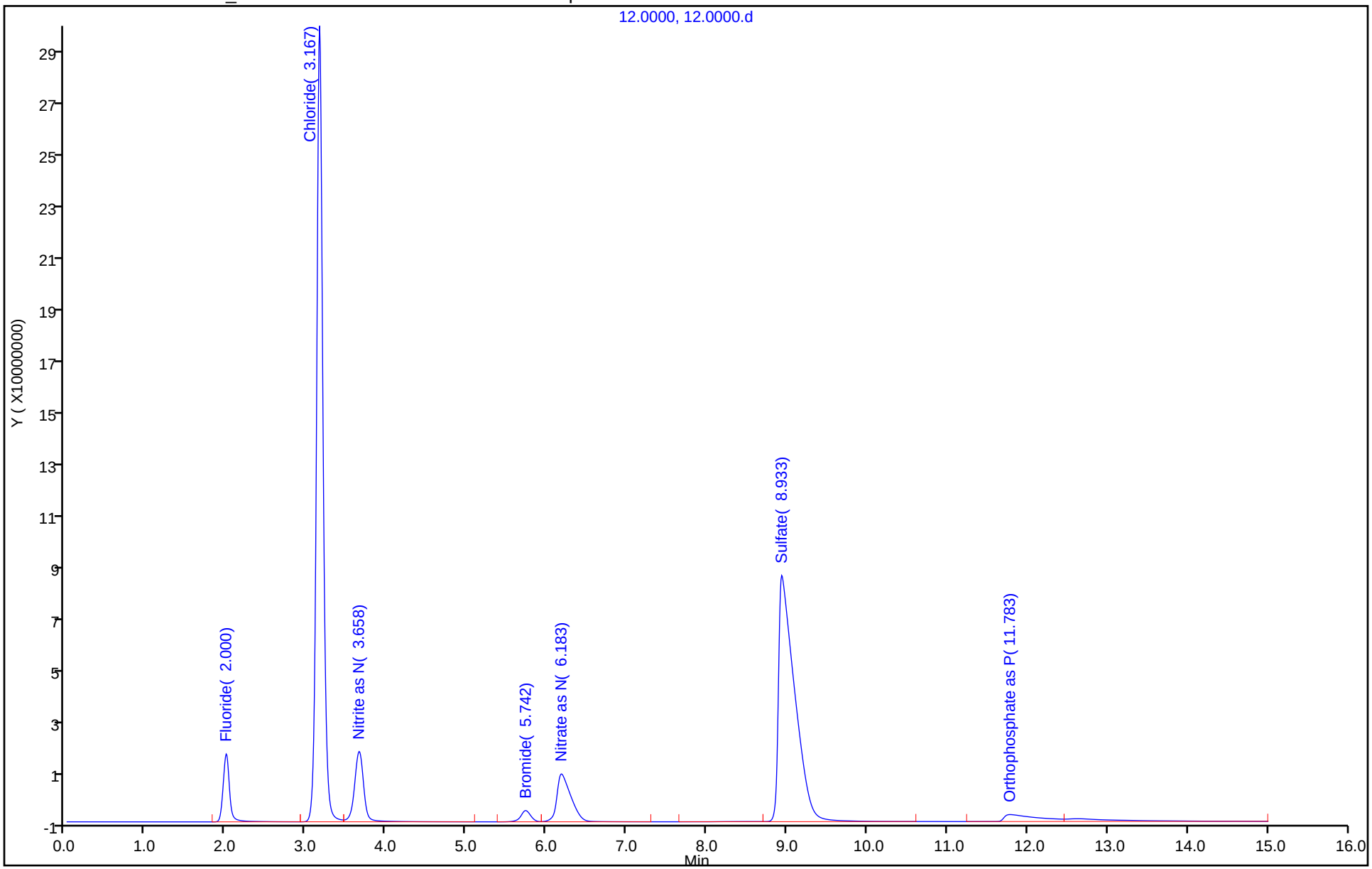
IC LCS_01288 Amount Added: 5.00 Units: mL

Report Date: 23-Jul-2018 09:24:54 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\12.0000.d

Injection Date:	20-Jul-2018 13:30:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	lcsd			Worklist Smp#:	12
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\13.0000.d
Lims ID: mb
Client ID:
Sample Type: MB
Inject. Date: 20-Jul-2018 13:47:00 ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-013
Misc. Info.: 13 1493
Operator ID: Instrument ID: WC_IonChrom7

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 09:24:33 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0306

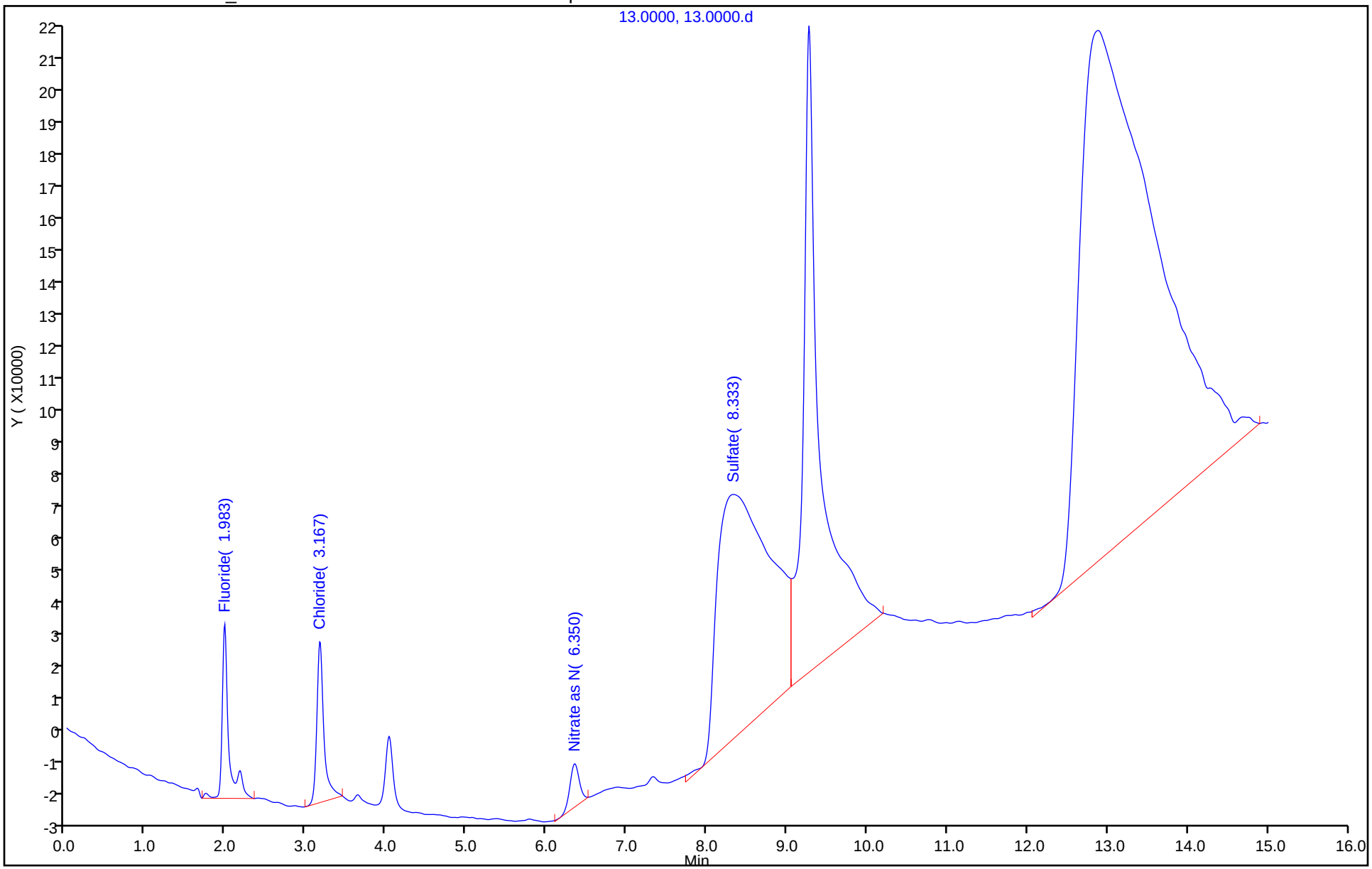
Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	1.983	2.000	-0.017	313211		-0.0283	
2 Chloride	3.167	3.158	0.009	310434		-0.0108	
3 Nitrite as N		3.658				ND	
4 Bromide		5.742				ND	
5 Nitrate as N	6.350	6.183	0.167	111962		0.008274	
6 Sulfate	8.333	8.933	-0.600	3431132		0.0899	
7 Orthophosphate as P		11.775				ND	

Report Date: 23-Jul-2018 09:24:56 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\13.0000.d

Injection Date:	20-Jul-2018 13:47:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	mb			Worklist Smp#:	13
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\14.0000.d
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 20-Jul-2018 14:05:00 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-014
Misc. Info.: 14
Operator ID: Instrument ID: WC_IonChrom7
Sublist: chrom-Anions_IC7*sub1

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 09:24:57 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0306

First Level Reviewer: jewellc Date: 20-Jul-2018 14:55:23

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.000	2.000	0.000	143472992	5.00	5.17	
2 Chloride	3.158	3.158	0.000	1661324016	100.0	97.6	
3 Nitrite as N	3.658	3.658	0.000	214425652	5.00	5.12	
4 Bromide	5.742	5.742	0.000	37092728	5.00	4.93	
5 Nitrate as N	6.183	6.183	0.000	220452491	5.00	4.97	
6 Sulfate	8.933	8.933	0.000	1306135844	100.0	103.0	a
7 Orthophosphate as P	11.775	11.775	0.000	76049633	5.00	4.52	

QC Flag Legend

Review Flags
a - User Assigned ID

Reagents:

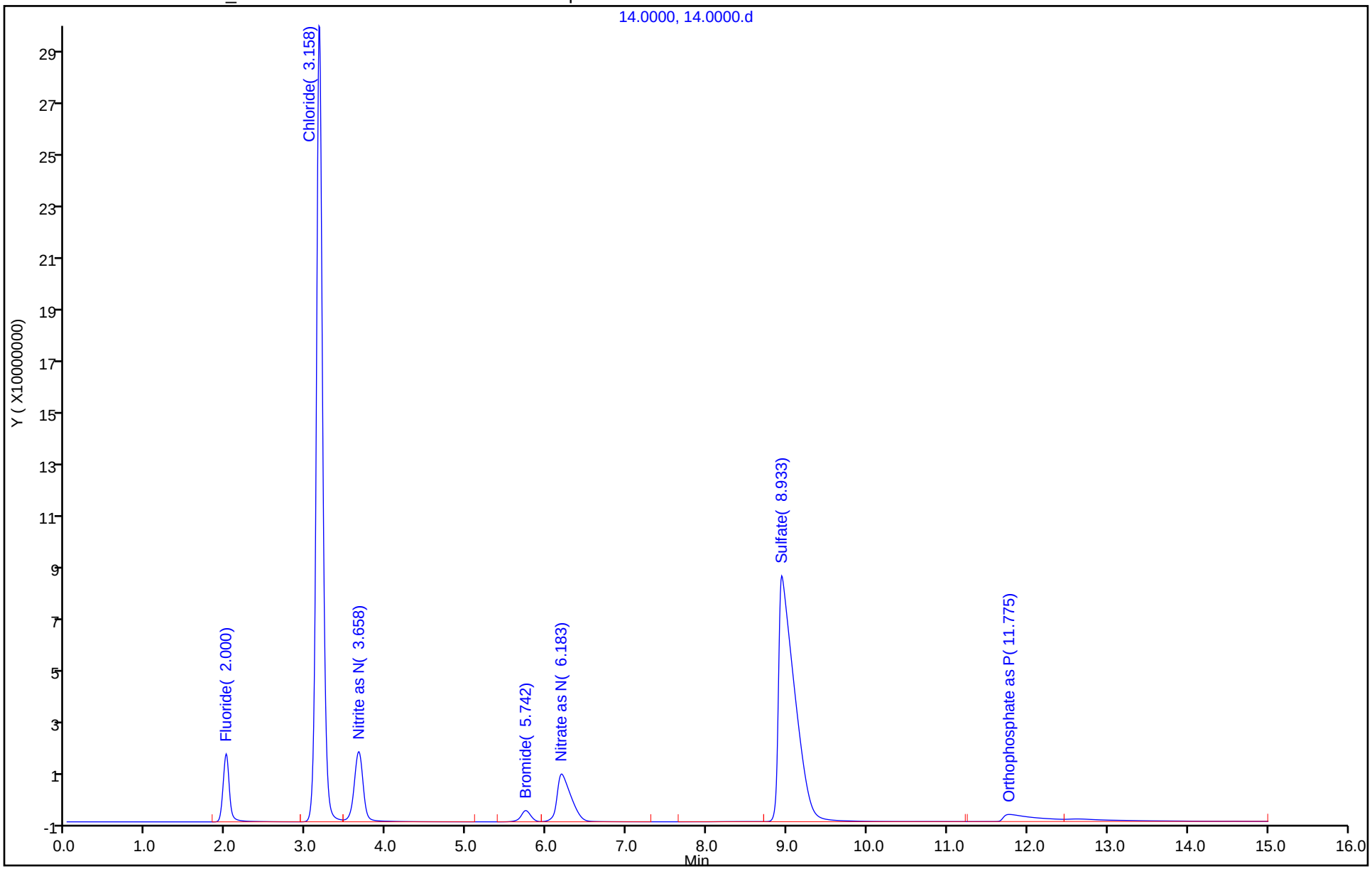
IC LCS_01288 Amount Added: 5.00 Units: mL

Report Date: 23-Jul-2018 09:24:57 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\14.0000.d

Injection Date:	20-Jul-2018 14:05:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	ccv			Worklist Smp#:	14
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File:	\\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\15.0000.d				
Lims ID:	ccb				
Client ID:					
Sample Type:	CCB				
Inject. Date:	20-Jul-2018 14:23:00	ALS Bottle#:	0	Worklist Smp#:	15
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Sample Info:	280-0072165-015				
Misc. Info.:	15 2424				
Operator ID:		Instrument ID:	WC_IonChrom7		
Method:	\\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m				
Limit Group:	Wet - Anions				
Last Update:	23-Jul-2018 09:24:57	Calib Date:	05-Jun-2018 12:02:00		
Integrator:	Falcon				
Quant Method:	External Standard	Quant By:	Initial Calibration		
Last ICal File:	\\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d				
Column 1 :			Det: 0005		
Process Host:	CTX0306				

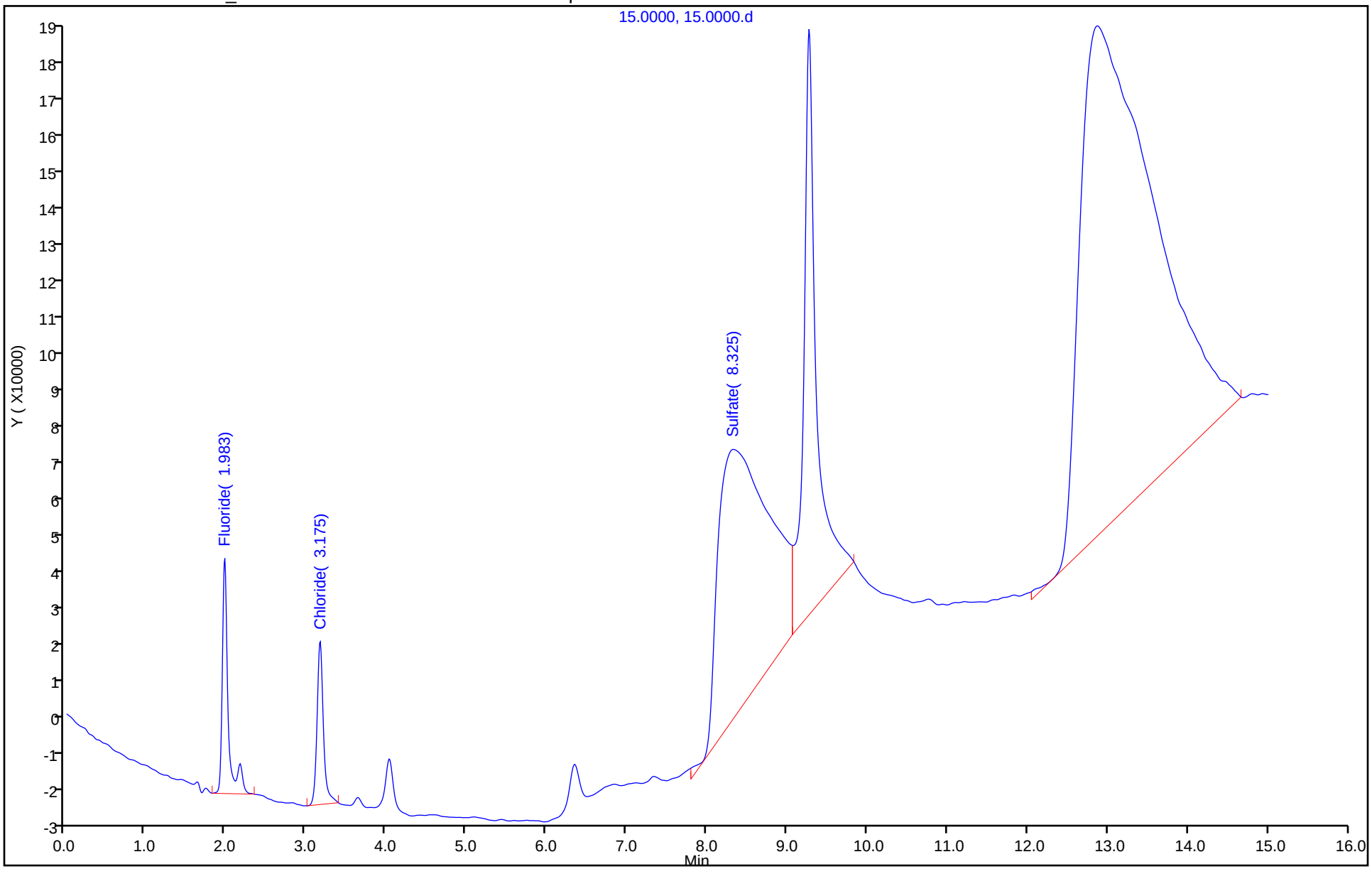
Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	1.983	2.000	-0.017	320911		-0.0280	
2 Chloride	3.175	3.158	0.017	242344		-0.0148	
3 Nitrite as N		3.658				ND	
4 Bromide		5.742				ND	
5 Nitrate as N		6.183				ND	
6 Sulfate	8.325	8.933	-0.608	3091479		0.0631	
7 Orthophosphate as P		11.775				ND	

Report Date: 23-Jul-2018 09:24:59 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\15.0000.d

Injection Date:	20-Jul-2018 14:23:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	ccb			Worklist Smp#:	15
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\16.0000.d
Lims ID: mrl
Client ID:
Sample Type: MRL
Inject. Date: 20-Jul-2018 17:38:00 ALS Bottle#: 0 Worklist Smp#: 16
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-016
Misc. Info.: 30076 2424
Operator ID: Instrument ID: WC_IonChrom7

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 10:54:29 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0306

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	1.992	2.000	-0.008	6954375	0.2000	0.2130	
2 Chloride	3.183	3.158	0.025	46549247	2.50	2.71	
3 Nitrite as N	3.667	3.658	0.009	9775441	0.2000	0.2227	
4 Bromide	5.800	5.742	0.058	1364643	0.2000	0.2208	
5 Nitrate as N	6.358	6.183	0.175	9624887	0.2000	0.2226	
6 Sulfate	9.225	8.933	0.292	45380067	2.50	3.40	
7 Orthophosphate as P		11.775			ND	ND	

QC Flag Legend

Processing Flags
ND - Not Detected or Marked ND

Reagents:

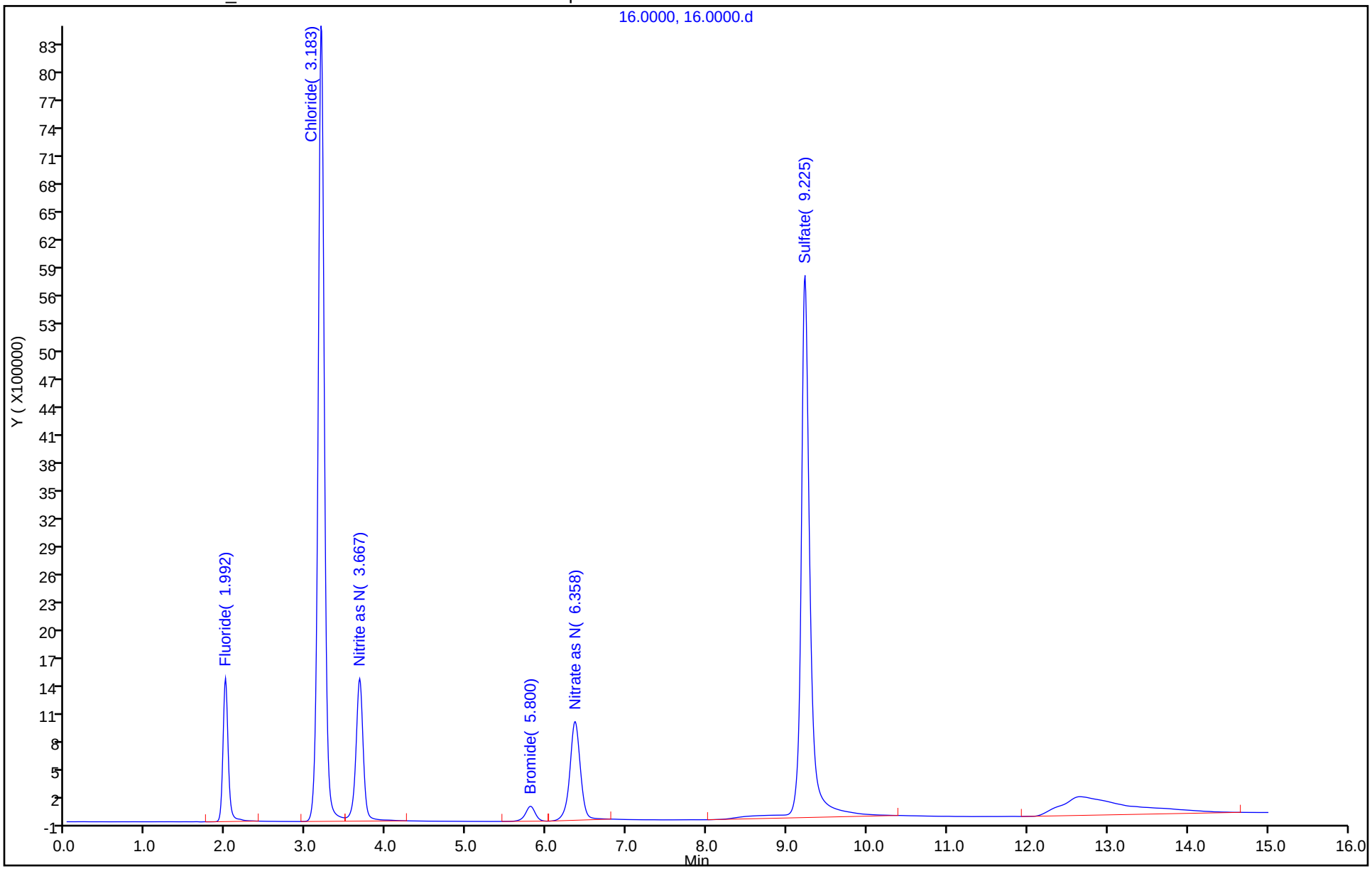
IC CAL cl/so4_00208 Amount Added: 0.05 Units: mL
IC Cal low_00385 Amount Added: 0.02 Units: mL

Report Date: 23-Jul-2018 10:54:36 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\16.0000.d

Injection Date:	20-Jul-2018 17:38:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	mrl			Worklist Smp#:	16
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\38.0000.d
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 21-Jul-2018 00:10:00 ALS Bottle#: 0 Worklist Smp#: 38
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-038
Misc. Info.: 20773
Operator ID: Instrument ID: WC_IonChrom7
Sublist: chrom-Anions_IC7*sub1

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 09:25:28 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0306

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.008	2.000	0.008	145939572	5.00	5.26	
2 Chloride	3.167	3.158	0.009	1683388181	100.0	98.9	
3 Nitrite as N	3.667	3.658	0.009	215078206	5.00	5.14	
4 Bromide	5.750	5.742	0.008	37473421	5.00	4.98	
5 Nitrate as N	6.200	6.183	0.017	227090726	5.00	5.12	
6 Sulfate	8.925	8.933	-0.008	1341423430	100.0	105.8	
7 Orthophosphate as P	11.900	11.775	0.125	56824689	5.00	3.46	

Reagents:

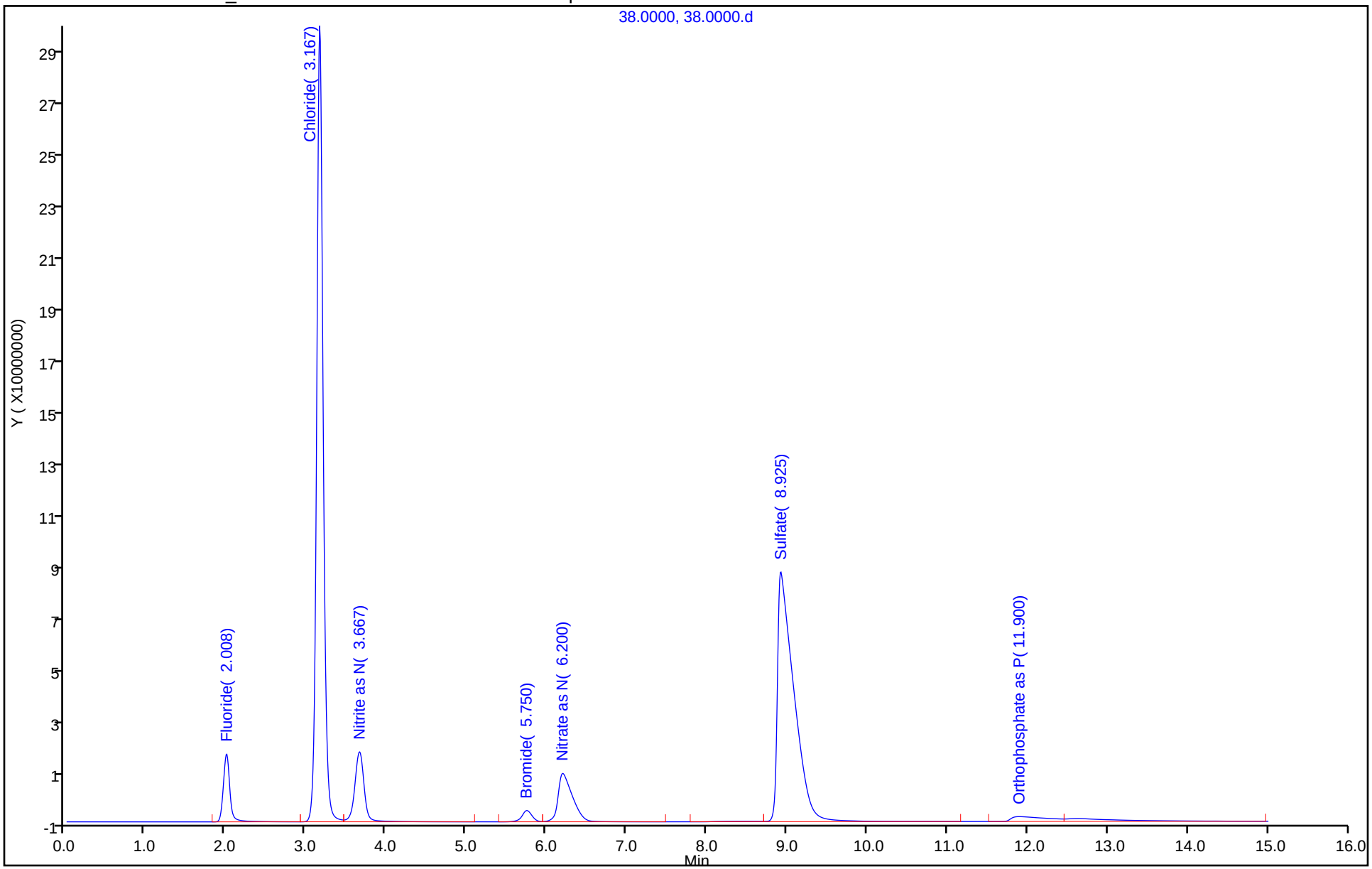
IC LCS_01288 Amount Added: 5.00 Units: mL

Report Date: 23-Jul-2018 09:25:29 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\38.0000.d

Injection Date:	21-Jul-2018 00:10:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	ccv			Worklist Smp#:	38
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\39.0000.d
Lims ID: ccb
Client ID:
Sample Type: CCB
Inject. Date: 21-Jul-2018 00:28:00 ALS Bottle#: 0 Worklist Smp#: 39
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-039
Misc. Info.: 29411
Operator ID: Instrument ID: WC_IonChrom7

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 09:25:28 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0306

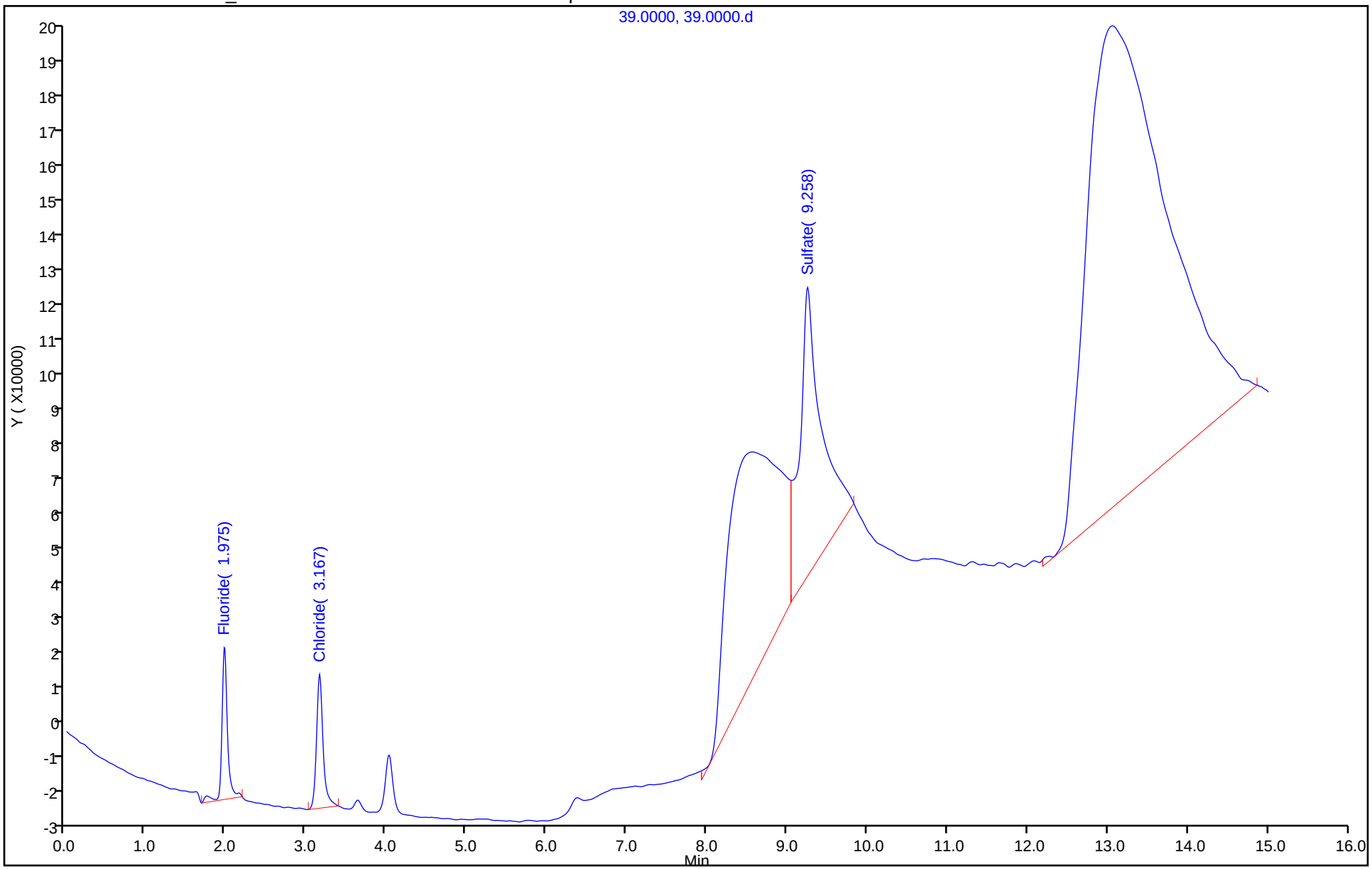
Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	1.975	2.000	-0.025	202964		-0.0323	
2 Chloride	3.167	3.158	0.009	209493		-0.0167	
3 Nitrite as N		3.658				ND	
4 Bromide		5.742				ND	
5 Nitrate as N		6.183				ND	
6 Sulfate	9.258	8.933	0.325	1487378		-0.0636	
7 Orthophosphate as P		11.775				ND	

Report Date: 23-Jul-2018 09:25:30 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\39.0000.d

Injection Date:	21-Jul-2018 00:28:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	ccb			Worklist Smp#:	39
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\45.0000.d
Lims ID: 280-111554-D-4
Client ID: RQLmw-012-062818-GW
Sample Type: Client
Inject. Date: 21-Jul-2018 02:15:00 ALS Bottle#: 0 Worklist Smp#: 45
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-045
Misc. Info.: 3134 F
Operator ID: Instrument ID: WC_IonChrom7

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 10:59:38 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

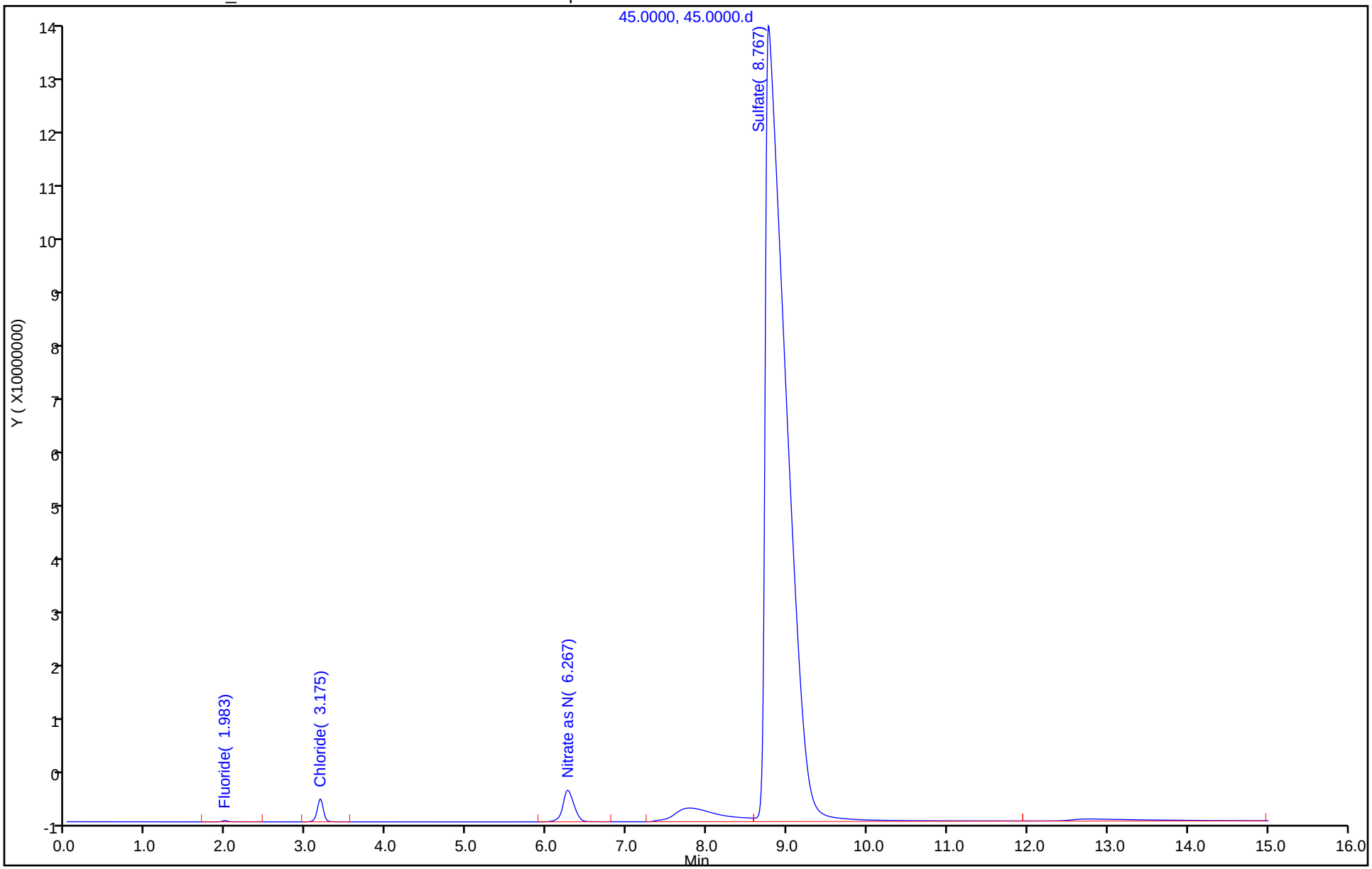
Column 1 : Det: 0005
Process Host: CTX0311

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
1 Fluoride	1.983	2.000	-0.017	1158233	0.002421	
2 Chloride	3.175	3.158	0.017	20821954	1.19	
3 Nitrite as N		3.658			ND	
4 Bromide		5.742			ND	
5 Nitrate as N	6.267	6.183	0.084	51796846	1.17	
6 Sulfate	8.767	8.933	-0.166	2414530197	190.6	
7 Orthophosphate as P		11.775			ND	

Report Date: 02-Oct-2018 17:52:11 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\45.0000.d				
Injection Date:	21-Jul-2018 02:15:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	280-111554-D-4	Lab Sample ID:	280-111554-4	Worklist Smp#:	45
Client ID:	RQLmw-012-062818-GW				
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\46.0000.d
Lims ID: 280-111554-E-10
Client ID: RQLmw-014-062818-GW
Sample Type: Client
Inject. Date: 21-Jul-2018 02:33:00 ALS Bottle#: 0 Worklist Smp#: 46
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-046
Misc. Info.: 28039 F
Operator ID: Instrument ID: WC_IonChrom7

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 10:59:38 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

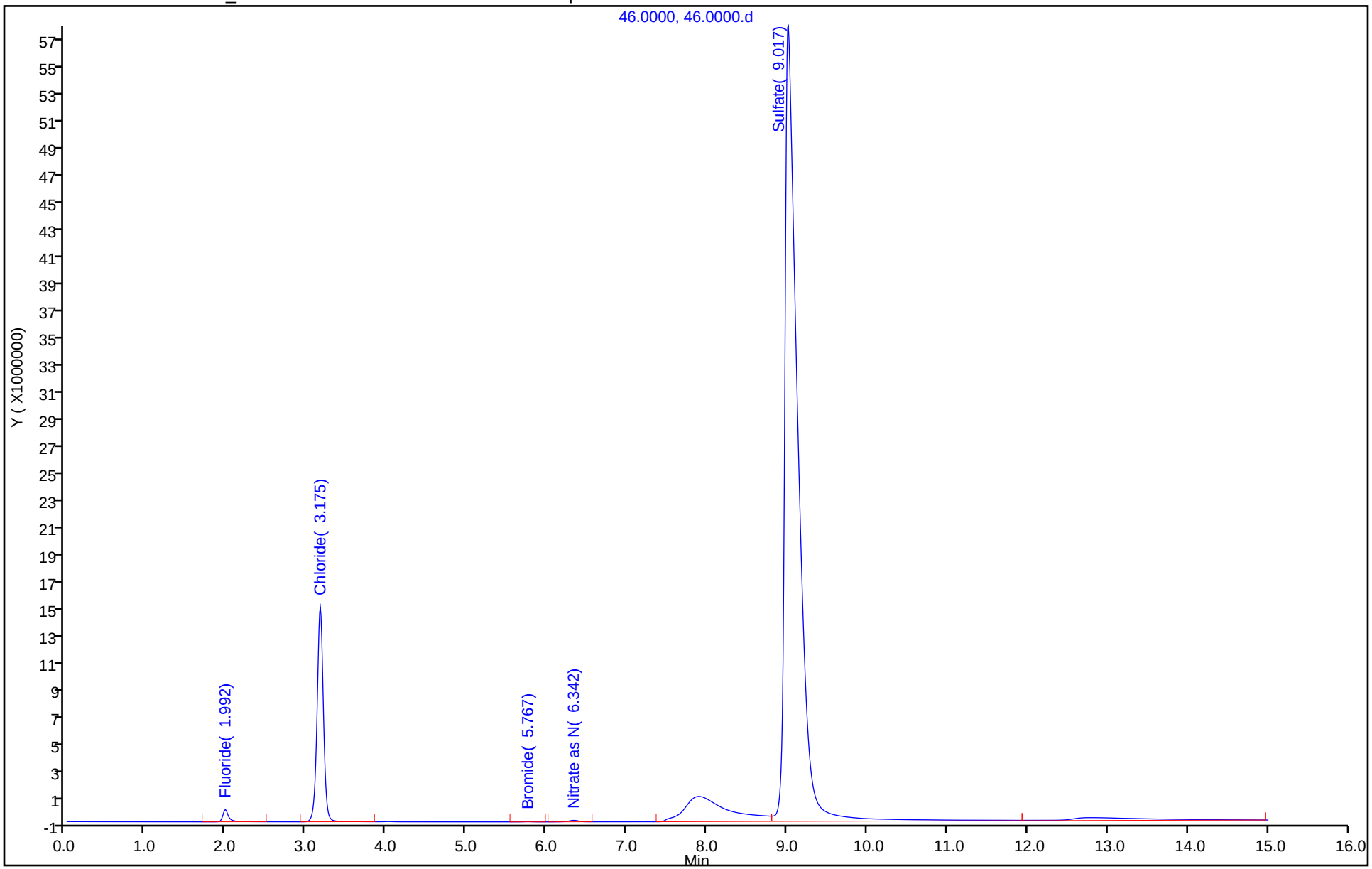
Column 1 : Det: 0005
Process Host: CTX0311

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
1 Fluoride	1.992	2.000	-0.008	4636776	0.1288	
2 Chloride	3.175	3.158	0.017	85042544	4.97	
3 Nitrite as N		3.658			ND	
4 Bromide	5.767	5.742	0.025	142652	0.0598	
5 Nitrate as N	6.342	6.183	0.159	940817	0.0269	
6 Sulfate	9.017	8.933	0.084	652781719	51.4	
7 Orthophosphate as P		11.775			ND	

Report Date: 02-Oct-2018 17:52:12 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\46.0000.d				
Injection Date:	21-Jul-2018 02:33:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	280-111554-E-10	Lab Sample ID:	280-111554-10	Worklist Smp#:	46
Client ID:	RQLmw-014-062818-GW				
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\48.0000.d
Lims ID: 280-111554-B-11
Client ID: RQLmw-013-062818-GW
Sample Type: Client
Inject. Date: 21-Jul-2018 03:08:00 ALS Bottle#: 0 Worklist Smp#: 48
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-048
Misc. Info.: 28909 F
Operator ID: Instrument ID: WC_IonChrom7

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 10:59:38 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

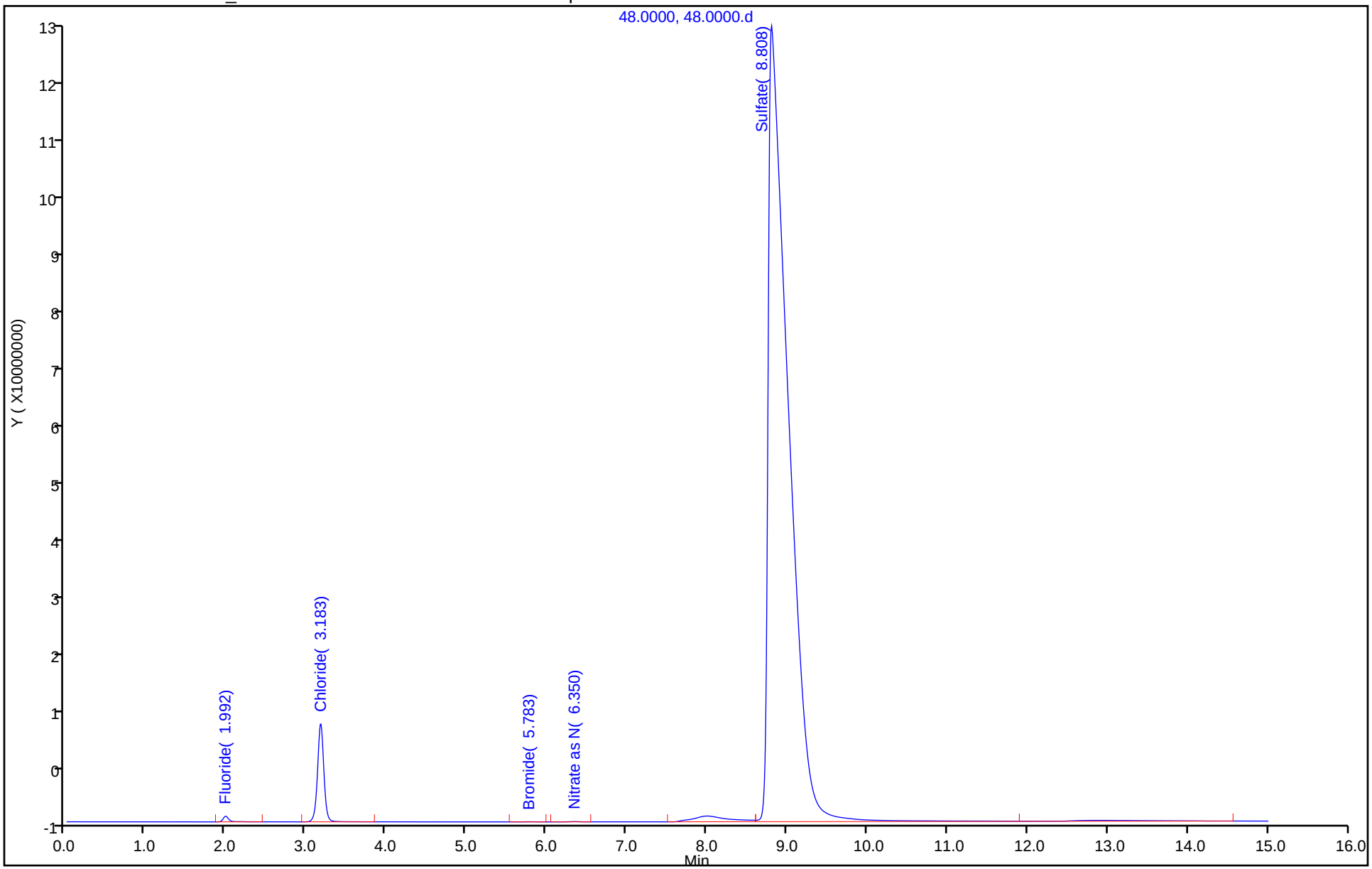
Column 1 : Det: 0005
Process Host: CTX0311

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	OnCol Amt ug/ml	Flags
1 Fluoride	1.992	2.000	-0.008	4385907	0.1197	
2 Chloride	3.183	3.158	0.025	83391696	4.87	
3 Nitrite as N		3.658			ND	
4 Bromide	5.783	5.742	0.041	137928	0.0592	
5 Nitrate as N	6.350	6.183	0.167	322055	0.0130	
6 Sulfate	8.808	8.933	-0.125	2120459885	167.3	
7 Orthophosphate as P		11.775			ND	

Report Date: 02-Oct-2018 17:52:15 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\48.0000.d				
Injection Date:	21-Jul-2018 03:08:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	280-111554-B-11	Lab Sample ID:	280-111554-11	Worklist Smp#:	48
Client ID:	RQLmw-013-062818-GW				
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\50.0000.d
Lims ID: ccv
Client ID:
Sample Type: CCV
Inject. Date: 21-Jul-2018 03:44:00 ALS Bottle#: 0 Worklist Smp#: 50
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-050
Misc. Info.: 7220
Operator ID: Instrument ID: WC_IonChrom7
Sublist: chrom-Anions_IC7*sub1

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 09:25:42 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0306

Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	2.000	2.000	0.000	149078512	5.00	5.38	
2 Chloride	3.167	3.158	0.009	1714295503	100.0	100.7	
3 Nitrite as N	3.658	3.658	0.000	215407099	5.00	5.15	
4 Bromide	5.758	5.742	0.016	37973082	5.00	5.04	
5 Nitrate as N	6.208	6.183	0.025	225132281	5.00	5.08	
6 Sulfate	8.892	8.933	-0.041	1320925633	100.0	104.2	
7 Orthophosphate as P	11.608	11.775	-0.167	99952798	5.00	5.84	

Reagents:

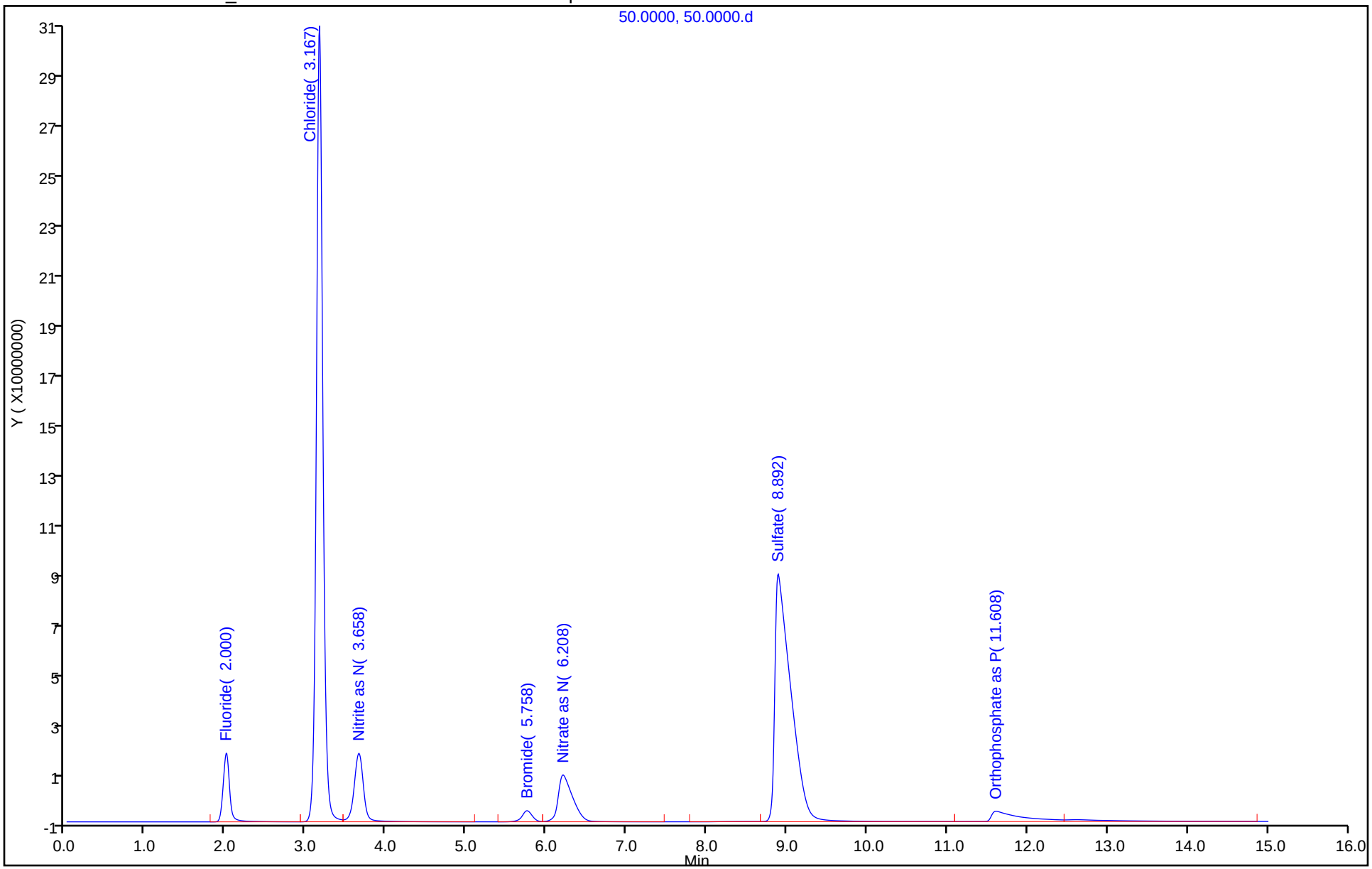
IC LCS_01288 Amount Added: 5.00 Units: mL

Report Date: 23-Jul-2018 09:25:43 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\50.0000.d

Injection Date:	21-Jul-2018 03:44:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	ccv			Worklist Smp#:	50
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\51.0000.d
Lims ID: ccb
Client ID:
Sample Type: CCB
Inject. Date: 21-Jul-2018 04:02:00 ALS Bottle#: 0 Worklist Smp#: 51
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Sample Info: 280-0072165-051
Misc. Info.: 9752
Operator ID: Instrument ID: WC_IonChrom7

Method: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\Anions_IC7.m
Limit Group: Wet - Anions
Last Update: 23-Jul-2018 09:25:42 Calib Date: 05-Jun-2018 12:02:00
Integrator: Falcon
Quant Method: External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180605-70676.b\07.0000.d

Column 1 : Det: 0005
Process Host: CTX0306

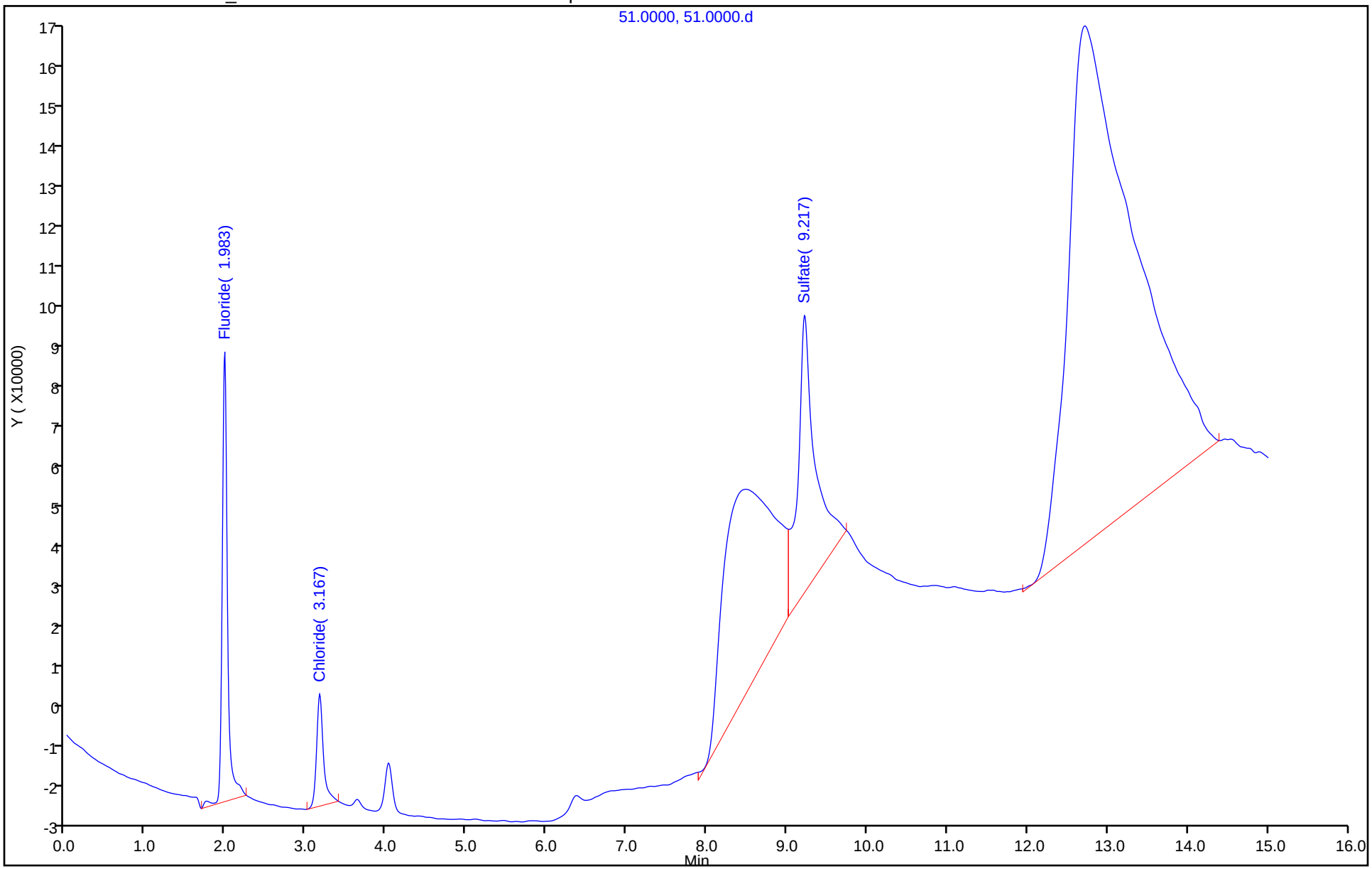
Compound	RT (min.)	Exp RT (min.)	Dlt RT (min.)	Response	Cal Amt ug/ml	OnCol Amt ug/ml	Flags
1 Fluoride	1.983	2.000	-0.017	497649		-0.0216	
2 Chloride	3.167	3.158	0.009	161758		-0.0195	
3 Nitrite as N		3.658				ND	
4 Bromide		5.742				ND	
5 Nitrate as N		6.183				ND	
6 Sulfate	9.217	8.933	0.284	1006339		-0.1016	
7 Orthophosphate as P		11.775				ND	

Report Date: 23-Jul-2018 09:25:44 Chrom Revision: 2.3 19-Jul-2018 15:14:50

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\WC_IonChrom7\20180720-72165.b\51.0000.d

Injection Date:	21-Jul-2018 04:02:00	Instrument ID:	WC_IonChrom7	Operator ID:	
Lims ID:	ccb			Worklist Smp#:	51
Client ID:					
Injection Vol:	25.0 ul	Dil. Factor:	1.0000	ALS Bottle#:	0
Method:	Anions_IC7	Limit Group:	Wet - Anions		



Shipping and Receiving Documents

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information			
Client Contact: Danyelle Phillips	Sampler: dep	Lab PM: McEntee, Patrick J	Carrier Tracking No(s):
Company: Cardno TEC, Inc	Phone: 434-906-2085	E-Mail: patrick.mcentee@testamericainc.com	COC No: 2 of 2
Address: 1658 Cole Boulevard Suite 190	Due Date Requested:		Page:
City: Golden	TAT Requested (days): 20 Business Days		Job #:
State, Zip: CO 80401			
Phone: 434-906-2085	PO #:		
Email: Danyelle.Phillips@cardno-gs.com	WO #: 076003.009.011		
Project Name: Ravenna, OH -	Project #: 28014271		
Site: Ravenna	SSOW#:		

Analysis Requested

Analysis	Preservation Code	RQLmw-007-062818GW
Field Filtered Sample (Yes or No)		
Perform MS/MSD (Yes or No)		Y
8260B - VOCs	A	
8270D - SVOCs List 1	N	
8270D - SVOCs List 2	N	
8270D - SVOCs List 3	N	X
8270D - SVOCs List 4	N	
8270D - SVOCs Full Suite	N	
8270D_SIM - PAHs (LVI)	N	
8082A - PCBs	N	X
8330B - Explosives/Propellants	N	
8081B - Pesticides (LVI)	N	
9012B - Cyanide	B	
6010C/6020A/7470A - Total Metals	D	
6010C/6020A/7470A - Dissolved Metals	D	
6020A - Arsenic	D	
7196A - Hexavalent Chromium (24 HOUR HOLD TIME)	N	
2320B - Alkalinity	N	
9056A - Anions (Chloride and Sulfate)	N	
9034 - Sulfide	C/B	
9056A - Nitrate (48 HOUR HOLD TIME)	N	
6860 - Perchlorate	N	
6010C - Phosphorous	D	
Total Number of containers		2

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Special Instructions/Note
RQLmw-007-062818GW	6-28-18	1410	G	W	

dep

Preservation Codes:
A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)
Other:

280-111554 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: Date: Time: Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	6-28-18 / 1630	Cardno	[signature]	6-29 1630	
[signature]	6-29 1700		KO Dv	06-30-18 0900	TADEN

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks: 0.8, 3.6, 1.6, 1.9, 2.4, 1.3 to 0.0 XFERED BY KO 06-30-18

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: dep	Lab PM: McEntee, Patrick J	Carrier Tracking No(s):	COC No:
Client Contact: Danyelle Phillips	Phone: 434-906-2085	E-Mail: patrick.mcentee@testamericainc.com		Page:
Company: Cardno TEC, Inc				Job #:
Address: 1658 Cole Boulevard Suite 190	Due Date Requested:			
City: Golden	TAT Requested (days): 20 Business Days			
State, Zip: CO 80401				
Phone: 434-906-2085	PO #:			
Email: Danyelle.Phillips@cardno-gs.com	WO #: 076003.009.011			
Project Name: Ravenna, OH -	Project #: 28014271			
Site: Ravenna	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Preservation Code:	8260B - VOCs	8270D - SVOCs List 1	8270D - SVOCs List 2	8270D - SVOCs List 3	8270D - SVOCs List 4	8270D - SVOCs Full Suite	8270D_SIM - PAHs (LVI)	8082A - PCBs	8330B - Explosives/Propellants	8081B - Pesticides (LVI)	9012B - Cyanide	6010C/6020A/7470A - Total Metals	6010C/6020A/7470A - Dissolved Metals	6020A - Arsenic	7196A - Hexavalent Chromium (24 HOUR HOLD TIME)	2320B - Alkalinity	9056A - Anions (Chloride and Sulfate)	9034 - Sulfide	9056A - Nitrate (48 HOUR HOLD TIME)	6860 - Perchlorate	6010C - Phosphorous	Total Number of containers	Special Instructions/Note:
FWGmw-012-062818	06.28.18	1405	G	W	N	N						X				X			X										5	FC
FWGmw-011-062818	06.28.18	15:29	G	W	N	N						X				X			X										5	IC
RBmw-012-062818-MW	06/28/18	1755	G	W	N	N												X				X	X	X					4	CEB

QC 4 JC

dep

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		06-28-18/1630	Cardno		6-29 1600	
2		1700			06-30-18 0900	TA DEN
3						

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Page 104 of 109

10/04/2018

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: HNR, CMJ	Lab PM: McEntee, Patrick J	Carrier Tracking No(s):	COC No:
Client Contact: Danyelle Phillips	Phone: 434-906-2085	E-Mail: patrick.mcentee@testamericainc.com		Page:
Company: Cardno TEC, Inc				Job #:
Address: 1658 Cole Boulevard Suite 190	Due Date Requested:			
City: Golden	TAT Requested (days): 20 Business Days			
State, Zip: CO 80401				
Phone: 434-906-2085	PO #:			
Email: Danyelle.Phillips@cardno-gs.com	WO #: 076003.009.011			
Project Name: Ravenna, OH -	Project #: 28014271			
Site: Ravenna	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - VOCs	8270D - SVOCs List 1	8270D - SVOCs List 2	8270D - SVOCs List 3	8270D - SVOCs List 4	8270D - SVOCs Full Suite	8270D_SIM - PAHs (LVI)	8082A - PCBs	8330B - Explosives/Propellants	8081B - Pesticides (LVI)	9012B - Cyanide	6010C/6020A/7470A - Total Metals	6010C/6020A/7470A - Dissolved Metals	6020A - Arsenic	7196A - Hexavalent Chromium (24 HOUR HOLD TIME)	2320B - Alkalinity	9056A - Anions (Chloride and Sulfate)	9034 - Sulfide	9056A - Nitrate (48 HOUR HOLD TIME)	6860 - Perchlorate	6010C - Phosphorous	Total Number of containers	Special Instructions/Note:
			Preservation Code:		X	X	A	N	N	N	N	N	N	N	N	N	B	D	D	D	N	N	N	C/B	N	N	D		
TB-062818-05	06/28/18	16:30	G	W	N	N	X																					1	A
RGLmw-016-062818-GW	06/28/18	1402	G	W	N	N											X											1	B
RGLmw-008-062818-GW	06/28/18	1432	G	W	N	N	X			X			X	X	X	X	X	X										2	A, B, D

QC'd by KMB

dup

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2SO3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - ph 4-5
L - EDA	Z - other (specify)
Other:	

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 6-28-18/1630	Company: Cardno	Received by:	Date/Time: 6-29 1630	Company
Relinquished by:	Date/Time: 6-29 1700	Company	Received by:	Date/Time: 06-30-18 0900	Company: TAL DEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: dep	Lab PM: McEntee, Patrick J	Carrier Tracking No(s):	COC No: 1 of 2
Client Contact: Danyelle Phillips	Phone: 434-906-2085	E-Mail: patrick.mcentee@testamericainc.com		Page:
Company: Cardno TEC, Inc				Job #:
Address: 1658 Cole Boulevard Suite 190	Due Date Requested:		Analysis Requested	
City: Golden	TAT Requested (days): 20 Business Days			Preservation Codes:
State, Zip: CO 80401	PO #:			A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2SO3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - ph 4-5; Z - other (specify)
Phone: 434-906-2085	WO #: 076003.009.011			Other:
Email: Danyelle.Phillips@cardno-gs.com	Project #: 28014271			QC - dep
Project Name: Ravenna, OH -	SSOW#:			Special Instructions/Note:
Site: Ravenna				

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Wewater, Ssolid, O=wasteoil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - VOCs	8270D - SVOCs List 1	8270D - SVOCs List 2	8270D - SVOCs List 3	8270D - SVOCs List 4	8270D - SVOCs Full Suite	8270D_SIM - PAHs (LVI)	8082A - PCBs	8330B - Explosives/Propellants	8051B - Pesticides (LVI)	9012B - Cyanide	6010C/6020A/7470A - Total Metals	6010C/6020A/7470A - Dissolved Metals	6020A - Arsenic	7196A - Hexavalent Chromium (24 HOUR HOLD TIME)	2320B - Alkalinity	9056A - Anions (Chloride and Sulfate)	9034 - Sulfide	9056A - Nitrate (48 HOUR HOLD TIME)	9060 - Perchlorate	6010C - Phosphorous	Total Number of containers	Special Instructions/Note:
			Preservation Code:				A	N	N	N	N	N	N	N	N	N	B	C	D	D	N	N	N	N	N	N	G		
RQLmw-0017-062818-GW	6-28-18	1410	G	W		Y	X						X		XXXX											X	2	MS/MSD
TB-062818-03	6-28-18	1400	G	W			X																				1	

dep

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological	☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify)	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:
Relinquished by:	Date/Time: 6-28-18/1630	Company: Cardno	Received by:	Date/Time: 6-29 1630	Company
Relinquished by:	Date/Time: 6-29 1700	Company	Received by: KADEN	Date/Time: 06-30-18 0900	Company: TADEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: KMB / KF	Lab PM: McEntee, Patrick J	Carrier Tracking No(s):	COC No:
Client Contact: Danyelle Phillips	Phone: 434-906-2085	E-Mail: patrick.mcentee@testamericainc.com		Page:
Company: Cardno TEC, Inc				Job #:
Address: 1658 Cole Boulevard Suite 190	Due Date Requested:			
City: Golden	TAT Requested (days): 20 Business Days			
State, Zip: CO 80401				
Phone: 434-906-2085	PO #:			
Email: Danyelle.Phillips@cardno-gs.com	WO #: 076003.009.011			
Project Name: Ravenna, OH -	Project #: 28014271			
Site: Ravenna	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Preservation Code	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - VOCs	8270D - SVOCs List 1	8270D - SVOCs List 2	8270D - SVOCs List 3	8270D - SVOCs List 4	8270D - SVOCs Full Suite	8270D_SIM - PAHs (LVI)	8082A - PCBs	9330B - Explosives/Propellants	8081B - Pesticides (LVI)	9012B - Cyanide	6010C/6020A/7470A - Total Metals	6010C/6020A/7470A - Dissolved Metals	6020A - Arsenic	7196A - Hexavalent Chromium (24 HOUR HOLD TIME)	2320B - Alkalinity	9056A - Anions (Chloride and Sulfate)	9034 - Sulfide	9056A - Nitrate (48 HOUR HOLD TIME)	9060 - Perchlorate	6010C - Phosphorous	Total Number of containers	Special Instructions/Note:
								A	N	N	N	N	N	N	N	N	N	N	D	D	D	N	N	N	C/B	N	N	D		
RQLmw-009-062818-GW	06/28/18	1458	G	W		N	N	X			X			X	X	X	X	X	X										12	D, B, A
RQLmw-014-062818-GW	06/28/18	1340	G	W		N	N									X							X	X	X				5	C, B
~~RQLmw-013-062818-GW~~	~~06/28/18~~	~~1414~~	G	W		N	N																							
RQLmw-013-062818-GW	06/28/18	1414	G	W		N	N																X	X	X				3	B
TB-062818-02	06/28/18	1620																												

QC by KF

dlg

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 6-28-18/1630	Company: Cardno	Received by:	Date/Time: 6-29 1641	Company
Relinquished by:	Date/Time: 6-29 1700	Company	Received by:	Date/Time: 06-30-18 0900	Company: TAEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information
Client Contact: Danyelle Phillips
Company: Cardno TEC, Inc
Address: 1658 Cole Boulevard Suite 190
City: Golden
State, Zip: CO 80401
Phone: 434-906-2085
Email: Danyelle.Phillips@cardno-gs.com
Project Name: Ravenna, OH -
Site: Ravenna

Sampler: dep
Phone: 434-906-2085
Due Date Requested:
TAT Requested (days): 20 Business Days
PO #:
WO #: 076003.009.011
Project #: 28014271
SSOW#:

Lab PM: McEntee, Patrick J
E-Mail: patrick.mcentee@testamericainc.com
Carrier Tracking No(s):

COC No:
Page:
Job #:

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B - VOCs	8270D - SVOCs List 1	8270D - SVOCs List 2	8270D - SVOCs List 3	8270D - SVOCs List 4	8270D - SVOCs Full Suite	8270D_SIM - PAHs (LVI)	8082A - PCBs	8330B - Explosives/Propellants	8051B - Pesticides (LVI)	9012B - Cyanide	6010C/6020A/7470A - Total Metals	6010C/6020A/7470A - Dissolved Metals	6020A - Arsenic	7196A - Hexavalent Chromium (24 HOUR HOLD TIME)	2320B - Alkalinity	9056A - Anions (Chloride and Sulfate)	9034 - Sulfide	9056A - Nitrate (48 HOUR HOLD TIME)	9060 - Perchlorate	6010C - Phosphorous	Total Number of containers
			Preservation Code:				A	N	N	N	N	N	N	N	N	N	E	D	D	D	N	N	N	C/B	N	N	D	
RQlmw-007-D-062818-GW	6-28-18	1410	G	W	N	Y	X		X		X	X	X	X	X	X											X	3
-EB-062818-04	6-28-18	1401	G	W	N	N	X																					3

Special Instructions/Note: QC-dep; no MS/MSD; dep

Preservation Codes:
A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA; M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2SO3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - ph 4-5; Z - other (specify)
Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological
Deliverable Requested: I, II, III, IV, Other (specify)

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 6-28-18/1630	Company: Cardno	Received by:	Date/Time: 6-29 1130	Company
Relinquished by:	Date/Time: 6-29 1700	Company	Received by:	Date/Time: 06-30-18 0900	Company: TAEN
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Login Sample Receipt Checklist

Client: Cardno GS, Inc

Job Number: 280-111554-2

Login Number: 111554
List Number: 1
Creator: Dunlap, Krista M

List Source: TestAmerica Denver

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	False	Refer to Job Narrative for details.
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	